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ABSTRACT

This ERIC Digest examines the uses of databases in the social studies, including what a database is and how to use it, types of databases available for social studies classroom use, and the role this educational tool can play in achieving the goals and objectives of the social studies. A distinction between print and computerized database files and a simplified example of the use of Boolean logic in searching computer databases is provided. Two types of databases currently applicable in the social studies classroom, on-line databases and database software, are then examined. Listed are some of the on-line databases relevant as student research tools in the social studies, including The New York Times Information Service; America: History and Life; Historical Abstracts; Facts on File; Educational Resources Information Center (ERIC); and Magazine Index. Uses of database software are discussed and examples of commercially available database software programs are also provided. That database development and maintenance are fast becoming essential skills for effective citizenship participation is offered as a compelling rationale for incorporating this tool into social studies instruction. By creating and using databases, students develop research and organization skills. By searching databases, they learn to identify information needs, make problem statements, retrieve and sort information, and design strategies for organizing data. (LH)

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by Lynn Parisi

Computerized databases, one of the more recent applications of computer technology to education, are receiving increasing attention from educators because of their potential for developing in students the very important skills of logical thinking, problem solving, and information handling. This ERIC Digest examines the use of databases in one discipline, the social studies. It considers what a database is and how to use it, types of databases available for social studies classroom use, and the role this educational tool can play in achieving the goals and objectives of the social studies.

What is a computerized database and how do you use it?

Databases are files of information which have been organized and indexed for quick and easy access to specific topics. Print databases such as the library card catalog or *Reader's Guide to Periodical Literature* are familiar to everyone. A computerized database is organized similarly, but with files of information loaded onto software discs or computer tape. With a computerized database, the researcher calls up information by typing in established index terms, numbers, or words.

The advantage of a computerized database over a print file is that the computer can combine, delete, broaden, or narrow categories of data, enabling the user to quickly obtain only the information that meets all his requirements. For example, in a hypothetical "countries of the world" database, one could search for all countries with a Gross National Product (GNP) of over one billion dollars. That search could be further refined to indentify only North or South American countries with such a GNP or, further, just those American countries with a certain political system.

Obtaining exactly the information one wants requires a clear definition of the research question and decisions about relevant and extraneous information. Searching a database effectively involves the skills of Boolian logic—the logic of combining and deleting sets of information through the key terms AND, OR, and NOT. Thus, the search outlined above might appear as follows.

Set 1=GNP>$1 billion

Set 2 =North America *OR* South America

Set 3=republican form of government

Set 4 (the desired set)=set 1 *AND* set 2 *AND* set 3

What types of databases are available for social studies?

Two types of computerized databases are currently applicable to the social studies classroom. on-line databases and database software programs.

On-line databases are so named because the personal computer (p.c.) user is linked by phone line to a distant mainframe computer storing documents or information in its memory. On-line databases may contain bibliographic citations, full texts of journal and news articles, or statistics such as stock market prices or weather information. Among the on-line databases relevant as student research tools in the social studies are *The New York Times Information Service, America: History and Life, Historical Abstracts, Facts on File, Educational Resources Information Center* (ERIC), and *Magazine Index*. Even the *Encyclopaedia Britannica* is now available as a computerized database.

To access on-line databases, a personal computer must be adapted for telecommunications by using a modem, a communications interface, and communication software. On-line databases are generally available on a subscription basis, either individually as with *The New York Times Information Service*, or collectively through a database service. Three widely-known database services are Dialog, BRS, and CompuServe. All of these services provide access to a wide variety of databases (for example, a Dialog subscription allows access to over 200 separate files) and have low-cost subscription rates for personal computer users. The total expense in using an on-line database includes the flat subscription rate, plus charges for telephone service time, amount of time hooked into the mainframe computer, and a slight reproduction fee for citations ordered. Prices range from as low as $25.00/hour for ERIC to around $100.00/hour for *The New York Times*.

Database software provides a computer program—a structure—for developing a file of information on any topic. Such a program enables the teacher or students to create custom-made databases for classroom use. Among the commercially-available database software programs appropriate for student users are. *PFS.File* (Software Publishing Corp., Mountain View, CA), *Database, Jr.* (Intellectual Software, Inc., Bridgeport, CT), *Notebook Filer* (D.C. Heath, Lexington, MA), *Friendly Filer* (Grolier Publishing, New York, NY), and *Bank Street Filer* (Broderbund Software, San Rafael, CA). A number of programs are also available as part of integrated packages such as *Appleworks*.

To design a database using these software programs, students or teachers identify a topic and then define and label specific categories of information (called fields) to be included in the file. To develop a database on "countries of the world," a class would identify the countries to include, then choose fields of information such as population, ethnic groups, language, type of government, or major industries. The final step in database construction is to collect information from available sources and enter it into the software program.

In the past year, a number of textbook publishers have introduced "file package" software for use with database program software. For these packages, the publisher has established fields on specific topics, compiled the data, and entered it onto a separate disc. Together, this file software and the program software form a complete database package on a topic. Database packages developed by commercial publishers for the social studies market include.

- Scholastic's *United States History*. This package contains three files, "Expanding the Frontier," "Inventions and Technology," and "Twentieth Century America." It is designed for use with *PFS. File*.

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- D.C. Heath's fourth-grade social studies file. This package, to accompany *Notebook Filer,* contains six files: "Northeast U.S.A.," "My Geography," 'United States," "Land and Water," "Natural Resources," and "Timeline." Other files are available for grades 10-12 social studies.
- Broderbund Software, Inc. is currently developing social studies files to be used with the *Bank Street Filer* database program.

What role can databases play in meeting the goals and objectives of the social studies?

Software databases can be developed for any social studies content area, from a local community file to U.S. presidential election statistics. On-line databases of journal and newspaper articles currently exist in the fields of U.S. history, world history, Middle Eastern affairs, religion, sociology, and current events.

Databases provide a unique tool for integrating the teaching of social studies knowledge, information skills, and higher order thinking skills. Creating and using databases develops research and organization skills. By searching databases, students learn to identify information needs, make problem statements, retrieve and sort information, and design strategies for organizing data (Lengel and others 1985). Extension activities enhance critical thinking skills. Through teacher-initiated activities and projects, students can go beyond the level of data input and recall toward evaluating what they find: forming and testing hypotheses, recognizing trends in information, making inferences about data, and solving problems (Apple Education News 1985).

The national report, *Educating Americans for the 21st Century,* stresses that problem solving, information handling, and communication skills (all skills involved in database applications) will be among the basic competencies of the next century (National Science Board on PreCollege Education in Mathematics, Science, and Technology 1983). While these skills have always been seen as traditional social studies skills, Beverly Hunter (1985) goes a step further, tying these skills specifically to computer literacy. According to Hunter, as our society moves into the Information Age, in which activities and institutions are based on the organization, storage, and dissemination of information, the ability to sort through information provided by computer and apply that information to problem solving must become a fundamental part of learning. Already political scientists predict the use of information systems in the political decision-making process will make computer literacy and "informatics" essential to intelligent political participation (Glenn and Klassen 1983).

Indications such as these, that database development and manipulation are fast becoming essential skills of effective citizenship participation, provide perhaps the most compelling rationale for incorporating this tool into social studies instruction.

RESOURCES

The following is a bibliography of resources, including references in this Digest. Those entries followed by an ED number are in the ERIC system and are available in microfiche and/or paper copy from the ERIC Document Reproduction Service (EDRS). For price information write EDRS, P.O. Box 190, Arlington, VA 22210.

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