

Learning & Leading With

Technology

Serving Teachers in the Classroom

March 1999 Vol. 26 No. 6 \$7.75

The Virtual Trip

page 6

Databases and Special-Needs Students

page 10

Humanities on the Web

page 14

Spreadsheets and Probability

page 18

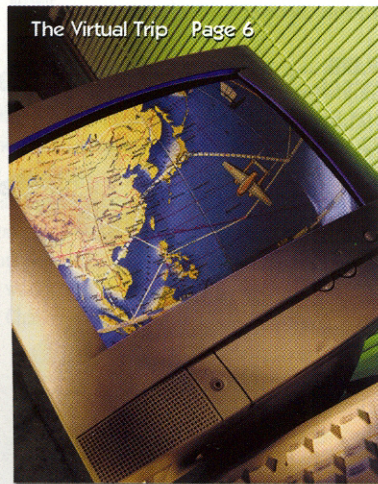
Web Astronomy Finding New Objects in the Night Sky

page 22



iste

Contents



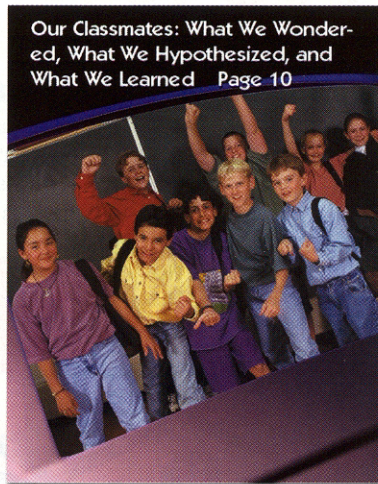
The Virtual Trip Page 6

Editorial

- 4 **The 15% Solution**
David Moursund

Features

- 6 **The Virtual Trip**
Noel Bitner, Elizabeth Wadlington, Sue Austin, Elizabeth Partridge, and Joe Bitner



Our Classmates: What We Wondered, What We Hypothesized, and What We Learned Page 10

In the Curriculum

Special Needs

- 10 **Our Classmates: What We Wondered, What We Hypothesized, and What We Learned**
Susan Monahan

Language Arts & Social Studies

- 14 **Finding EDSITEMent in the Humanities**
Candace Katz

Math

- 18 **Rolling the Dice: Developing an Understanding of Experimental and Theoretical Probability**
David K. Pugalee

Science

- 22 **Hunting for Asteroids, Comets, and Novas**
Dennis Erickson



Finding EDSITEMent in the Humanities Page 14

Telecommunications

- 28 **In the Dark Ages? How to Create Imaginative, Exciting, and Interactive Web Sites with Barely More Than a Keyboard**
Steve Feld

- 32 **Meeting the Needs of the Net Generation**
Dorothy Valcarcel Craig

- 36 **Touching Students' Minds in Cyberspace**
M. Khalid Hamza and Bassem Alhalabi

- 40 **The World Wide Web: Interfaces, Databases, and Applications to Education**
Richard Repp

Mining the Internet

- 42 **"I Know What We're Doing, But How Do We Do It?" Action Sequences for Curriculum-Based Telecomputing**
Judi Harris

The World Wide Web

Interfaces, Databases, and Applications to Education



By Richard Repp

Subject: Web Publishing, Database Management

Grade Level: All

Technology: FileMaker Pro and Claris Home Page (FileMaker, Inc.); dedicated Internet connection

Online Supplement: www.iste.org/L&L/. Click on this month's cover and then on the Supplements button.

With computer databases being more widely used, filing cabinets filled with dusty papers are slowly being replaced by electronic records. As the author of this article demonstrates, teachers are increasingly able to use such technology in their daily teaching.



Business and industry have long seen the potential for using the common interface of the World Wide Web: People anywhere in the world can access a wide array of databases. Until recently, however, both databases and Internet connections were beyond the reach of most teachers because of cost and teachers' own lack of technical expertise. But as a profession teachers are quick to pick up on anything that will help us sort through paperwork and spend more time with our students.

What's Involved?

Many of us are familiar with the databases and spreadsheets that are used as stand-alone programs on our personal computers. Those of us who use the Internet often see online lists of predetermined categories that users can choose or forms into which they can enter information that is sent to and presumably used by whoever has set up the Web site. The process or mechanism by which the information is sent to the host computer, however, is not apparent at first. In fact, it has three components: the database, the interface, and the Web form.

Web forms are at the front end of the process and allow information to be entered in many ways: Users can enter data by typing into text fields, select one of several choices of radio-style buttons, mark one or more check boxes, or pick a single item in a pop-up menu. Creating a Web form is not difficult to anyone who has worked with HyperText Markup Language (HTML), the programming language used to format Web pages. HTML is much easier to learn than other computer languages and resembles the codes used in early word-processing programs. Tutorials for working with HTML can easily be found on the Internet.

Initially, the most mysterious part of the process to users is the second or middle part: How does the information get from the Web form to the host's database? It does so using a Common Gateway Interface (CGI) script. Until recently, using CGI scripts required knowing a sophisticated programming language such as Practical Extraction Report Language (PERL)—that is, an expertise beyond the experience of most teachers. Luckily, though, prepackaged CGI scripts now can do the job without the user needing to know complicated programming techniques. Lasso, the CGI program used to produce the examples in this article, is one such program; it is available from Blue World Communications (www.blueworld.com).

The back end of the process is a database that stores the information entered from the Web. Many widely used databases can be accessed from the Web, but FileMaker Pro 4.0 is one good choice that is available to teachers. The FileMaker format is familiar to teachers who have used databases in ClarisWorks (now AppleWorks). Some of the technology used in the Lasso software has been incorporated into FileMaker, so users no longer need to buy separate software.

FileMaker also can be coupled effectively with Claris Home Page 3.0, so that many of the more technical aspects of the process are done automatically or with the help of assistants.

Examples

I am the computer consultant and Webmaster for the Illinois Alliance of Essential Schools (IAES). The organization is a not-for-profit regional center of the Coalition of Essential Schools, a nationally recognized educational restructuring effort (for more information, check www.essentialschools.org). In the course of my work, I have used the Web interface in several ways. The IAES has offered online courses in school reform to practicing teachers, disseminating material over the Internet, by e-mail, and through teleconferencing.

Asynchronous Discussion Groups

One class included an online forum in which class participants could discuss pertinent topics. On the Web, this mechanism is sometimes called an "asynchronous discussion group" or a "forum," because any class member can add to the text discussion at any time (see Figure 1).

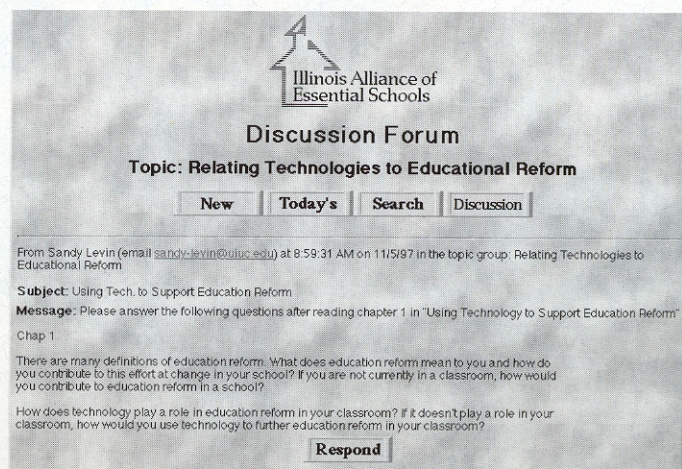


Figure 1.

Participants were able to access this sort of forum through a Web page and choose from a list of predetermined weekly topics. In each topic group, the teacher presented questions for the class to discuss. Participants could answer these questions or follow different strands of thought presented by their classmates. A "Respond" button on the Web page was the mechanism that made this sort of interaction possible.

A search mechanism in the forum allowed users to investigate the entire database of records for any item. They could limit their searches by such factors as the name of the person posting a message, message date, or message topic; this allowed users to access information in the order they felt was important, rather than in some predetermined order. The mechanism was based on one designed by Diane Oswald of Blue World Communications. Data is transmitted from Web

Continued on page 60.

Continued from page 41.

form to a database that stores the information in appropriate fields, including a keyword field to determine the topic of the discussion. The database then has all of the sorting features of a FileMaker Pro document.

Handing in Assignments on the Web

Databases also helped the class by handling class assignments. Class members did not reside at the college, so they either had to fax their assignments or send them as e-mail attachments. The Web interface allowed a mechanism that sent all assignments to the same place. Users simply filled out a Web form, and the information was transferred to a database.

Web-Based Evaluation Forms

The class-evaluation form was particularly useful. The standard evaluation form used on campus did not work well for the distance-learning format. Ordinarily, students are given the form near the end of a semester during class time and asked to fill it out with the teacher outside of the class. Because the teacher cannot see the evaluation until after the semester's grades are posted, e-mail evaluations sent back to the teacher would not work. The Web-based form (see Figure 2) allowed information to be supplied in a truly anonymous way.

Figure 2.

Web-Based Calendar

I also found the Web interface to be useful in facilitating the Alliance office's daily work. A mechanism was needed for many people to access and update the databases used in the office. The Alliance's Web pages include an online calendar that needs regular updating (see Figure 3). A calendar in HTML would present problems: Those who were not familiar with the formatting language would have trouble updating it, and it would not be feasible or even wise from a security standpoint to allow many people to have access to the Web pages.

A Web calendar had many advantages over static HTML pages. Users could update pages from anywhere they could

log on to the Internet. No special expertise was needed to add to the calendar—users simply filled out an online form. The database format also allowed the calendar to be searchable.

Research Tools

The system was also helpful when I took data along on a research project. I used FileMaker databases with a Web interface to give research subjects a pre- and a posttest. This procedure made complex data analysis more feasible. I did not have to go through the tedious process of transferring data from paper tests into a statistics program. I simply exported data from the FileMaker database and imported it into a statistics program.

The Pros and Cons of Such a Web Gateway

When should a Web designer use the more complicated procedures outlined above? When are static Web pages or databases without a Web interface most appropriate? These pages can be used for three particular situations: (1) when a teacher is maintaining Web pages that change frequently, such as calendars and schedules; (2) when two or more people need to update databases or Web pages, particularly if the people are geographically distant or use different computer platforms; and (3) when a teacher has information that is better presented in a nonlinear and searchable manner.

The use of the technologies described here has become easier over the last year, but the disadvantages still may keep many teachers away from the technology for awhile. Teachers

Illinois Alliance of Essential Schools Calendar						
April						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22 Continuing the Conversation	23 1998 Fall Forum Submission Deadline	24	25	26 CES 4th National Congress
27 CES 4th National Congress	28 CES 4th National Congress	29	30	1	2	3
1998						
March April May June July August September October November December						

Figure 3.

who have no experience producing Web pages or using databases, for example, will need reliable support or they will be too frustrated to get much from the experience. And it may be that using databases adds an unnecessary layer of complexity to the teaching process.

The Web pages need to be stored somewhere, and many teachers do not have enough room on their computers or even servers to allow for this. Fortunately, places for storage can be found on the Web, although remote access does not allow for as much control as most teachers would like. The soft-

ware also can hog precious computer resources. And anytime databases are put on the Web, there are issues of security and access to student data.

If you are lucky enough to have access to the right hardware, the system cost for these sorts of Web pages won't cause much concern. Furthermore, many manufacturers offer educational discounts for their software. Bear in mind that software is subject to frequent change, and something cheaper and easier to use is bound to come along by the time this article appears. From my personal experience, however, the best package for teachers to use at this time is a combination of FileMaker Pro 4.0 or later and Claris Home Page 3.0 or later. The combination (less than \$300 with educational discounts) would allow any of the uses described here without requiring a degree in computer programming. ■

Richard Repp, rrepp@null.net

Resources

Find information about AppleWorks at www.apple.com/appleworks.

FileMaker Pro and Claris Home Page are available from FileMaker, Inc. Visit www.filemaker.com for more information.

Note: The author wishes to thank Sandy Levin, Jean Krysko, and everyone associated with the Illinois Alliance of Essential Schools. Without them, this article would not be possible.

GUIDELINES FOR SUBMISSION OF ARTICLES

The articles in *Learning & Leading With Technology* are written by practitioners in the field of education. Those who contribute to *L&L* are making an extra effort to share knowledge that can improve education through the use of technology. *L&L* would not exist as a professional journal without our authors' willingness to share their expertise.

We are looking for practical ideas for using technology where it can make a difference—making a teacher's job easier; saving time; motivating students; helping students with varying learning styles, abilities, and backgrounds; and creating educational environments that are new and unique or that would be impossible without technology. We also publish practical articles about technology coordination and staff development.

Guidelines for submission of articles to *L&L* are posted on the *L&L* Web site at www.iste.org/L&L/. To request a printed copy of the submission guidelines, contact Acquisitions Editor, Anita Best (abest@iste.org; 541.346.2400) or write to ISTE, 1787 Agate St., Eugene, OR 97403-1923.

INDEX TO ADVERTISERS

ISTE	Lawrenceville Press	27
<i>Best Web Sites, 2nd Edition</i>	NECC '99	C4
<i>Educators Take Charge</i>	PictureTel Corporation	C3
<i>Fat Crayon Multimedia</i>	Primary Source Media	21
<i>Generation www.Y</i>	Rosemont College	50
<i>HyperStudio</i>	SmartStuff Software	13
<i>Project-Based Learning</i>	T.D. Curran	1
Corporate Sponsors		61

Sharing in Our Future

ISTE and its corporate sponsors understand that today's students will soon become tomorrow's technology leaders.

By supporting ISTE's efforts to expand and diversify the effective use of technology in the classroom, these farsighted companies are making an investment in a brighter future for all of us:

Advanced Network & Services, Inc.

Apple Computer, Inc.

AT&T Learning Network

Intel Corporation

The Lightspan Partnership

Microsoft Corporation

NetSchools Corporation

Quality Education Data, Inc.

Sunburst Communications



We urge you to contact ISTE's corporate sponsors and tell them how much you value their contributions to ISTE and to the classrooms of the future.



iste International Society for
Technology in Education

Teachers Helping Teachers Use Technology in the Classroom