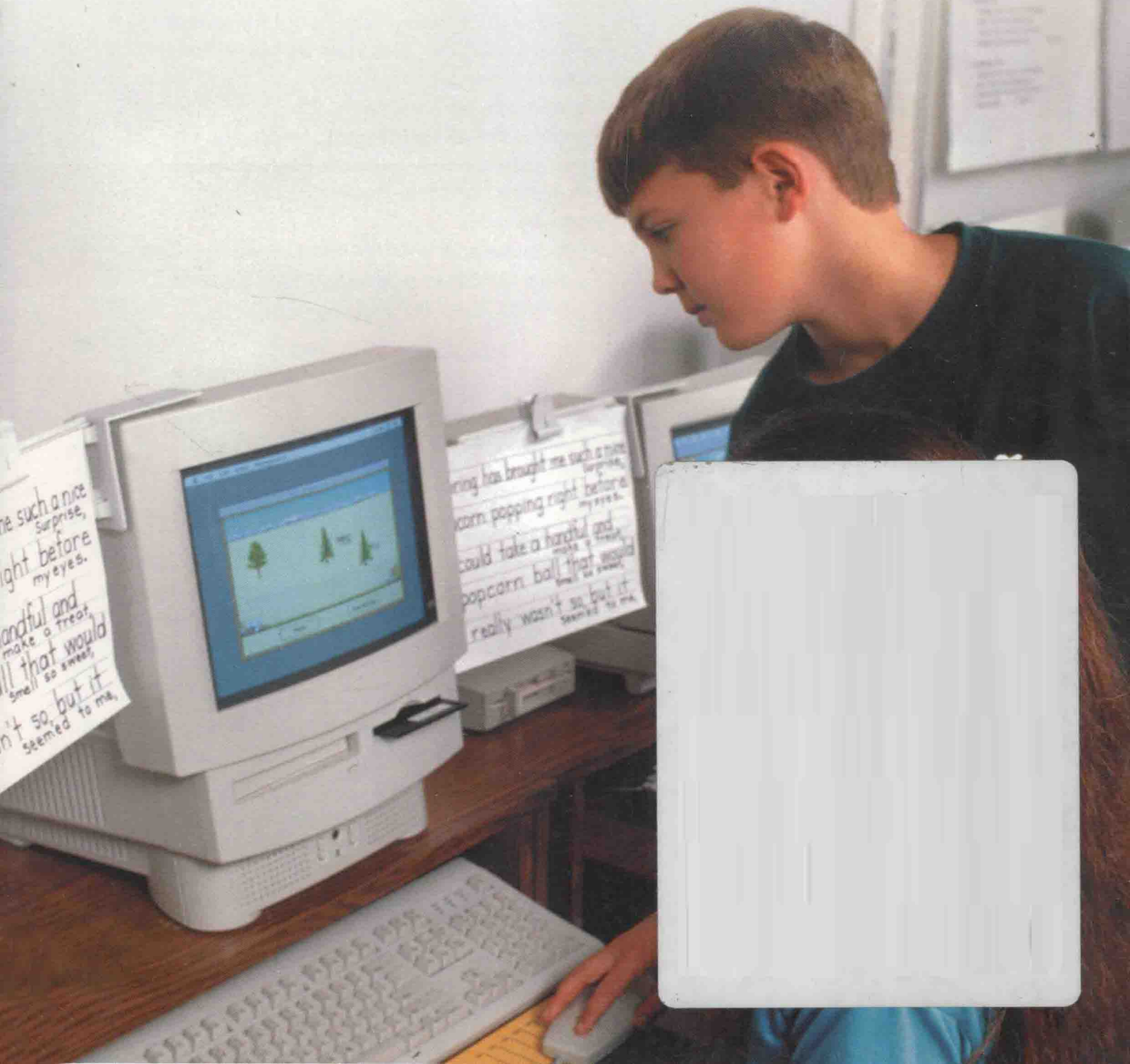


Computers in Education

02/03



COMPUTERS IN EDUCATION

02/03

Tenth Edition

Editors

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University of Akron

John J. Hirschbuhl is the founder of the Center for Computer-Based Education, an assistant to the associate vice president for information services, and professor of education at the University of Akron. He is currently a consulting scholar for the IBM Corporation and a senior vice president of development and operations at Computer Knowledge International, Inc. He received his Ph.D. from Pennsylvania State University and his B.S. and M.A. from Temple University. Dr. Hirschbuhl has published over 100 articles in professional journals on computer-based education and training, and he has consulted with many of the *Fortune* 500 companies and academic institutions.

Dwight Bishop

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Dwight Bishop, primary developer in the University of Akron's Multimedia Lab, has created commercial and academic software. He has instructed courses in computer-based education, multimedia authoring, multimedia screen design, and statistics. Mr. Bishop has 7 years of experience as a personnel consultant (training and selection). He received his B.A. from the University of North Carolina, his M.S. from Purdue (I/O psychology), and his M.A. (computer-based education) from the University of Akron.

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Tenth Edition

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Members of the Advisory Board are instrumental in the final selection of articles for each edition of ANNUAL EDITIONS. Their review of articles for content, level, currentness, and appropriateness provides critical direction to the editor and staff. We think that you will find their careful consideration well reflected in this volume.

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To the Reader

In publishing ANNUAL EDITIONS we recognize the enormous role played by the magazines, newspapers, and journals of the public press in providing current, first-rate educational information in a broad spectrum of interest areas. Many of these articles are appropriate for students, researchers, and professionals seeking accurate, current material to help bridge the gap between principles and theories and the real world. These articles, however, become more useful for study when those of lasting value are carefully collected, organized, indexed, and reproduced in a low-cost format, which provides easy and permanent access when the material is needed. That is the role played by ANNUAL EDITIONS.

The tenth edition of *Annual Editions: Computers in Education* is designed to provide you with the latest information and trends regarding computers and the roles they play in people's lives. Today's fast-moving society has focused on a mass move toward a media-laced Internet whose World Wide Web carries streamed audio and video and other digital technologies, such as phone mail systems, online database access, teleconferencing systems, and interactive multimedia systems. These technologies provide an electronic pipeline that can reach anyone anywhere on Earth.

Streamed media and interaction have become windows to the universe, and they are providing an interconnectedness that is inherent to learning. This technology is providing a global education wideband network for the twenty-first century. We are now zipping our way along the worldwide digital highway on our way to educational and training materials that stimulate us to interact with realistic simulations and to key information that enables us to conceive new and more powerful ways of thinking about and solving sophisticated problems. This communication is providing homes, schools, universities, and businesses with a wide broadband communication system. We now have the needed bandwidth and links online to bring the community, home, school, and business together in lifelong interactive educational experiences.

Digital video has become a common application on today's Internet. Through it we can influence the lives of people all over the globe through collaborative teaching and learning in an authentic setting. Current instructional management systems are capable of delivering, managing, and assessing learning results in order to maximize the effectiveness of online teaching/learning systems. We are now realizing the long-sought benefits of technology within the education and training systems of the United States.

This volume addresses the question, "How are the U.S. education and training communities riding the back of current technologies in order to make it a better-educated and more competitive nation in this twenty-first century global economy?" We have reviewed the current literature and selected key statements that respond to the issue.

In addition, there is an abundance of articles dealing with distance learning, networking, the Internet, and interactive multimedia applications for the classroom, laboratory, and the home. There is a pressing need for a publication that brings together this wealth of pertinent information on the successful implementation of current technology into schools, homes, and businesses as well as the new hardware/software applications that have made this possible. The *Annual Editions* format uniquely meets this need.

This anthology addresses the current issues confronting computer-using educators and trainers. Both need to know about the current classroom applications and software evaluations. It also provides a close-up look at integrating technology into the curriculum, teacher training, interactive multimedia, the Internet, and distance learning applications.

This volume is designed for use by educators involved in preservice and inservice education of educators, trainers, and administrators. It is also intended for parents, students, school board members, and others concerned with the use and impact of technology on today's education and training activities. Efforts have been made to include articles without references to specific hardware or software that may become quickly outdated.

As always, it is expected that you will have suggestions for improving future editions of *Annual Editions: Computers in Education*. You can help shape the next volume by completing and returning the postage-paid article rating form located on the last page of this book.



John J. Hirschbuhl
Editor



Dwight Bishop
Editor

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Topic Guide

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1. Lamar Alexander: A Transformative Power,

Stefanie Sanford, *Converge*, March 2001.

Stefanie Sanford provides an interview that paints Lamar Alexander as a thoughtful leader in the education field for over a quarter of a century. In this interview, he speaks passionately about the role of education and the opportunities that can be available to institutions by simply **bringing choice and technology into our nation's school systems**.

2. High-Tech Teaching, Felicia E. Halpert, *Parents*, March 1999.

Felicia Halpert explores how children learn when they are asked to find the information they need on the Internet. She explains that they try much harder, spend more time learning, and outperform those who try to learn without using computers. Her conclusion is that when using the Internet **students feel in control and take responsibility for their own learning**.

3. Technology & Literacy: Raising the Bar, Decker Walker, *Educational Leadership*, October 1999.

Decker Walker discusses how the ubiquitous presence of technology that is available to **the next generation will raise educational expectations**. Walker believes information technology will influence society and education as much as print technology has, and the effect won't take hundreds of years to appear. This article provides a peek at how the next generation of Americans will expect educated people to act.

4. Early Childhood Classrooms in the 21st Century: Using Computers to Maximize Learning, Susan W. Haugland, *Young Children*, January 2000.

Susan Haugland states that electronic technology is now used widely at home, at work, and at school. The author believes that the issue of **how computers are used with young children is more important than if computers are used at all**. She describes four steps that are required to integrate computers into the learning place in order to maximize children's learning.

5. What Students Want to Learn About Computers, Judith O'Donnell Dooling, *Educational Leadership*, October 2000.

Judith O'Donnell Dooling reviews a survey of students, parents, and administrators concerning approaches to teaching and learning with computer technology. The key to satisfying the wants and needs of students and parents is the ability of educators **to integrate technology into the curriculum** as a tool for teaching and learning.

6. Technology Use in Tomorrow's Schools, Barbara Means, *Educational Leadership*, December 2000/January 2001.

Barbara Means discusses how students and teachers have **increasing access to almost limitless amounts of information on the World Wide Web**. She provides a panorama of how educational use of the computer has evolved from the 1980s to the present. Means also points out that we still fall short of providing a seamless convenient, robust, and reliable technology support structure for all students and teachers.

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Introduction

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| 7. Project TEAMS: Integrating Technology Into Middle School Instruction, Robert A. Reiser and Sarah M. Butzin, <i>TechTrends</i> , March 1998. | 32 |
| This essay describes the Project TEAMS (Technology Enhancing Achievement in Middle School) instructional model and how the instructional approach plays an integral part in the middle school curriculum. The authors point out that, in addition to its emphasis on the use of technology, the TEAMS instructional approach also focuses on the <i>use of active learning and interdisciplinary instruction</i> . A description of the elements of the TEAMS model is provided. | |
| 8. Using the Internet to Improve Student Performance, Angela M. Guptill, <i>Teaching Exceptional Children</i> , March/April 2000. | 39 |
| Angela Guptill details how teachers can use the World Wide Web to <i>draw associations between prior knowledge and new information</i> , collect and classify information, and predict outcomes based on a Web site search. Guptill shows how technological resources have made it possible to develop lessons that promote critical, analytic, higher-order thinking skills, and real-world problem solving that are frequently found on assessments today. | |
| 9. Working With WebQuests: Making the Web Accessible to Students With Disabilities, Rebecca Kelly, <i>Teaching Exceptional Children</i> , July/August 2000. | 43 |
| Rebecca Kelly describes a <i>Web-based teacher-created lesson plan</i> that incorporates research, problem solving, and the application of skill and knowledge. The lesson is especially helpful in meeting the needs of students with disabilities within general education classrooms. The lesson provides multiple representations of information, multiple means of expression, and multiple means of engagement. | |
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| Judi Harris makes the case for <i>telecollaboration and telere-search Internet-supported, curriculum-based learning</i> . She not only describes the processes, but she also details the activity structures that go into the two processes. These approaches seem to help students address many content and process standards at the same time and in engaging, pedagogically sound ways. | |

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12. Computers as Mindtools for Engaging Learners in Critical Thinking, David H. Jonassen, Chad Carr, and Hsiu-Ping Yueh, *TechTrends*, March 1998.

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This article describes how common computer software applications can be used as interactive **knowledge construction mindtools**. The authors state that technologies should not support learning by attempting to instruct the learners, but rather they should be used as knowledge construction tools. They describe how learners function as designers and how computers function as mindtools for interpreting and organizing their personal knowledge.

13. Grounded Constructions and How Technology Can Help, Sasha A. Barab, Kenneth E. Hay, and Thomas M. Duffy, *TechTrends*, March 1998.

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The authors focus on five ways in which technology can be used to foster authentic learner inquiry. They explain how technology can be used to provide a **fertile context for which grounded constructions may emerge**. They envision using such technological resources as providing multimedia environments to be explored in a context where the learner is engaged in authentic inquiry.

14. Kids as Computers, Sherry J. Roberts, *Learning & Leading with Technology*, April 2001.

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The writer describes how a teacher combines small group design and role-playing with an information-processing model to teach students computer literacy. In this class, the students learned **how the information processing cycle works** and in the process each group member became a step in the information processing cycle. This model strategy was also the answer to classroom management concerns.

15. Learning to Use Your Mind Effectively in a Technology-Based Classroom, Pamela Keel, *Understanding Our Gifted*, Spring 2000.

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Pamela Keel presents the **structure of teaching technology** using methods that differentiate and allow students to match their research and projects to their personal life experiences. The article outlines the steps needed to achieve the learning objectives.

16. Strategies of Successful Technology Integration: Part 1—Streamlining Classroom Management, Lynn McNally and Cindy Etchinson, *Learning & Leading with Technology*, October 2000.

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The authors specify seven practical strategies for **integrating technology into the classroom** in a smooth and effective manner. The approach uses a variety of software applications as classroom management tools. The article details ways for both teachers and students to use technology tools for classroom management in order to provide a shared sense of classroom ownership and responsibility in a collaborative classroom setting.

17. Concept to Classroom: Web-Based Workshops for Teachers, James G. Donlevy and Tia Rice Donlevy, *International Journal of Instructional Media*, Volume 27, Number 2, 2000.

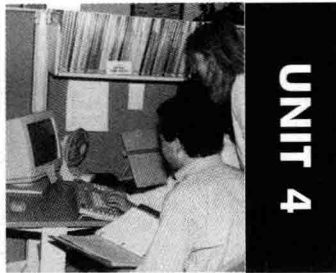
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The authors describe a series of free, online workshops developed by Channel 13/WNET New York and Disney Learning Partnerships to **help teachers explore issues in education**. The workshop topics include exploration of multiple intelligences, constructivism, academic standards, cooperative and collaborative learning, assessment, curriculum redesign, inquiry-based learning, and the role of parents and the community.



Classroom Applications and Software Evaluations

Six selections provide criteria for the selection and implementation of instructional software in the classroom.



UNIT 4

Teacher Training and Resources

Six selections examine the problems associated with staff development and teacher education to ensure teacher computer competency in the classroom.

Overview

- 18. Look It Up on the Web: Practical Behavioral Support Information**, Michael B. Ruef and Cindy Higgins, *Teaching Exceptional Children*, March/April 1999.

In this report, the authors focus on the Web in an effort to support teachers in their **quest for authoritative resources**. They describe the efforts of a panel composed of teachers, family members, researchers, and communication specialists who compiled an annotated list of Web sites providing practical, positively oriented information on challenging behavior. Criteria for selection were: overall aesthetics, navigability, clarity, and credibility of content.

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- 19. Stages of Virtuality: Instructor and Student**, Dee McGonigle and Renee M. Eggers, *TechTrends*, April/May 1998.

The authors have identified the typical stages during the instructors' and students' transition into the various **aspects of virtual learning**. Although this article is geared toward entire courses being offered over the Internet, it can also partially apply to traditional courses that have an Internet component.

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- 20. Online Mentoring**, Carole Duff, *Educational Leadership*, October 2000.

Carole Duff describes how the growth of technology brings new opportunities for mentoring through online tutorials, ask-an-expert coaching, and e-mail linking of students with successful professionals in careers of mutual interest. Ursuline Academy wanted to provide on-the-job experience or guidance to their high school students, so they established a **telemonitoring program** that matched 14 upper-level mathematics and computer-science students with women engineers at Texas Instruments.

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- 21. Evaluating & Using Web-Based Resources**, Glen Bull, Gina Bull, Kara Dawson, and Cheryl Mason, *Learning & Leading with Technology*, April 2001.

This essay depicts a method for providing guidance to students on how to locate online resources by using a five-step process: identification of potential resources, evaluation of appropriate resources, integration into the research paper, citation of the resource, and verification by the instructor. Teachers **examine selected citations and provide appropriate feedback**.

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- 22. Using Computers to Support a Beginning Teacher's Professional Development**, Huann-shyang Lin and Houn-Lin Chiu, *Journal of Science Education and Technology*, Volume 9, Number 4, 2000.

This study explored the efficacy of promoting a beginning chemistry teacher's curriculum development and teaching practices through the use of computers. The teacher's teaching practices both before and after the Web site treatment were observed and analyzed. The study found that before the treatment the teacher used the textbook as the only resource of his teaching. After the treatment, the teacher was able to develop suitable curricula for the purpose of **increasing student involvement**.

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- 23. Using Personal Digital Assistants in Clinical Supervision of Student Teachers**, Kent J. Crippen and David W. Brooks, *Journal of Science Education and Technology*, Volume 39, Number 3, 2000.

Journalizing is an important tool to help student teachers reflect on the nature of the student teaching experience. The communication of journals to student teacher supervisors is enhanced greatly by using e-mail. Certain software tools can be used to enhance journalizing. These tools can be used to facilitate writing field notes during in-class observations by the supervisor. E-mail exchange, however, has supplanted the need for an **electronic journalizing tool**.

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24. **Do It Step-by-Step**, Michael F. Ruffini, *Learning & Leading with Technology*, February 2000. 122

This article guides teachers in developing multimedia projects using a systems approach based on **instructional design principles**. Michael Ruffini focuses on analyzing the learners, selecting the topics, writing objectives, defining the project type, designing text, cards, and buttons, exploring hyperlink navigation; and evaluating multimedia projects.

25. **MindWorks: Making Scientific Concepts Come Alive**, Barbara J. Becker, *Science & Education*, Volume 9, 2000. 129

Barbara Becker presents an overview of the goals of the MindWorks program for science curriculum development. The project hopes to address student motivation, student understanding of the **structure and workings of the physical world**, and students' and teachers' ideas about the process and culture of scientific activity. The author also discusses the progress of pilot implementation and evaluation.

26. **Designing Instructional Technology From an Emotional Perspective**, Hermann Astleitner and Detlev Leutner, *Journal of Research on Computing in Education*, Summer 2000. 134

This article presents strategies for making instructional technology more emotionally sound. The authors discuss how fear, envy, anger, sympathy, and pleasure can be experienced during a learning situation. They also describe **20 general instructional strategies** that can be used to decrease negative emotions and increase positive emotions.

27. **Multimedia or Not to Multimedia? That Is the Question for Students With Learning Disabilities**, Cheryl A. Wissick and J. Emmett Gardner, *Teaching Exceptional Children*, March/April 2000. 143

This article presents instructional factors that teachers should consider when selecting multimedia materials that are appropriate for students with learning disabilities. Specific programs and Web sites that **use design features effectively** are discussed, and problematic features in multimedia software packages are described, along with strategies that make appropriate accommodations.

28. **Multimedia Distance Education Interactions**, Juhani E. Tuovinen, *Educational Media International*, March 2000. 152

Juhani Tuovinen describes the nature of multimedia interactions in distance education and synthesizes approaches based on **distance education theory**, cognition research, and multimedia development. The author provides a composite framework for discussion of multimedia and multimodal interactions in distance education context.

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29. **Guerrilla Technology**, Royal Van Horn, *Phi Delta Kappan*, February 1999. 160

This article provides advice on what to do about schools that are poor and without access to technology. Royal Van Horn points out how to change the situation with very little money. The writer suggests that teachers go on a scavenger hunt to **find important unused equipment**. Quite often the least obvious places have a wealth of useful equipment. Examples of where to look and what might be found are provided.

30. **Champions of Women in Technology**, Deborah Radcliff, *Computerworld*, January 18, 1999. 163

Deborah Radcliff focuses on the inequity of women in the information technology field. The writer points out that some **female IT**



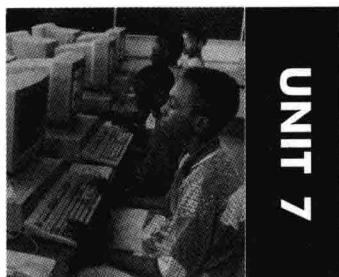
Multimedia

Five selections demonstrate how educators have harnessed the power of multimedia to improve their students' education.



Special Issues

Five selections discuss the need for computer equipment in some schools, the status of women in the technology field, the impact of computer use in early child development, and distribution rights of Internet data.



The Internet and Computer Networks

Five articles address several issues about the Internet and other networks, including the need to build critical skills that enable students to benefit from using the Net and using the Internet as a ready-reference resource.

professionals are spearheading grassroots mentoring and educational organizations that are working to reverse the trend and entice more women into technical jobs. Several programs that focus on this problem are identified and described.

31. **False Promise**, Katy Kelly, *U.S. News & World Report*, September 25, 2000. 166

This article declares that a growing number of educators, child development experts, and doctors are beginning to **speak out against early computer use**, especially when coupled with regular television watching. Too much "screen time" at a young age may actually undermine the development of the critical skills that kids need to become successful. It may diminish creativity, imagination, motivation, attention spans, and the desire to persevere.

32. **Symbiosis: University/School Partnerships**, Rosemary W. Skeele and James K. Daly, *Journal of Interactive Instruction Development*, Summer 1999. 170

The authors state the case for teacher education institutions to experiment with the effective application of computer technology for teaching and learning in their own campus practice. They describe how the Seton Hall faculty have made a commitment to the **greater integration of technology into instruction**. The authors are trying to articulate a wider vision for technology, making it as essential a tool as the chalkboard.

33. **Who Owns the Courses?** Sally M. Johnstone, *Syllabus*, June 2001. 179

Sally Johnstone makes a case for ignoring intellectual property rights when distributing learning materials over the Internet, and she provides an example of an institution that has already done so. The point is that **the person who creates the material owns the rights**, but those who help produce it have already been paid for doing so.

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34. **Internet 2 and the Next Generation Internet: A Realistic Assessment**, Cecilia M. Preston, *SEARCHER: The Magazine for Database Professionals*, January 1999. 182

Cecilia Preston describes new developments, such as **Internet 2 and the Next Generation Internet** (NGI) initiative, as well as other potential advances in high-performance applications that these new electronic resources will create. The article relates these developments to the evolution of the Internet, and it also looks ahead to their anticipated impact beyond the scope of higher education and research communities.

35. **Intelligent Campus Buildings for the Information Age**, Jack Caloz, *Facilities Manager*, May/June 2000. 187

Jack Caloz predicts that a **well-designed electronic infrastructure** will provide the educational and operational components of intelligent campus buildings in the information age. Caloz claims that the information gathered from the campus networking systems will provide a new, more effective, and less costly educational experience, enriching students, faculty, and the institution simultaneously.

36. **Web Clippings**, Glen Bull, Gina Bull, and Steve Whitaker, *Learning & Leading with Technology*, February 2001. 190

This article claims that the solution to enhancing your students' access to computers and online resources may soon rest in the palms of their hands. These mobile devices can readily access and retrieve Internet-based information. The authors believe this **hand-held capability** offers a wide range of possibilities for both educational and administrative uses in the classroom.

37. Avaricious and Envious: Confessions of a Computer-Literate Educator, R. W. Burniske, *Phi Delta Kappan*, March 2001. 194

R. W. Burniske asks the questions, Is there more to a computer than technical skill? and ***Is computer literacy more than a neutral term?*** The author also ponders the paradox of whether a hunger for computer literacy can invite computer dependency, or if computer literacy is an absolute necessity in the twenty-first century. If you are interested in preserving your humanness in the midst of a technical century, read this article.

38. Wireless Andrew, Michael Fickes, *College Planning & Management*, May 2000. 198

Michael Fickes describes how the use of the ***Internet and laptops*** helps students attending Carnegie Mellon University carry out sophisticated research anywhere on campus. The author also provides a description of how the university became a wireless community.

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39. IT Teams: Saving the World Through Authentic Challenging Tasks, Shayne Russell and Meg Warren, *MultiMedia Schools*, March/April 2000. 202

This article describes an award-winning multidisciplinary, multimedia unit on Native Americans that was developed through participation in the Earthwatch Institute programs. It explains the Earthwatch program, ***collaboration between library media specialists and classroom teachers***, and the use of the Big6 process for information problem solving and the development of information literacy skills.

40. Six Steps to Improving the Quality of Your Electronic Discussion Groups, Gregory R. MacKinnon and Lynn Aylward, *Journal of Instruction Delivery Systems*, Volume 13, Number 4, 1999. 207

This paper outlines an approach for ***post-secondary educators*** to improve the quality of electronic discussion groups. Using a template of macros constructed in Microsoft Word, the authors explain a system of coding called cognotes, and they discuss an evaluation method where higher order critical thinking skills are given greater value toward higher grades.

41. Web-Based Portfolios for Technology Education: A Personal Case Study, Mark E. Sanders, *Journal of Technology Studies*, Winter/Spring 2000. 210

Students can use ***Web-based portfolios*** in technology classes to display classwork and project work. Developing effective Web sites provides an understanding of a range of information-age tools, motivates them to do high-quality work, requires self-assessment and reflection, and teaches design skills.

42. Seven Tips for Highly Effective Online Courses, Leonard Presby, *Syllabus*, June 2001. 217

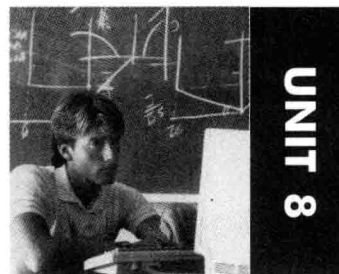
Leonard Presby provides a ***structure for online tools*** that are useful in helping students learn quantitative methods and analytical techniques. The author recommends hybrid courses that consist of half online and half in-class delivery. His seven steps provide a recipe for building effective hybrid courses.

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Distance Learning

Four articles discuss the value of interactive technologies within a distance learning environment.

Topic Guide

This topic guide suggests how the selections in this book relate to the subjects covered in your course.

The Web icon (🌐) under the topic articles easily identifies the relevant Web sites, which are numbered and annotated on the next two pages. By linking the articles and the Web sites by topic, this ANNUAL EDITIONS reader becomes a powerful learning and research tool.

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Application	4. Early Childhood Classrooms in the 21st Century 9. Working With WebQuests 12. Computers as Mindtools for Engaging Learners 13. Grounded Constructions 14. Kids as Computers 15. Learning to Use Your Mind Effectively in a Technology-Based Classroom 16. Strategies of Successful Technology Integration 17. Concept to Classroom: Web-Based Workshops for Teachers 22. Using Computers to Support a Beginning Teacher's Professional Development 32. Symbiosis: University/School Partnerships 34. Internet 2 and the Next Generation Internet 🌐 1, 6, 7, 9, 10, 11, 14, 15, 29, 30		14. Kids as Computers 22. Using Computers to Support a Beginning Teacher's Professional Development 23. Using Personal Digital Assistants in Clinical Supervision of Student Teachers 25. MindWorks: Making Scientific Concepts Come Alive 28. Multimedia Distance Education Interactions 31. False Promise 32. Symbiosis: University/School Partnerships 34. Internet 2 and the Next Generation Internet 39. IT Teams: Saving the World Through Authentic Challenging Tasks 🌐 6, 7, 17, 26, 27, 29, 30
Assessment	8. Using the Internet to Improve Student Performance 17. Concept to Classroom: Web-Based Workshops for Teachers 29. Guerrilla Technology 41. Web-Based Portfolios for Technology Education 🌐 2, 27, 28	Distance Learning	39. IT Teams: Saving the World Through Authentic Challenging Tasks 40. Six Steps to Improving the Quality of Your Electronic Discussion Groups 41. Web-Based Portfolios for Technology Education 42. Seven Tips for Highly Effective Online Courses 🌐 33, 34, 35
Curriculum	11. Illusory Dilemma: Online to Learn or In Line With Standards? 17. Concept to Classroom: Web-Based Workshops for Teachers 22. Using Computers to Support a Beginning Teacher's Professional Development 25. MindWorks: Making Scientific Concepts Come Alive 🌐 4, 5, 6, 29, 30	Education	1. Lamar Alexander 3. Technology & Literacy 4. Early Childhood Classrooms in the 21st Century 5. What Students Want to Learn About Computers 6. Technology Use in Tomorrow's Schools 9. Working With WebQuests 10. Designing Instruction for Emotional Intelligence 17. Concept to Classroom: Web-Based Workshops for Teachers 28. Multimedia Distance Education Interactions 32. Symbiosis: University/School Partnerships 34. Internet 2 and the Next Generation Internet 35. Intelligent Campus Buildings 36. Web Clippings 41. Web-Based Portfolios for Technology Education 🌐 1, 24, 25, 29, 32
Design	7. Project TEAMS: Integrating Technology Into Middle School Instruction 8. Using the Internet to Improve Student Performance 9. Working With WebQuests 10. Designing Instruction for Emotional Intelligence 11. Illusory Dilemma: Online to Learn or In Line With Standards? 12. Computers as Mindtools for Engaging Learners 14. Kids as Computers 17. Concept to Classroom: Web-Based Workshops for Teachers 24. Do It Step-by-Step 26. Designing Instructional Technology From an Emotional Perspective 27. Multimedia or Not to Multimedia? 28. Multimedia Distance Education Interactions 35. Intelligent Campus Buildings 41. Web-Based Portfolios for Technology Education 🌐 6, 7, 17, 26, 27, 29, 30	Evaluation	12. Computers as Mindtools for Engaging Learners 13. Grounded Constructions 16. Strategies of Successful Technology Integration 21. Evaluating & Using Web-Based Resources 25. MindWorks: Making Scientific Concepts Come Alive 40. Six Steps to Improving the Quality of Your Electronic Discussion Groups 41. Web-Based Portfolios for Technology Education 🌐 1, 2, 3, 13, 16, 29
Development	10. Designing Instruction for Emotional Intelligence		

TOPIC AREA	TREATED IN	TOPIC AREA	TREATED IN
Goals	10. Designing Instruction for Emotional Intelligence 25. MindWorks: Making Scientific Concepts Come Alive 29. Guerrilla Technology ● 1, 2, 3	Personal Digital Assistants (PDAs)	23. Using Personal Digital Assistants in Clinical Supervision of Student Teachers 36. Web Clippings
Information	2. High-Tech Teaching 3. Technology & Literacy 4. Early Childhood Classrooms in the 21st Century 5. What Students Want to Learn About Computers 6. Technology Use in Tomorrow's Schools 8. Using the Internet to Improve Student Performance 9. Working With WebQuests 10. Designing Instruction for Emotional Intelligence 14. Kids as Computers 18. Look It Up on the Web: Practical Behavioral Support Information 30. Champions of Women in Technology 35. Intelligent Campus Buildings 39. IT Teams: Saving the World Through Authentic Challenging Tasks 41. Web-Based Portfolios for Technology Education ● 6, 7, 16, 17, 18, 19	Research	9. Working With WebQuests 11. Illusory Dilemma: Online to Learn or In Line With Standards? 15. Learning to Use Your Mind Effectively in a Technology-Based Classroom 18. Look It Up on the Web: Practical Behavioral Support Information 21. Evaluating & Using Web-Based Resources 26. Designing Instructional Technology From an Emotional Perspective 28. Multimedia Distance Education Interactions 34. Internet 2 and the Next Generation Internet 38. Wireless Andrew ● 1, 21, 24, 29, 33, 34, 35
Inquiry	13. Grounded Constructions 17. Concept to Classroom: Web-Based Workshops for Teachers ● 5, 6	Science	20. Online Mentoring 22. Using Computers to Support a Beginning Teacher's Professional Development 23. Using Personal Digital Assistants in Clinical Supervision of Student Teachers 25. MindWorks: Making Scientific Concepts Come Alive ● 9, 10, 11, 14, 15, 24, 25
Internet	2. High-Tech Teaching 8. Using the Internet to Improve Student Performance 11. Illusory Dilemma: Online to Learn or In Line With Standards? 19. Stages of Virtuality: Instructor and Student 33. Who Owns the Courses? 34. Internet 2 and the Next Generation Internet 35. Intelligent Campus Buildings 36. Web Clippings 37. Avaricious and Envious: Confessions of a Computer-Literate Educator 38. Wireless Andrew ● 6, 13, 17, 29, 33, 34, 35	Systems	1. Lamar Alexander 24. Do It Step-by-Step 32. Symbiosis: University/School Partnerships 34. Internet 2 and the Next Generation Internet 35. Intelligent Campus Buildings ● 1, 17, 22, 24
Multimedia	13. Grounded Constructions 25. MindWorks: Making Scientific Concepts Come Alive 26. Designing Instructional Technology From an Emotional Perspective 27. Multimedia or Not to Multimedia? 28. Multimedia Distance Education Interactions 39. IT Teams: Saving the World Through Authentic Challenging Tasks ● 4, 20, 21, 23, 24, 25	Teacher Education	18. Look It Up on the Web: Practical Behavioral Support Information 19. Stages of Virtuality: Instructor and Student 20. Online Mentoring 21. Evaluating & Using Web-Based Resources 22. Using Computers to Support a Beginning Teacher's Professional Development 23. Using Personal Digital Assistants in Clinical Supervision of Student Teachers 32. Symbiosis: University/School Partnerships ● 6, 7, 17, 27, 28, 30
Networking	34. Internet 2 and the Next Generation Internet 35. Intelligent Campus Buildings 36. Web Clippings 37. Avaricious and Envious: Confessions of a Computer-Literate Educator 38. Wireless Andrew ● 13, 16, 17, 19, 21, 26, 27, 28, 29, 30	Tools	12. Computers as Mindtools for Engaging Learners 16. Strategies of Successful Technology Integration 23. Using Personal Digital Assistants in Clinical Supervision of Student Teachers 29. Guerrilla Technology 41. Web-Based Portfolios for Technology Education 42. Seven Tips for Highly Effective Online Courses ● 6, 7, 13, 22, 24, 29, 30
		Wireless Internet	38. Wireless Andrew

● AE: Computers in Education

The following World Wide Web sites have been carefully researched and selected to support the articles found in this reader. The sites are cross-referenced by number and the Web icon (●) in the topic guide. In addition, it is possible to link directly to these Web sites through our DUSHKIN ONLINE support site at <http://www.dushkin.com/online/>.

The following sites were available at the time of publication. Visit our Web site—we update DUSHKIN ONLINE regularly to reflect any changes.

Introduction

1. Agency for International Technology

<http://www.ait.net>

AIT is a nonprofit education organization established in 1962 to develop, acquire, and distribute quality technology-based resources. It provides leadership to the educational technology policy community as well as instructional television programs.

2. Goals 2000

<http://www.ed.gov/pubs/goals/progrpt/index.html>

The reform initiative started by the U.S. Department of Education has a progress report to share.

3. History of Computers in Education

<http://www.csulb.edu/~murdock/histofcs.html>

This site explores the history of computers and the history of computers in education. A time line lists the dates in which important events took place and gives a brief explanation of the impact of technology on education.

Curriculum and Instructional Design

4. CTW

<http://www.ctw.org/home/content/0,2946,,FF.html>

Children's Television Workshop enjoys a visionary role in innovative family programming. Its new media property is custom-made for today's families. The Workshop delivers a unique approach to the Internet, melding technology and edutainment to bring families together to learn and have fun.

5. Education Place

<http://www.eduplace.com/index.html>

Houghton Mifflin's home page contains activities for students, parents, and teachers, which include weekly author interviews and child-written book reviews. It has links to excellent education topics and organizations with synopses of research (for instance, phonics instruction).

6. Teaching With Electronic Technology

<http://www.wam.umd.edu/~mlhall/teaching.html>

This collection of World Wide Web sites addresses the use of electronic technologies in the classroom, which range from general and theoretical resources to instructive examples of specific applications to teaching and learning.

Classroom Applications and Software Evaluations

7. Beginner's Guide to HTML

<http://www.itc.univie.ac.at/docs/html-primer.html>

This is a primer for producing documents in HTML, the markup language used by the World Wide Web.

8. Classics for Young People

<http://www.ucalgary.ca/~dkbrown/storclas.html>

A growing number of children's literature classics are out of copyright and are among the books available in full text here.

9. ENC Online

<http://www.enc.org>

The Eisenhower National Clearinghouse includes science and math resources, lesson plans, a search engine, and more.

10. NASA Spacelink

<http://spacelink.msfc.nasa.gov/home.index.html>

This aeronautics and space resource for educators contains a variety of space travel information, including travel throughout the galaxy with information and images.

11. The Nine Planets

<http://seds.lpl.arizona.edu/billa/tnp/>

This planetary tour through the solar system has sound and video clips and links to related sites.

12. Scholastic Network

<http://www.scholastic.com>

Here is a selection of Scholastic products, including Global Community, Magic SchoolBus, contests, Scholastic publications, and new school-home Software Clubs for Grades PreK-8.

13. Teachers Helping Teachers

<http://www.pacificnet.net/~mandel/>

Provides basic teaching tips, new teaching methodology ideas, and forums for teachers to share. Download software and participate in chat sessions. Features educational resources on the Web, with new ones added each week.

14. The TeleGarden

<http://www.usc.edu/dept/garden/>

Interact and view a remote garden filled with living plants. Members care for the garden through a robot arm.

15. Volcano World

<http://volcano.und.nodak.edu>

Study extinct and live volcanoes worldwide. There are activities for children and adults, and lesson plans for teachers.

Teacher Training and Resources

16. Boulder Valley School District Home Page

<http://www.bvssd.k12.co.us>

This is the site of a district-developed home page containing planning ideas and links to educational resources for teachers and students.

17. Getting U.S. Teachers Online

<http://quest.arc.nasa.gov/online/table.html>

This NASA resource provides online service providers, listed by state, as well as other access options for K-12 teachers.

18. The History Channel

<http://www.historychannel.com>

The History Channel offers a section on classroom study guides and ideas for and from educators, along with many other helpful features and related links.

19. Teachers Guide to the Department of Education

<http://www.ed.gov/pubs/TeachersGuide/>

Government goals, projects, grants, and other educational programs are listed here as well as links to services and resources.

Multimedia

20. CNN Interactive

<http://cnn.com>

The latest news, including pictures and archival links, is available here, along with the Infoseek search engine.

21. Mighty Media

<http://www.mightymedia.com>

The mission of this privately funded consortium is to empower youth, teachers, and organizations through the use of interactive communications technology.

22. Mustang List of Lesson Plans

<http://mustang.coled.umn.edu/lessons/lessons.html>

This source leads to many other sites that contain electronic lesson plans, including online interdisciplinary projects.

23. MSNBC Cover Page

<http://www.msnbc.com>

As the only news organization to embrace three media technologies—broadcast, cable, and the Internet—MSNBC brings you up-to-the-minute news from around the globe.

24. NASA Aerospace Education Services Program

<http://www.okstate.edu/aesp/AESP.html>

This site leads to cross-curricular projects, science, technology, space, literature, math, language, astronomy, writing projects, museum links, and space image libraries.

25. The Science Learning Network

<http://www.sln.org>

This collection of museum sites includes movies, teachers' projects, news, and links to other science education material.

Special Issues

26. Consortium for School Networking

<http://www.cosn.org>

This site provides information and discussion on how to implement networks in schools. It offers online resources and forums.

27. Educators Net

<http://www.educatorsnet.com>

Billed as the "World's No.1 Education Search Engine," this site has over 7,200 reviewed listings and acts as a guide to education-related resources and businesses on the Internet.

28. ERIC Clearinghouse on Teaching and Teacher Education

<http://www.ericsp.org>

This ERIC site has links to lesson plans and sites on applying technology, as well as essays on teaching with technology.

The Internet and Computer Networks

29. Online Internet Institute

<http://oii.org>

A collaborative project between Internet-using educators, proponents of systemic reform, content area experts, and teachers who desire professional growth, this site provides a learning environment for integrating the Internet into educators' individual teaching styles.

30. The Teachers' Network

<http://www.teachnet.org>

Bulletin boards, classroom projects, online forums, and Web mentors are featured, as well as the book, *Teachers' Guide to Cyberspace*, and a course on how to use the Internet.

31. WebCrawler

<http://webcrawler.com>

This is a fast search engine that analyzes the full text of documents, allowing the searcher to locate keywords that may have been buried deep within a document's text.

32. Yahoooligans! The Web Guide for Kids

<http://www.yahoooligans.com>

An excellent site for children, this resource can be used if you wish to limit access by your students but still allow independent searching.

Distance Learning

33. The Chronicle of Higher Education: Distance Education Page

<http://www.chronicle.com/distance/>

This site, maintained by *The Chronicle of Higher Education*, provides daily updates, articles, and resources concerning distance education.

34. Distance Learning on the Net

<http://www.hoyle.com/distance.htm>

Distance learning and education is the subject of this home page. Included are descriptions of distance education Web sites along with links that lead to further distance learning and education resources on the Net.

35. Yahoo! Distance Learning Site Listings

http://dir.yahoo.com/Education/Distance_Learning/

Yahoo! lists a few dozen sites that contain important information and resources concerning distance education. You may also select from a number of categories, including Course Online, Online Teaching and Learning, Adult and Continuing Education, and Colleges and Universities.

We highly recommend that you review our Web site for expanded information and our other product lines. We are continually updating and adding links to our Web site in order to offer you the most usable and useful information that will support and expand the value of your Annual Editions. You can reach us at:
<http://www.dushkin.com/annualeditions/>.

Unit Selections

1. **Lamar Alexander: A Transformative Power**, Stefanie Sanford
2. **High-Tech Teaching**, Felicia E. Halpert
3. **Technology & Literacy: Raising the Bar**, Decker Walker
4. **Early Childhood Classrooms in the 21st Century: Using Computers to Maximize Learning**, Susan W. Haugland
5. **What Students Want to Learn About Computers**, Judith O'Donnell Dooling
6. **Technology Use in Tomorrow's Schools**, Barbara Means

Key Points to Consider

- ❖ How will instructional technology change the way we learn? Why?
- ❖ What effect will the Internet/Intranet have on schools and learning? At what levels?
- ❖ What is the greatest obstacle to proper use of technology in the classroom?
- ❖ How would you use technology in a distance learning environment?
- ❖ What steps can we take, when integrating computers into the learning place, to maximize children's learning?



Links

www.dushkin.com/online/

1. **Agency for International Technology**
<http://www.ait.net>
2. **Goals 2000**
<http://www.ed.gov/pubs/goals/progrpt/index.html>
3. **History of Computers in Education**
<http://www.csulb.edu/~murdock/histofcs.html>

These sites are annotated on pages 4 and 5.