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ABSTRACT

An overview of the literature reflecting the rapid development of interest in microcomputer use in education since 1978 is followed by an annotated bibliography which lists books, articles, and ERIC documents in nine categories. The first section includes materials of general interest--historical background, guides to using computers in the educational process, books for home hobbyists, cost studies, and others not classifiable elsewhere. Considerations in purchasing computers for both small- and large-scale investments are emphasized in the section on hardware. The software section lists publications which analyze sources, problems, evaluation criteria, and computer review access needs. Varied educational applications are grouped together, while library projects, collection building and access, community teaching, and online systems are topics included under the library applications heading. The alternative sites section includes publications describing computer uses in museums, learning parks, summer camps, prisons, hospitals, parks, and community centers. A section on games and toys focuses on electronic learning aids, video games, and classroom computer simulations. Computer literacy and future prospects are the final topics. An author index and list of journals (with addresses) complete the bibliography. (LMM)

MICROCOMPUTERS AND THE MEDIA SPECIALIST: AN ANNOTATED BIBLIOGRAPHY

by
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INTRODUCTION

In 1978 the popular journals began to issue a trickle of commentary about a phenomenon that appeared to show promise among the educational community: microcomputers in schools. After a ten-year flurry of chiefly administrative activity with large-scale computers and experimentation by Control Data Corporation through its PLATO program, the advent of low-cost, powerful and typewriter-sized hardware generated renewed interest in the possibilities that computers might bring to learning and teaching. Reports of experiments at Stoneybrook, MIT, Stanford, and the Universities of Pittsburgh, Iowa, Utah, Oregon began creeping into the literature. A cast of characters both familiar (Atkinson, Suppes, Kemeney, Charp) and new (Dwyer, Braun, Papert, Kay, Goldberg) reached out through the literature to enter the consciousness of publishers and educators. A new vocabulary--Pet, Apple, byte, disc, BASIC, PASCAL--poured from the lips of the informed. Students in increasing numbers, along with their parents, began demanding "computer literacy." After an extended hiatus, programmed learning, CAI (computer-assisted instruction) and CMI (computer-managed instruction) were among the program offerings of most major educational meetings. In 1978 the ERIC Clearinghouse on Information Resources began issuing a series of bibliographies in response to growing requests for information.

Seen as a new panacea replete with promises for teaching both the handicapped and the gifted, as well as all subject areas, microcomputers spread across the full spectrum of elementary and secondary schools in the nation. The process was not unlike other much ballyhooed technological "breakthroughs" --e.g., language labs and school video studios, promoted by those whose interests were more marketing than learning theory. Unlike the others, however, homes and businesses have rapidly incorporated the new technology. A survey undertaken by Gutman Library of Harvard Graduate School of Education of 50 state departments of education in January 1981 revealed 46 states with funded programs in school settings, and every state in the nation looking at and thinking about the use of computers in schools. Other institutions were also setting up computerized learning stations--parks, museums, public libraries. Many of these applications were one-third reality and two-thirds visionary promise, yet this technology gave rise to optimism in a time of budgetary and philosophic conservatism. The rapid numerical growth of computer

hardware in school settings testifies to current interest. A recent National Center for Educational Statistics study shows that one-third of the school systems in the United States have purchased computers, and 22,000 schools now own microcomputers.

Over the years 1978-1981 the trickle of information and scholarly research has become a torrent of verbiage with questionable reliability or substance. From journals as disparate as Business Week and Phi Delta Kappan, Journal of Speech and Hearing Disorders, Newsweek, and Graduate Woman, recent articles have one common thread: microcomputer applications in education. An entire category of computer journals emerged. Titles like Electronic Learning, Online, The Computing Teacher, and School Microware joined Byte, InfoWorld, Creative Computing and Personal Computing as the new sources of information for those just beginning, as well as the hobbyists and aficionados.

This bibliography is an attempt to sift and sort the confusing flood of competing articles into some categories of interest to the school educator, and particularly to the media specialist. It is the school media center that is the logical home for microcomputers as a distribution center, teaching station, information base, source for networking, indexing, abstracting, cataloging and circulation, particularly with hardware that must be shared. It should be the school media librarian who is teaching, advising, and disseminating information, hardware, and software. The sorting process was developed to serve that information and application base, but the categories were problematic even using those parameters, and judgements made about the articles are both arbitrary and occasionally inconsistent. The final selection for inclusion was based to a large extent on personal interests and collections. As the pages swirled around the room and drifted into piles for analysis, it became obvious that so much has been written that a different compiler could select 250 other citations without duplicating one single entry. This selection is not comprehensive or systematic in a scholarly sense; it is pragmatic (containing much popular press) and utilitarian. It was a joyful effort that we hope will make the search and reading by educators comprehensible and unintimidating, with a corresponding sense of pleasure.

General

In this selection of books and articles there are included materials about the history and use of microcomputers, as well as

those that give an overall guide to the relationship between computers and the education process. There are a few of the hundreds of books available for the home hobbyist and there are those that could not be categorized. Somehow, in looking at computer literature the line keeps slipping between teacher and learner, classroom, and home, education and business. A study by Peat Marwick (Fielden and Pearson, 1978) considers educational costs, and experimentation in other countries gives credence to local efforts.

Hardware

A critical need in most schools considering the purchase of computers is some method of assessment and comparison amid the growing variety of hardware and peripherals. Each of the articles comparing actual models and brands becomes obsolete by the time it is published. Both the American Microcomputer Association and Minnesota Educational Computing Consortium give extensive assistance for large-scale purchases. Others agree on a basic set of considerations for even a small investment. Despite rapidly changing technology, increasing capacity and new possibilities in speech compression, graphics, and word processing, there are caveats of caution but no recommendations for delaying purchase decisions--rather, a "get your feet wet" philosophy.

Software

The problem of insufficient quality software will remain as long as buyers make love to equipment without demanding information about what materials are available to use with the particular hardware. In computers this is compounded by the incompatibility of machines and materials. When Dallas Public Schools required companies bidding for the microcomputer contract to list every piece of available software that could run on their equipment, most bidders dropped out, bitterly complaining about the difficulty of such a request. Educational software comes from various sources: publishing houses, computer journals, and a vast cottage industry tied together loosely in user groups of particular brands and models. There are no standard criteria for publication. Both MicroSIFT (Microcomputer Software and Information for Teachers), a project of the Northwest Regional Laboratory, and EPIE (Educational Products Information Exchange), working with the Resource Laboratory of Teachers College, Columbia University, are attempting to deal with

systematic review of materials on a national scale. Many large computer complexes (universities and state departments of education) have instituted screening and evaluation as part of their ongoing operations. School Microware Reviews, a new publication, devotes a portion of its space to computer review access. Microform Review attempts to do this for all fields. In the absence of outside independent funding this could, but will not be, undertaken by manufacturers. Systematic, organized, qualitative review access is essential to all future development of effective school use. Despite the possibility for individual programming and the necessity for teaching this skill, it is unrealistic to imagine that every student and teacher will be independent of commercial materials. As equipment proliferates, the problem of runnable effective software will loom as a behemoth.

Educational Applications

The variety and interest in educational applications of microcomputers increase as a snowball rolling downhill. Success stories abound on the pages of all educational and general publications. Most computer journals publish annual issues devoted solely to education. Gutman Library of Harvard Graduate School of Education compiled, organized, and indexed the first directory of applications in schools and alternative settings of the United States--over 250 listings, with a new edition to be published in the spring of 1982. This is the strength and vitality of the "micro" phenomenon. It is also the nursery of false promises, the home for those whose fictional fantasies exceed factual realities. Until a body of substantive research validates the extravagant claims, panacea promotional material will continue to flow from the Newsweeks, the New York Times, and the education monthlies. Work of Papert with preschoolers, of Adele Goldberg at Xerox Research Lab in Palo Alto, and research in Minnesota (where the largest of all state efforts has existed for a number of years) are the substance behind the ephemera. As a springboard for creative ideas and individual experimentation, this section may produce tomorrow's validated research.

Library Applications

Although libraries on an elementary and secondary level have not been in the vanguard of experimentation, they are quickly

realizing the potential for the technology in the organization of and access to information. As capacity and networking possibilities expand, data storage and retrieval will serve this young student population as it now reaches the researcher. School and public libraries will join together not only in collection-building and access, but in a community teaching function. Such projects as Computer Town USA (Zamora, 1981) vividly illustrate community and library computer interaction. Individualization of instruction and the matching of resources to curriculum are taking place in libraries along with booking of materials and indexing/abstracting services. Small school libraries are putting their entire card catalogs online as well as producing cards and journal listings. The sharing of resources, long a tantalizing economic promise, is closer to realization.

Alternative Sites

Although schools have often been constrained by programs and personnel in early efforts at change, other institutions are playing with the learning possibilities of the technology. Museums are rapidly incorporating interactive computers into their exhibits for instructional material as well as building computer installations within their walls. The Capital Children's Museum (Hirshberg, 1981) and Lawrence Hall of Science are examples of programs that draw students in and reach out in very different ways. Sesame Place (Inman, 1981), a learning park with others to follow, has brought the "arcade" to new respectability--a different kind of classroom. Computer summer camps are sprouting around the country, offering mental stimulation and play along with physical activity. Prisons and hospitals, parks and community centers are all becoming part of a network external to the school building. The home learning center continues its steady climb bringing concerns of equity into school planning. These developments should receive increasing attention as resource sharing becomes essential and public school populations decline, and as alternative teaching methods reach out to new learning populations.

Games/Toys

This section focuses on articles from three distinct sources. The game and toy industry has always functioned on the periphery of education, using its creative forces to help children learn when a profitable market existed. The advent of the microprocessor chip has

greatly enlarged this potential. New products are labeled "electronic learning aids," with specific educational goals and using the most advanced technology. Others would serve useful goals for teachers and parents if they recognized the value. Access to such toys will send young children to school with skills that must be recognized by teachers. Video games have become endemic in the society. They are part of the passing scene--the department store, arcade, movie theater and community center. They offer teaching possibilities for those who respond to visual stimuli, as well as creative thinking. Finally, classroom simulations with computers are another teaching method that has arisen from the psychology of learning through gaming.

Computer Literacy

Few educators will agree upon a definition of computer literacy. It is the history of computers, the world of technology, the applications in society, the act of "being friendly" with a computer, or indeed the skill of programming. Teachers, parents, and students, however, along with educational leaders, are joined in a mighty chorus demanding "computer literacy" in the schools. A society that requires computer skills for most jobs, that zealously purchases microprocessor products, and that sees information technology as the major source of employment for the future, requires academic lip service if not real planning and preparation. Discussion and debate over these issues will and must continue.

Future Prospects

The future is now. Already scientists and thinkers are far ahead of educators in creating tomorrow's vehicles for learning. Unfortunately, schools remain reactive to the tools of technology rather than the stimulators. Intelligent videodiscs can and probably will ultimately change the way people learn as well as the storage of information. Great archival libraries will be protected in new form. Teletext, cable, satellite transmission, low level radio, and robotics all will have profound social and educational implications. Issues of privacy, fraud and equity, as well as the structure and nature of schools as institutions of the society, need answers. These few articles touch the surface like a hot stove, giving a glimpse of what lies next for schools and the media specialist, for education in the society.

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Includes bibliographies on educational computing available through the ERIC system, e.g., Computer-Assisted Instruction: The Best of ERIC 1973-76 (ED 125 608) and Computer Based Education: The Best of ERIC 1976-80 (ED 195 288).

Bortnick, Robert. "Computers and the Curriculum." The School Administrator 37, 9 (Oct 1980):14-15.

Describes the computer as a cognitive tool enabling the learner to examine complexities, solve problems and create alternatives, as well as freeing the teachers from 'drill' teaching, clerical functions and documentation.

Braun, Ludwig. "Computer-Aided Learning and the Microcomputer Revolution." Programmed Learning and Educational Technology 18, 4 (Nov 1981):223-229.

Discusses the impact of computers on education, focusing on recent microcomputer developments, advantages of microcomputers, innovative computer-based activities in the U.S., and barriers to the effective use of computers in schools.

Brosnan, William. "What You Need to Know About M/Cs." The School Administrator 38, 4 (Apr 1981):32-33.

Emphasizes the role of micros as the servant of administrators and teachers.

Clement, Frank J. "Affective Considerations in Computer-Based Education." Educational Technology 21, 4 (Apr 1981):28-32.

Deals with the problems of attitudes toward computer education from the point of view of four distinct populations--student, instructor, lesson author, and administrator.

"Computer Instruction: A Fad or a Phase?" Education USA. Sep 29, 1980, p. 33, 40.

Until computers become cost effective they will continue to be used for (1) remedial purposes and (2) statistical memory-banks.

Dertouzos, Michael L. and Joel Poses, eds. "The Computer Age: A Twenty-Year View." Cambridge, MA: M. I. T. Press, 1979.

A superb series of articles by MIT's community of computer thinkers present in rapid succession a variety of intelligible perspectives of computer applications, human interaction, futurism, and possible societal responses.

Doerr, Christine. Microcomputers and the 3 Rs: A Guide for Teachers. Rochelle Park, NY: Hayden, 1979.

Written for a specific audience, the book should provide reassurance and ideas for a variety of educational applications. It is divided into three sections: technical explanation, application, and sources.

Dwyer, Thomas A. and Margo Critchfield. So You Just Bought a Personal What? A Structured Approach to Creative Programming. Peterborough, NH: Byte Books (McGraw-Hill), 1980.

Although the intended audience is the home hobbyist, the organization, attention to detail, game technique, and humor would facilitate its use as a programming text for a variety of users. Included are applications for play, finance, and education, as well as discussions of increased capacity and larger systems.

Ellis, Joseph. "Friend or Foe? Making the In-House Computer Work for Your School." NASSP Bulletin 65, 445 (May 1981):16-23.

Using the analogy of buying a car, Ellis offers a step-by-step guide to purchasing a computer for a school system.

Emmens, Carol A. "Video Watch." School Library Journal 27, 6 (Feb 1981): 40-41.

Extols the virtues of interactive video and the way in which it has taken passivity out of video watching.

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Had Christopher Evans lived he would have contributed in large measure to an understanding of microprocessors as they affect human existence: He spoke with a lucid tongue to the uninitiated about both reality and dreams, and his convictions about the rapid pace of change seem prophetic.

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An evaluative study undertaken by Peat Marwick Mitchell and Co. to look at British computer efforts in elementary and secondary education, as well as with the military, examined cost statistics, educational benefits, and cost effectiveness. Though no overall conclusions could be reached on value for money, both process and problems point to further study of their methods.

Forester, Tom, ed. The Microelectronics Revolution: The Complete Guide to the New Technology and Its Impact on the Society. Oxford: Blackwell, 1980.

A collection of thought provoking articles ranging from description to theoretical discussion.

Frederick, Franz J. Guide to Microcomputers. Washington, D.C.: Association for Educational Communications and Technology, 1980. ED 192 818.

A comprehensive resource book complete with names, addresses, and descriptions of current products and languages. It would be of great service if updated with sufficient frequency to serve the changing market.

Frenzel, Lou. "The Personal Computer--Last Chance for CAI?" Byte 5, 7 (Jul 1980).

CAI has not been extensively used, nor has it lived up to its expectations, but personal computers may make CAI

practical despite the expense and the dearth of good programmed course materials.

Friel, Susan and Nancy Roberts. "Computer Literacy Bibliography." Creative Computing 6, 9 (Sep 1980):92-97

Good overall bibliography with each entry annotated and defined according to grade level.

Gleason, Gerald T. "Microcomputers in Education: The State of the Art." Educational Technology 21, 3 (Mar 1981):7-18.

Presents a current perspective on the instructional applications of computer assisted instruction, generally, and microcomputer applications, specifically.

Graham, Neill. The Mind Tool: Computers and Their Impact on Society, Second edition. St. Paul, MN: West Publishing, 1980.

A generalized introduction to BASIC and to varied users of computers.

Information Technology in Education. Joint Hearings before the Subcommittee on Science, Research and Technology of the Committee of Science and Technology and the Subcommittee on Select Education of the Committee on Education and Labor. House of Representatives, 96th Congress, 2nd Session, April 2, 3, 1980. Washington, DC: U.S. Government Printing Office, 1980. ED 198 816 (microfiche only).

Includes testimony by Arthur S. Melmed, National Institute of Education; Dr. Dustin Heuston, World Institute for Computer Assisted Teaching; Dr. J. C. R. Licklider, Massachusetts Institute of Technology; Dr. Maxine Rockoff, Corporation of Public Broadcasting; Dr. Vivian Horner, Warner Cable Corporation; Dr. James Johnson, University of Iowa; Dr. Charles Mosmann, California State University, Fullerton; and Ernest J. Anastasio, Educational Testing Service.

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fundamental ideas and provide viewers with experience in computers and programming.

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Logsdon, Tom. Computers and Social Controversy. Potomac, MD: Computer Science Press, 1980.

A computer science text that discusses controversial issues such as privacy, fraud, effectiveness, man as machine, and financial and military concerns, as an approach to understanding the technology and its implications. An excellent time chart, glossary, and series of bibliographics enhance its disturbing effects.

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Reviews the impact and multiple use of micros on present society, and predicts extensive use in libraries of the future.

Luehrmann, Arthur. "Planning for Computer Education--Problems and Opportunities for Administrators." NASSP Bulletin 65, 444 (Apr 1981):62-69

Poses ten questions adminstrators need to ask and think about before incorporating micros in public schools.

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From the United Kingdom, a 600-list bibliography along with an incisive introductory survey essay, and an extensive nonprint collection (200 entries) used in teaching about computers.

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A comprehensive volume describing the complexity and many facets of networking, with particular emphasis upon the library community. While possibilities for networks now increasingly exist on an even smaller scale, many of the critical issues exposed here remain. There are particularly useful appendices and a listing of existing (1980) networks.

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Given the recent surge of micros, there is a real need to consider a rationale before buying for your school district.

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A bibliography designed for learning laboratory coordinators, librarians and media specialists. Topics range from instructional satellite systems and CAI guides to catalog systems for non-print materials and model programs for elementary schools.

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Report to National Institute of Education Conference, Washington, DC, Dec. 19, 1981. An examination of the use of microcomputers in three different school systems and how the innovations affect school system, school and classroom. See also Sheingold's article listed under Educational Applications.

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Series of essays illustrating philosophic differences written by trailblazers in education with computers. This is a must for decision-makers as an articulate, cogent presentation of various uses of computers with children.

The, Lee. "What Did You Do in Computer Class?" Personal Computing 5, 9 (Sep 1981).

Describes how U.S. education continues to lag behind Soviet and French systems in science and technology,

contending that unless something is done to provide universal access to students, other places of education will proliferate.

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This is a philosophic, humanistic, critical appraisal of relationships. Questions of performance vs. understanding, science and technology, human conceptual framework, behavior, and ability are discussed in the context of the computer community. Weizenbaum is among the few urging a thoughtful look at the implications of computers upon society.

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A personal favorite of the many useful books for the beginner approaching the field of computer study. Written in human jargon, it gives concrete examples and many photographs. Such volumes need frequent updating with changing technology and new hardware.

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Hardware

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As computer manufacturers attempt to reach wider audiences with lower-priced machines, many (like IBM and XEROX) are turning to retail stores. However, few such stores can offer the support, service, and expertise that customers are beginning to demand.

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Despite many issues to be considered and pitfalls to overcome, word processing on personal computers remains the most productive use of today's personal computers. Licklider's article deals with (1) getting the words in and (2) getting the words out.

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This document (1) gathers and reports all pertinent information about existing microcomputer hardware, (2) gathers and reports all pertinent information about instructional uses of micros, and (3) contains a written report for MECC and the national educational community on the potential use of micros.

"Microcomputer Round-Up: Today's Personal Computers: Products for Every Need--Part II. Personal Computing 5, 6 (Jun 1981).

Second of a 2-part look at a cross-section of some of the personal computers on the market and their advantages and disadvantages.

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Not only a warning to educators to sift out fact from fiction, but also a detailed report comparing the various facts about micro selection.

Milner, Stuart. "How to Make the Right Decisions about Microcomputers." Instructional Innovator 25, 6 (Sep 1980):12-19.

Comprehensive survey of the field suggesting pros and cons of popular systems as well as overall considerations and implementation problems.

"Speech Peripherals Make Computers More Human." Personal Computing 5, 6 (Jun 1981):19-20.

Includes a description of TYPE-'N-TALK from Votrax, a new text-to-speech synthesizer which allows the personal computer to talk back to the user in highly intelligible

English words and phrases in much the same way as a typewriter for the blind.

Woods, Lawrence. "Microcomputer Networks." Boston Computer Update, Sep/Oct 1981, p.45-46.

Tells how to equip an office or classroom with a bank of microcomputers using a local network which connects a high capacity disc drive and several computers to a cable network.

Zinn, Karl L. "Considerations in Buying a Personal Computer." Creative Computing 4, 5 (Sep/Oct 1978):102.

A checklist of considerations for an educator who is interested in purchasing a personal computer but lacks the necessary expertise.

Software

Bejar, Isaac I. "Milliken Math Sequences." Creative Computing 6, 9 (Sep 1980):56-57.

CAI may come of age, particularly in the math curriculum, now that several established educational publishers have produced software packages like the Milliken Math Sequences.

Best of Interface Age Vol. II: Software in BASIC. Portland, OR: Dilithium Press, 1980.

Five articles from the journal review programs for management, medical, games, and education use.

Caldwell, Robert M. and Peter J. Rizza, Jr. A Computer-Based System of Reading Instruction for Adult Non-Readers. Dallas, TX: Southern Methodist University; Minneapolis, MN: Control Data Corporation, 1979. ED 184 554.

Describes a modularized network of computer-assisted tutorials, drills, tests, printed materials, and videotaped presentations designed to improve the basic reading, math, and language skills of adults who have mastered these skills at a level above third grade but below the eighth grade level.

"Checklist for Identifying Learning Program Characteristics." Educational Technology 20, 11 (Nov 1980):35.

Format for evaluation of microcomputer courseware.

Dwyer, Tom. "Books as an Antidote to the CAI Blues, or Take a Publisher to Lunch." Byte 5, 7 (Jul 1980):74-82.

Reports that more and more refreshing exceptions in software and courseware are appearing for CAI and suggests ways of courting publishers to move away from prepackaged teaching programs.

Eldredge, Bruce and Kenneth Delp. "But What's a Software?" Media and Methods 17, 6 (Feb 1981):4.

Suggests using criteria for evaluation of the four software areas--CAI, CMI, games and simulation--such as readability level, format, level of interest, method of reinforcement, etc.

Edwards, Judith. "MicroSIFT: Clearing the Way". The Computing Teacher 7, 5 (Apr/May 1980):10-11.

This clearinghouse in the Northwest Regional Educational Laboratory attempts to meet two urgent needs in the age of computer literacy: (1) exchange of developed materials and (2) user support. The tentative design involves a network of existing regional centers serving K-12 institutions.

EPIEgram: Materials, April 1981.

Newletter from the Educational Products Information Exchange (EPIE) includes a review of Courseware Magazine (published by Dr. Dan Issacson), articles on helping schools evaluate microcomputer materials from a curricular point of view, and a speakout on software quality.

EPIE Report! Materials. Microcomputer Courseware/Microprocessor Games (98/99m) 15, 1/2m (Fall-Win 1981):1-54.

A discussion of the evaluation of microcomputer courseware precedes analyses and evaluations of six courseware packages for teaching mathematics at various levels and descriptions of eight microprocessor games, including math, spelling, and facts games.

Fox, Mark S., Donald J. Bebel and Alice C. Parker. "The Automated Dictionary." Computer 13, 7 (Jul 1980):35-48.

This report predicting the development of a completely computerized dictionary describes the preliminary results of a study from Carnegie Mellon University which was commissioned by the National Institute of Education. See also Kitsz in this section.

Gayley, Donna K. "Locating Educational Software: A Compilation of Information for Educators Seeking Microcomputer Software." Iowa City, IA: University of Iowa, March 1981.

Attempts to bring together information which would be useful to educators seeking software for micros. Includes reference works, periodicals and commercial sources.

Goldberg, Adele and David Robson. "A Metaphor for User Interface Design." In Proceedings of the University of Hawaii Twelfth Annual Symposium on System Sciences, Honolulu, 1979, p.148-157.

Introduces the idea of a "Filtering Template" as a method for implementing software interfaces, and uses the SMALLTALK system to illustrate its use.

Hernegreen John. Directory of Commercially Available Instructional Software for the Apple II Microcomputer. Richmond, KY: Eastern Kentucky University, Nov 1980.

A directory with quarterly updates.

Kern, Christopher. "Washington Tackles the Software Problem." Byte 6, 5 (May 1981):128-138.

Although it existed before the advent of the microcomputer, the software problem has intensified with the increased supply of quality hardware. Discusses problems relating to copyright, piracy, and patenting.

Kimmel, Stephen. "Programs for Preschoolers: Starting Out Young." Creative Computing 7, 10 (Oct 1981):44-53.

Describes one man's experience with his preschool son and his search for suitable software with nonverbal communication and a strong visual emphasis.

Kingman, James C. "Designing Good Educational Software." Creative Computing 7, 10 (Oct 1981):72-81.

Chronicles the seven important aspects of good software --educational soundness, ease of use, bullet proofing, instructions, appropriate language, frame size, motivation, and evaluation.

Kitsz, Dennis. "Electronic Dictionaries Will Even Spell." 80 Microcomputing, 14 (Feb 1981):60.

Describes report from Carnegie Mellon University predicting the development of a completely computerized dictionary (preliminary results of a study commissioned by The National Institute of Education). See Fox and others in this section.

Kleiman, Glenn and others. "Evaluating Educational Software." Creative Computing 7, 10 (Oct 1981):85-90.

Bemoans the indifferent quality of much of the available software and presents guidelines for the selection of good software based on three general requirements: (1) it must follow good educational practices, (2) it must be suitable for the intended purposes and uses, and (3) it must take advantage of the unique capabilities of computers.

Lubar, David. "Educational Software." Creative Computing 6, 9 (Sep 1980):67-72.

Looks critically at a variety of educational software for home computers.

McCulloch, D. W. "Computer Software Exchange: Some Economic Considerations." Educational Technology 21, 5 (May 1981): 34-35.

Both in Europe and the USA, incompatibility of software systems prevents maximum benefit from instructional software because of (1) too much variation in quality, and (2) little standardization.

MicroSIFT (Microcomputer Software and Information for Teachers).

A clearinghouse for microcomputer software, courseware, and hardware information for schools, MicroSIFT operates from the Northwest Regional Educational Laboratory, 300 S.W. Sixth Ave., Portland, Oregon 97204. A newsletter, MicroSIFT News, is available from the project.

"Missing Computer Software." Business Week, Sep 1, 1980, p.46-53.

The pace of software evolution is the "throttling factor" in the evolution of the computer industry, and lack of quality software and expertise will combine to limit future progress.

Peelings. May/June 1981.

The magazine of Apple software evaluation.

"A Rush of New Companies to Mass-Produce Software." Business Week, Sep 1, 1980, p.54-56.

Although software vendors will have to be quick on their feet to adjust to the changing market and management demands, Business Week predicts solid growth in the standard software market (32% annually to nearly $8 billion by 1985).

School Microware Reviews 1, 1 (Sum 1981).

Includes Software Evaluation Form which concerns itself with quality of materials, adequacy of instruction and the effectiveness of the dialog between the student and the computer.

Talmage, Harriet. "Selecting Instructional Materials: Part 2. Matching Materials to Needs." Curriculum Review, Apr 1981, p.105-109.

Presents a 4-part scheme for educators to use in critically selecting instructional software.

Turrentine, Bonnie. "School MicroWare--A Directory of Educational M/C Software." Boston Computer Update, Sep/Oct 1980, p. 17.

A convenient reference source for educators bringing together in one place information about all available software.

Willis, Jerry. Nailing Jelly to a Tree. Portland, OR: Dilithium Press, 1981.

Another beginner book, this time about programming and adaptation of existing software from one machine to another. This will be useful for educational lobbyists as incompatible software is a consistent headache.

Educational Applications

Ahl, David H. Computers in Mathematics: A Sourcebook of Ideas. Morristown, NJ: Creative Computing Press, 1979.

The most comprehensive collector of mathematics games, ideas, and programs available. Good introductory material and a comparative hardware chart to assist in purchase decisions.

Ahl, David H. "Plato: Alive and Well." Creative Computing 7, 10 (Oct 1981):130.

After Control Data Corporation's retreat from the educational market--"educators are not innovators"--they have focused on instructional programs for business and industry. Since 1977, they have developed approximately 7,000 course modules.

Beyers, Charlotte. "Children of the Computer Age." Times Educational Supplement (London), Feb 20, 1981, p. 14.

Describes Bing Nursery School at Palo Alto where writing and reading readiness is fostered by use of a loaned Apple microcomputer.

Braun, Dr. Ludwig. "Computers in Learning Environments." Byte 5, 7 (Jul 1980):7-14.

Chronicles advantages to having microcomputers in classrooms and documents current trends in learning using this technology.

Caldwell, Robert M. "Designing Effective Computer-Based Education to Teach Reading to Nonliterate Adults." Journal of Instructional Development 3, 4 (Sum 1980):16-18, 23-24.

Explains the instructional rationale utilized in the design of the Basic Skills Learning System and defines some of the teaching strategies that seem to be responsible for the dramatic gains achieved at test sites across the country.

Clark, Robert C. "Applications for Microcomputers in Pre-College Mathematics." The Computing Teacher 8, 4 (1980-81):33-36.

Discusses the imminence of technology as a learning aid in four major roles: (1) tutorial (CAI), (2) drill and practice, (3) simulations, and (4) micros as an object of study.

"Compupoems." South Coast Writing Project, University of California, Santa Barbara. Talented Young Writers Conference, South Conejos School District, Antonito, CO, March 20, 1981.

Compupoem is a computer assisted writing game which encourages concern for planning, unity, and coherence. It also helps students review basic parts of speech and raises questions about the nature of authorship and creative writing.

The Computing Teaching 8, 2 (1981). Theme issue.

Deals with school administrator's introduction to instructional use of computers.

Cox, Dorothy and Carl F. Berger. "Microcomputers Are Motivating." Science and Children 19, 1 (Sep 1981):28-29.

A study of 7th and 8th graders using micros to develop problem-solving skills to determine interaction patterns of students working in groups, and to investigate whether students of all abilities can succeed using a micro.

Critchfield, Margot. "Beyond CAI: Computers as Personal Intellectual Tools." Educational Technology 19, 10 (Oct 1979): 18-25.

Documents various uses and potential uses of computers, emphasizing the importance of students "authoring" their own learning.

Crouse, David B. "The Computerized Gradebook as a Component of a Computer-Managed Curriculum." Educational Technology 21, 5 (May 1981):16-19.

Discusses the use of the computer as a facilitator to free teachers from burdensome paperwork rather than trying to make it a "member of the profession."

Davison, Ned. "Nursery Rhymes to Shakespeare: Using a Text Editor to Look at Literature." Creative Computing 7, 10 (Oct 1981):111-118.

Suggests the possibility of using computers to examine literary structuring as well as relationships between different poetic elements.

Dwyer, Thomas and Michael Kaufman. A Guided Tour to Computer Programming in Basic. Boston: Houghton Mifflin, 1973, 1980.

Instruction book with such depth and simplicity that it has been used in elementary, secondary schools and adult education classes. Amply illustrated, it gives a basic overview, an introduction to programming, and (in 1973 edition) some investigation of applications.

Engel, F. L. and J. J. Andriessen. "Educational Technology Research: Computer-Aided Learning of a Foreign Vocabulary." Educational Technology 21, 5 (May 1981):46-53.

Reports on the use of micros in the learning of a foreign language for the purposes of building vocabulary, assembling "memory bank" and providing systematic practice, both in the school and at home.

Fox, Raymond. "Micro-Processor Based Visual Image Controlled Instruction Delivery System for Deaf and Hearing Impaired Persons." Warrenton, VA: Learning Technology Institute, n.d.

This paper describes a programmable micro-processor controlled interactive media based instruction delivery system which uses super-8 film cassettes and addressable audiotape messages with conventional computer-assisted instruction and computer-managed instruction. Current plans for future implementation are also outlined.

See also Fox, Raymond. "Media Based Interactive Visual Image Controlled (Vis-I-Con) Instruction Delivery System for Instruction of Deaf and Hearing Impaired." American Annals of the Deaf 124, 5 (Sep 1979):604-610.

Fox, Raymond. "Computer Controlled Interactive Motion and Still Image Film Projection System for Vocational Educa-

tion for the Deaf." Journal of Educational Technology Systems 7, 3 (1978-79):229-237.

Geoffrion, Leo D. and E. Paul Goldenberg. "Computer-Based Exploratory Learning Systems for Communication-Handicapped Children." The Journal of Special Education 15, 3 (1981): 325-332.

Case studies of severely handicapped children using computer-based exploratory learning systems show that they eagerly involve themselves in the activities and demonstrate skills thought to be beyond their ability by more traditional approaches.

Goldberg, Adele. "Educational Uses of a Dynabook." Computers and Education 3 (1979):247-266.

Using a concept introduced by Xerox Learning Research Group in the early 1970's, this paper describes the implementation of the Dynabook concept for educational purposes by conducting computer programming classes for students from 6 to 15 years of age.

Goldberg, Adele. "Small Talk in the Classroom." Palo Alto, CA: Xerox Palo Alto Research Center, 1977.

Describes the placing of Small Talk systems in the independent study center of a Palo Alto Middle School. Each course is described, providing examples of a number of applications of the Small Talk system and evaluative comments on the use of the school resource center.

Hantula, James. "Wordmz." History Teacher 10, 4 (Aug 1977): 587-594.

Describes a computer program which generates numbers or letter mazes for use in history curriculum.

Hasselbring, Ted S. and Cathy L. Crossland. "Using Microcomputers for Diagnosing Spelling Problems in Learning-Handicapped Children." Educational Technology 21, 4 (Apr 1981):37-39.

Posits the use of linking microcomputer technology with existing diagnostic spelling instruments to provide the

educator with the potential for diagnosis and remediation. This article describes the successful merger of the Kottmeyer Diagnostic Spelling Test with a microcomputer.

Hechinger, Fred M. "Computers in the Class." New York Times, May 12, 1981, p. C1, C3.

Bank Street study of experiences of three school systems on the value of micros in schools underlines the great potential to change the way teachers and students learn, and highlights problems of access, integration, and the paucity of high quality software.

Joiner, Lee Marvin, Burton J. Silverstein and Jay Dee Ross. "Insights from a Microcomputer Center in a Rural School District." Educational Technology 20, 5 (May 1980):36-40.

Describes what happened when Ortonville (Minnesota) established a microcomputer center in its grades K-12 school building, and a project was run by students and local school staff to study the feasibility of microcomputers for school management, CAI, computer literacy, computer programming, and community service.

Kemeny, J. G. and T. E. Kurtz. "Dartmouth Time Sharing System." Science 162, 3850 (Oct 11, 1968):223-228.

General description of work done in the field of computers and education with students at Dartmouth College.

Kiltinen, John O. and Dennis Tasson. "Finding the Odd Ball: A Classical Weighing Problem Computerized." School Science and Mathematics 78, 4 (Apr 1978):275-280.

Describes a basic computer program involving selection based on appropriate weighings in search of an odd base.

Krasner, Glenn. "The Design of a Small Talk Music System." Palo Alto, CA: Xerox Palo Alto Research Center, Jul 1980.

Using SMALLTALK, a programming language in which all components are objects, this paper describes a direct translation between an orchestra and its computer-simulated counterpart.

Licklider, Tracy R. "Calling Information: Telecomputing with Personal Computers." Boston Computer Update, Jan/Feb 1981, p.13-18.

Describes how the two major "information utilities"--the SOURCE and MICRONET--provide access to information via home computers. Utilities also offer electronic mail, shopping, user-to-user chatting games, programs that you can download into your computer, and the opportunity to try programming in a dozen languages.

Lindsay, Peter and others. "Microcomputers in Ontario Schools." Orbit 57 12, 2 (Apr 1981):8-10.

Although much in infancy status, micros in Ontario classrooms are being used increasingly by both teachers and students, not only for computer literacy, but also as instructional tools in the teaching/learning process.

MacLeod, Ian and Peter Procter. "A Dynamic Approach to Teaching Handwriting Skills." Visible Language 13, 1 (1979):29-42.

A hand-held pen and a graphic display screen were used to improve handwriting skills of three 13- and 14-year-old students.

Mazur, Ken. "Computer Networking." Personal Computing 4, 9 (Sep 1980):58-63.

In a field dominated by SOURCE and MICRONET and constantly evolving, Mazur warns of the serious implications of computer networking for the public at large and the potential effects on society as we know it.

Mazur, Ken. "Videotex: Low-Cost Networking." Personal Computing 4, 9 (Sep 1980):61.

A joint project by Radio Shack and Compu-Serve, Inc., to establish a consumer-oriented communication network at a reasonable cost. Radio Shack calls its hardware/software packages VIDEOTEX.

"Micro-Computers Make Light Work of Managing Instruction." Wisconsin R&D Center News. Fall 1980:2, 8.

Using an information storage and retrieval system based on microcomputers, individualized and objective-based curricular programs are infinitely more manageable.

Microcomputer Directory: Applications in Educational Settings. Cambridge, MA: Harvard University Graduate School of Education, Monroe C. Gutman Library, Spring 1981.

Compiled for the 2nd Microcomputer Conference in Education, this directory lists information about programs throughout the country.

Microcomputers and Basic Language Skills. A.M.A. Research Report No. 25. Washington, DC: American Microcomputer Association, 1980.

Extols the virtues and promise of micros to supplement basic language learning through drill and practice, thus freeing the teacher for "more creative functions."

Micro--Read: Basic Skill Improvement Grant. 1980/81.

A project using two Pennsylvania school districts, Bethel Park and North Allegheny, to determine the feasibility and effectiveness of using micros and micro software as vehicles to remediate the reading skills of secondary students.

Noonan, Larry. "Computer Simulations in the Classroom." Creative Computing 7, 10 (Oct 1981):132-138.

Using Santa Paravia and Fiumacco (TRS-80 Level II), the program presented a series of real life situations to encourage the student to identify cause and effect relationships by trying different solutions to computer posed problems.

Olds, Henry F., Judah L. Schwartz and Nancy A. Willie. People and Computers: Who Teaches Whom. Newton, MA: Education Development Center, 1980.

Report for a study conducted by Robert Torque to introduce teachers to computers and their applications. There are implications for both teacher training and

software development. The sample was small and the experiment brief, yet questions that were brought to the surface by teachers and investigators deserve further consideration.

Papert, Seymour. "New Cultures from New Technologies." Byte 5, 9 (Sep 1980):230-240.

The creation of a "mathland" environment where it is possible to use the computer as a pencil has been successfully implemented at the Massachusetts Institute of Technology, using a TI 99/4 equipped to support LOGO.

Petrakos, Pamela. "Project Local: A Classroom Computer Project with a 13-Year History." 80 Microcomputing 14 (Feb 1981): 74-78.

Project Local reports on the use of computers in learning generally, and mathematics in particular, in the towns of Westwood, Natick, Needham, Wellesley, and Lexington, Massachusetts.

Reinert, Harry. Extending the Teacher: From Text to Context. The Challenge of Communication. A CTFL Review of Foreign Language Education, v. 6. New York: American Council on the Teaching of Foreign Languages, 1974. ED 162 504.

Focuses on the importance of context for creative student activity and examines ways in which teachers extend language text to include cultural and linguistic components.

Sheingold, Karen. Issues Related to the Implementation of Computer Technology in Schools: A Cross-Sectional Study. Children's Electronic Laboratory Memo No. 1. New York: Bank Street College of Education, 1981. ED 205 165.

Examination of microcomputer use in three school systems concluded that microcomputers on their own will not promote any particular educational outcomes; rather, their impact will depend largely on the educational context in which they are embedded.

Smith, Robert W. "Speed Reading with the Personal Computer." Creative Computing 7, 10 (Oct 1981):162.

Not so much a speed reading course as, with the help of Atari Basic, a tool to allow building up speed gradually as comprehension develops.

Spero, Sam W. "The Teacher and the Personal Computer: Alternatives in Instruction." Interface Age 5, 6 (Jun 1980):89-92.

Describes benefits of Radio Shacks' TRS 80 for classroom use by teachers.

Spivak, Howard and Stuart Varden. "Classrooms Make Friends with Computers." Instructor 89, 8 (Mar 1980):84-86.

Documents specific ways in which a classroom computer can be a teacher's aide.

Stapleton, John F. "Computers in the Classroom." The Commonwealth (Mass.), April 1981.

Underlines the unlimited capacities of the computer and video disc combination and describes a collaborative approach at Westwood (Project Local) and an individual community's success story (Sandwich).

Trippett, B. L. "Town and Gown Say 'I Do'". Instructional Innovator 26, 6 (Sep 1981):30-31.

Describes the 'marriage' of interests between North Kingston (Rhode Island) school district and the town of South Kingstown, who share online access to a powerful processing system.

Watts, Norman. "A Dozen Uses for the Computer in Education." Educational Technology 21, 4 (Apr 1981):18-22.

Documents a dozen uses of micros in education and advocates that teachers confront the imminent computer literacy crisis now.

Weintraub, J. I. "Programming for Education." 80 Microcomputing 14 (Feb 1981):68-73.

A micro salesman writes of the difficulty faced in producing programs for inquisitive 5-year-olds and offers a skills checklist for writing such programs.

Weir, Sylvia. LOGO as an Information Prosthetic for the Handicapped. Cambridge, MA: Massachusetts Institute of Technology, Division for Study and Research in Education, May 1981.

Report describes how handicapped students at the Cotting School for Handicapped Children in Boston used a computer-based learning environment--a LOGO classroom--where interactive graphics systems for doing computer programing, mathematics, animation, physics, music and creative writing were used.

Wieck, Colleen. "Computer Resources: Will Educators Accept, Reject, or Neglect in the Future?" Education Unlimited 2, 1 (Apr 1980).

Documents the computer-as-aid literature for the visually impaired, mentally retarded, learning disabled and physically handicapped.

Willis, N. E. "Microcomputers: An Opportunity for New Approaches to Education." Educational Broadcasting International 13, 1 (Mar 1980):30-32.

Documents the capacities of the "silicon chip" and how it will revolutionize technology and, by implication, education.

Zahn, Donald K. "The Impact of the Computer in the Business Classroom." Business Education Forum 34, 6 (Mar 1981):25-26.

Deals with problems of expanding computer education within business education and calls for a relevant secondary curriculum to promote computer literacy and to prepare for careers which combine business acumen with technological facility.

Zausmer, Russell. "Classroom Management System." Creative Computing 7, 10 (Oct 1981):62-66.

Individualized learning programs have placed tremendous clerical burdens on teachers; however, SRA has produced courseware called "Classroom Management System--Mathematics B" for 4th to 8th grade students, which tests

students, evaluates tests, prescribes work to reinforce specific areas where the student is weak, and records both individual and class progress.

Zinn, Karl L. "A Drop-In Computer Center for High School Students." Creative Computing 4, 5 (Sep/Oct 1978):96-97.

Interview with the teacher of an after-school computer course for elementary and junior high schools focuses on the advantages and disadvantages of such a course.

Zinn, Karl L. "Personal Computers at the University of Michigan and an Assessment of Potential Impact." Creative Computing 4, 5 (Sep/Oct 1978):84-87.

Describes benefits of personal computers at the University of Michigan and ponders the implications of the emerging technology as a means of improving access to higher education.

Zinn, Karl L. "Using the Microcomputer: One University's Experience." Educational Technology 19, 11 (Nov 1979):54-55.

Reports on the many uses of micros at the University of Michigan.

Zinn, Karl L. and Bernard Banet. "Bridging the Gaps." Creative Computing 7, 10 (Oct 1981):126-130.

A National Science Foundation funded project to improve the effectiveness of microcomputers in education was especially concerned with the contribution of local resource people in the use of technology in teaching.

Library Applications

Blair, John C., Jr. "Micro Magic." Online 5, 4 (Oct 1981):90-94.

An overview/primer to help people decide about whether or not to choose a micro system as well as providing a forum for swapping ideas and experience.

Brickley, Richard R., comp. "Schools, Computers and Libraries: Selected Resources from Course Projects Developed by Students in L.S." Villanova, PA: Villanova University, Fall 1980. ED 200 194.

Course projects developed by students include proposals for both courses (junior high level) and administrative applications, as well as resource lists.

Calhoun, Judith and others. "A Computerized Approach to Management of Utilization Data in a Media Center." THE Journal: Technological Horizons in Education 6, 6 (Nov 1979):50-51.

Describes the computerized data control system used at the Furstenberg Center at the University of Michigan Medical School.

Christian, Deborah. "The Microcomputer at Oakridge, Oregon." Library Journal 105, 13 (Jul 1980):1470-1471.

A microcomputer is used to automate the circulation system of a small public library in Oregon.

Davis, Glyn, ed. "Flintshire County Library: Computer Cataloguing System." Mold, England: Flintshire County Library, April 1970. ED 054 838.

Outlines an application of computer techniques to a bilingual (Welsh-English) library bookstock which resulted in improvement of reader service.

Deal, Paula Nespeca. "A Study of Centralized Processing for School Media Centers." Drexel Library Quarterly 13, 2 (Apr 1977): 80-90.

Reports a comparison study of differing methods of materials processing (including methods of utilizing OCLC) and the cost benefit value of these services.

Fosdick, Howard. "The Microcomputer Revolution." Library Journal 105, 13 (Jul 1980):1467-1472.

Explores the potential of the microcomputer for library automation.

Gwinn, Nancy E. and Warren J. Haas. "Crisis in the College Library." AGB Reports 23, 2 (Mar/Apr 1981):41-45.

Discusses the need for library-faculty partnerships, sharing of resources, and microcomputer application to bibliographic processes.

Harter, Stephen P. and Kenneth F. Kister. "Online Encyclopedias: The Potential." Library Journal 106, 15 (Sep 1, 1981): 1600-1602.

Suggests that encyclopedias will soon be computerized and discusses the differences between print and online, the advantages of computerization, and the dramatic improvements in access to knowledge and information.

Harter, Stephen P. and Fred C. Pfister, comps. Directory of Computer Applications in Florida Libraries. Tallahassee, FL: Florida State Library, 1979. ED 198 803.

A comprehensive directory including information on the uses and applications of computer systems in Florida's libraries.

Hines, Theodore and others. Computer-Based Systems for Increasing Information Access to School Media Center Materials. Final Report. Greensboro, NC: University of North Carolina at Greensboro, School of Education, 1978. ED 172 826 (microfiche only).

Final report includes 10 separate papers describing a range of applications of proven computer techniques to school media center materials.

Hines, T. C. and others. "Library Applications of Microcomputers." Greensboro, NC: University of North Carolina at Greensboro, n. d.

A brief report recommending useful applications of micros for public libraries, school media centers, community college and technical institute learning resource centers, and special libraries.

Hoffman, Charles. "The Computer in the High School Library." Catholic Library World 50, 1 (Jul/Aug 1978):10-11.

Documents the many applications of computer systems and their attendant benefits in control, management, and time-saving.

Jones, Ray and Barbara Wittkopf. "Computerized Census Data: Meeting Demands in an Academic Library." RQ, 19, 3 (Spr 1980):246-251.

Documents experience of the University of Florida Libraries' Census Access Program and their provision of print and machine-readable census products for users since 1971.

Lundeen, Gerald. "The Role of Microcomputers in Libraries." Wilson Library Bulletin 55, 3 (Nov 1980):178-185.

Microcomputers can be used in all functional divisions: cataloging (MINI, MARC systems), circulation (stand alone or attached to main frame), acquisitions and serials, journals routing, reference, database systems, and word processing.

Microcomputer Directory: Applications in Educational Settings.

(See Microcomputer Directory in Classroom Applications)

Nicklin, R. C. and John Tashner. "Micros in the Library Media Center." School Media Quarterly 9, 3 (Spr 1981):168-172, 177-181.

As well as examining the factors determining the placement of micros in the library media center, this article calls for media specialists to become informed advisors,

teachers, advocates, and evaluators of the emerging hardware/software.

Poirot, James L. Microcomputer Systems and Apple Basic. Austin, TX: Sterling Swift Publishing Co., 1980.

Useful primarily for a series of examples or figures to be used in an APPLE BASIC programming course. Much of the information should be coordinated with actual computer experience.

Pratt, Allan D. "The Use of Microcomputers in Libraries." Journal of Library Automation 13, 1 (Mar 1980):7-17.

Small scale, inexpensive computer systems can be used effectively for text processing, bibliography and guide preparation, with telephone coupler to connect DIALOG, OCLC, ORBIT.

"Putting the Library on a Computer." Business Week, Mar 30, 1981, p.104-106.

Describes the dawning of a new library system with hook-ups to remote computer databases and computer-controlled regional library networks.

Romans, Anne F. and Stanley A. Ransom. "An Apple a Day: Microcomputers in the Public Library." American Libraries 11, 11 (Dec 1980):691-693.

Describes the microcomputer promoting literacy among rural New York children with limited exposure to technological innovations.

School Uses Micro Computer to Replace Card Catalog." American Libraries 12, 5 (May 1981):293-294.

Documents change at Mountain View Elementary School in Broomfield, Colorado, designed to end "catalog frustration" and promote resource use and computer literacy.

Simpson, George A. Microcomputers in Library Automation. McLean, VA: Mitre Corporation, 1978. ED 174 217.

Microcomputers will provide low-cost systems and will compensate for reduced budgets, decreased staff, and increased service demands.

Standifer, Hugh. "What the Computer Center Should Do for a Library." Journal of Library Automation 12, 4 (Dec 1979): 362-366.

Contending that a library can use its local computer center for automation, this article further contends that such automation should be cost and/or service justified.

Thomassen, Cora E., ed. CATV and Its Implications for Libraries. Proceedings of the Allerton Park Institute, Monticello, Illinois. Urbana, IL: University of Illinois, Graduate School of Library Science, 1974.

A collection of the papers from the conference on the implications of cable TV for libraries.

Twaddle, Dan R. "School Media Services and Automation." School Media Quarterly 7, 4 (Sum 1979):257-268.

Provides examples of automation in school media service programs and includes an annotated bibliography of relevant literature.

White, Wallace. "What's That Funny Noise? Videogames in the Library." Library Journal 106, 8 (Apr 15, 1981):859-860.

Describes the project in Piqua, Ohio, where a videogames center was housed within the library as part of an electronic learning center.

Wood, R. K. and others. "Video Disc/Microcomputer Research Opens New Horizons for Libraries." American Libraries 12, 6 (Apr 1981):208-209.

This "omnibus medium" has many purposes, including storage of information, sound, and images from virtually all media, and storage of digitized computer data. Also documents Utah State University's various research experiments, i.e., Video Disc Innovation Projects.

Wood, Richard J. "A Computer-Assisted Instruction Program on How to Use a Library Card Catalog: Description, Program And Evaluation." Slippery Rock, PA: Slippery Rock State College, 1975. ED 167 156 (microfiche only).

A BASIC computer program developed for use at Slippery Rock State College but adaptable to other libraries using L.C. classification/cataloging. Program includes a general introduction, drawer arrangement, guide cards, types of catalog cards, and catalog card format.

Zamora, Ramon. "Computer Town, USA." School Library Journal 27, 8 (Apr 1981):28-31.

A computer literacy project funded by N.S.F. and housed (enthusiastically) by Menlo Park Library. Describes an implementation package which explains how to begin a computer town in your local community.

Alternative Sites

Bagley, Carole A. Comprehensive Offender Program Effort--Final Progress Report. St. Paul, MN: Minnesota State Department of Corrections, 1977. ED 152 226.

Reports on two adult correctional institution projects which used computers to complement curriculum offerings.

Burdick, Bruce. "Computerizing Museum Exhibits: The Beginnings of the Essential Conversation." People's Computers 7, 2 (Sep/Oct 1978):30-33.

An experimental computer-based nutrition exhibit at the Chicago Museum of Science and Industry becomes a vehicle of interaction between viewer and museum.

Caldwell, Rob and Peter Rizza. "A Computer-Based System of Reading Instruction for Adult Non-Readers." AEDS Journal 12, 4 (Sum 1979):155-162.

Chronicles programs in Minnesota, Texas, and Maryland that use computers to achieve at least 8th grade equivalent in adult basic skills.

"Camps for Computers." Time, Aug 3, 1981, p. 70.

Describes life at two computer co-ed summer camps in Connecticut and California where students devise electronic games and learn computer languages.

Champlain College Computer Camp, Burlington, Vermont 05402.

To be offered during the summer of 1982 for teenagers, aged 11-16. The goal is to provide participants with a basic understanding of computers and their uses.

Computer Camp East, Becket Academy, East Haddam, Connecticut 06423.

An overnight co-ed learning experience offering two weeks of the "wonder" of computers for pre-teens and teenagers, acccording to the brochure.

Diem, Richard A. Results and Analysis of a Computer Assisted Instructional Program in Basic Skills in a Detention Center. Paper presented at the annual meeting of the Southwestern Educational Research Association, Houston, Texas, 1979. ED 186 027.

Examines attitudes and perceptions at a Texas Detention Center where PLATO was used as an effective and pleasurable teaching device.

Hirshberg, Peter. "Compu-tots and Other Toys of Museum Life." Instructional Innovator 26, 6 (Sep 1981):28-30.

Describes Future Center, "tomorrow's classroom" at the Capital Children's Museum in Washington, D.C., which is stocked with 20 Atari 800 micros, each equipped with a printer, disc drive and color monitor.

Inman, Virginia. "Kids Get Their Thrills in Megabytes at Theme Park for Computer Age." Wall Street Journal, Jun 18, 1981, p. 29.

Describes Sesame Place, which includes a room housing 50 coin operated computer games. This is a joint venture of the Children's Television Workshop and Busch Entertainment.

Kahn, Bob. "Computers and Science Museums: A Public Access Model Part II." People's Computers 7, 2 (Sep-Oct 1978):20-26.

Documents level 2 (general public access) of a 5-stage model for providing people using science technology centers with access to computers.

"Macomber Farm Project." Boston Globe, Aug 2, 1981. Special color supplement.

Macomber Farm in Framingham, Massachusetts, attempts to educate the public about the needs of animals and uses electronic games and interactive technology to teach the social organization of cattle, sheep and chickens.

Microcomputer Directory: Applications in Educational Settings.

(see Microcomputer Directory in Classroom Applications)

"A Playground for the Brain." Time, Sep 21, 1981, p. 64.

Describes Sesame Place, where the creators of Sesame Street are perfecting computer software programs to sell to the general public.

Ritterbush, Philip C. and Richard Grove. Museums and Media: A Basic Reference Shelf. Museums and Media: A Status Report. Stanford, CA: Stanford University, ERIC Clearinghouse on Educational Media and Technology, 1970. ED 044 935.

This document in two parts visualizes a future with a museum computer network, a museum of media and no objects, and a museum environment individualized by computer and visual previews of the galleries.

Ryan, T. A. Redirection in Corrections Through Adult Education. Paper presented at National Association of Public and Continuing Adult Education/Adult Education Association Conference, Los Angeles, 1971. ED 068 772.

Acknowledges the need to provide educational programs to meet special needs of adult offenders. Program also provides a training component.

Sandman, Richard and Wayne Welch. Evaluation of Title I CAI Programs at Minnesota State Correctional Institutions. Minneapolis, MN: University of Minnesota, 1978. ED 189 125.

Describes results at three Minnesota correctional institutions that used CAI on PLATO terminals to improve basic reading and math skills.

Schwartz, Judah. "The Role of the Microcomputer in the Museum Exhibitions." In Etude de l'Architecture Informatique du Musée National des Sciences et de l'Industrie. Eurosoft Report, Paris, July 1981.

Describes notions about using interactive technology as a way of organizing a set of exhibits. A typology of exhibit types and sample programs to be used in museums are presented.

Staples, Betsy. "Computers Are for People." Creative Computing 7, 10 (Oct 1981):104-107.

Describes a visit to the Marin Computer Center operated by David and Anne Fox in San Francisco, where teachers can bring their classes for a half day's exposure to computing.

"Technology in Alternative Learning Environments." Instructional Innovator 25, 8 (Nov 1980):9.

Discusses the where, who, what, when and why of technology's assault on learning.

"New Theaters for Learning." Time Magazine, Jul 25, 1977, p. 56.

Describes technology centers for inquiry and discovery in Boston, Brooklyn, San Francisco, and Washington, DC.

"Tutors of Ex-Offenders Use Video Games as Enticement." New York Times, Nov 2, 1980, p. 54.

Fortune Society, on the lower east side of New York, tutors and counsels former offenders with the help of computer games.

Unkel, M. B. and others. "Putting Computers to Good Use." Parks & Recreation 10, 11 (Nov 1975):19-20, 35-38.

Examines the use of computers in parks and recreation departments to assist in management, accounting, maintenance and making reservations.

Vance, David. "Manual for Museum Computer Network Griphos Application." Stonybrook, NY: Museum Computer Network, Inc., 1976. ED 122 737.

Second in a series of manuals prepared by the Museum Computer Network explaining the use of General Retrieval and Information Processors for Humanities Oriented Studies (Griphos).

Weiner, Myron E. The Humanistic Duo: The Park/Recreation Professional and the Computer. Paper presented at the National Park and Recreation Congress, 1973. ED 115 593.

This paper discusses the most effective use of technology (e.g., microcomputers) for those providing for leisure services and includes a primer on computers for parks/recreation personnel.

Games/Toys

Ahl, David H. "Getting Started in Classroom Computing." Maynard, MA: Digital Equipment Corporation, 1974. ED 092 071.

Written and compiled for secondary-age students, this booklet introduces many computer-related concepts through a set of six classroom games.

Allen, Layman E. Community Thinkers' Tournaments for Coordinating Other Community Resources to Complement the Educational Function of Schools. Paper presented at the 8th International Simulation and Gaming Conference, Birmingham, England, July 13-17, 1977. ED 149 721.

Documents the results of exploiting instructional gaming technology in programs at Ann Arbor (Michigan) and at Watts (Los Angeles), and reveals how learning networks can supplement formal education.

Bertoni, Phil. "Software for the Young at Heart." Boston Phoenix Magazine Supplement, Nov 18, 1980, p. 6-12.

Looks at the intricacies of adult computer fantasy entertainment, e.g., Dungeons and Dragons.

Bitter, Gary. "What About Those Electronic Games?" Teacher 97, 3 (Nov/Dec 1979):78-82.

Looks at the educational merits of new hand-held computer games.

Blumenthal, Ralph. "Electronic Games Race." New York Times, Dec 14, 1980, p. 180-188.

Documents the marketplace war between major manufacturers of electronic games.

Butler, Tommie and others. "Basic Business and Economics: A Secondary School Adventure in the Free Enterprise System." Business Education Forum 32, 2 (Nov 1977):20, 22-23.

The computerized business game is used to foster a better understanding of the free enterprise system (a program for high school business students).

Dennis, J. Richard and others. Instructional Games and the Computer-Using Teacher. The Illinois Series on Educational Application of Computers, No. 9e. Urbana, IL: University of Illinois, Department of Secondary Education, 1979. ED 183 189 (microfiche only).

Addresses many topics related to computerized games and their potential.

Dirks, Douglas and others. A Study of Computer Simulations for Environmental Science Education. Illinois Series on Educational Applications of Computers, No. 2. Urbana, IL: University of Illinois, Department of Secondary Education, 1975. ED 138 279.

This description of the Huntington simulations includes computer programs and related off-line materials for teachers and students, as well as separate guidelines for simulation choice for curriculum planners and teachers.

"Educational Games Computers Play." The Computing Teacher 8, 6 (1980-81).

Acting as a broker between technology and educators, this theme issue focuses on the various facets of CAI.

"Electronic Game Makers Brace for a Shake-out: Coleco's Electronic Success." Business Week, Oct 27, 1980, p. 66J-66T.

Describes Coleco's climb back from the brink of financial disaster with the advent of the electronic baseball game.

Frenzel, Louis E., Jr. "Learning with Micros." Interface Age 5, 10 (Oct 1980):38.

Describes how home computers have been slow to capture public imagination for purposes of balancing checkbooks, keeping a Christmas card list or family budget. Computer-aided instruction for adults could be the stimulant the home computer market needs.

Goldberg, Adele. "Educational Uses of a Dyanbook." Computers and Education 3, 4 (1979):247-266.

Describes computer games and simulations for logical sequencing, hypothesis testing, and modeling as part of a programming design curriculum.

"High Hopes for High-Priced Electronic Games." Business Week, Dec 3, 1979, p. 116B.

Using a knowlege-based program rather than a search-based strategy, Chafitz Inc. of Rockville, Maryland, offers luxury, high-priced chess and backgammon.

Klabbers, Jan. "Development of an Interactive Simulation Game: A Case Study of Dentist." Simulation and Games 2, 1 (Mar 1980):59-86.

Discusses the general structure and specification guidelines for interactive simulation/games and offers the example of Dentist, a dental health care simulation.

Lewis, Lawrence T. "All-Purpose Learning Games for Computer-Assisted Instruction." Journal of Geography 78, 6 (Nov 1979): 237-244.

Describes BALG (basic, all-purpose, learning games) which attempts to combine entertainment with learning geography at various educational levels.

Malone, Thomas. What Makes Things Fun to Learn? A Study of Intrinsically Motivating Computer Games. Palo Alto, CA: Xerox Palo Alto Research Center, 1980.

Examines two questions: (1) Why are computer games so captivating? and (2) How can the features that make computer games captivating be used to make learning--especially learning with computers--interesting?

Marsh, Paul W. "The Microcomputer Goes to School." Audiovisual Instruction 23, 5 (May 1978):38-40.

Discusses educational uses and implications of less expensive computers.

"Mattel's Intelligent Television." Boston Computer Update 3, 4 (Jul/Aug 1980):25-26.

Attempting a breakthrough in the home computer market, Mattel has launched "Intellivision" games.

"Mattel Lives Down Its Past." Financial World 148, 18 (Sep 15, 1979):39-40.

Describes Mattel's involvement with electronic hand-held games--especially Intellivision.

Mennie, Don. "Consumer Electronics: Personal and Plentiful." IEEE Spectrum 16, 1 (Jan 1979):62-66.

Documents the variety of electronic gadgets and aids available for the consumer.

"The Micro-Processor: A Revolution for Growth." Business Week, Mar 19, 1979, p. 42B-42X.

Describes the demise of electronics instrument manufacturing and the subsequent rise of the microprocessor and its attendant problems, particularly the variability of the software.

People's Computer Group. What to Do After You Hit Return. Rochelle Park, NJ: Hayden, 1980.

Compendium of familiar and recently developed games in an entertaining format. Most can be played with or without a computer. The programs are listed to run on a Hewlett-Packard 2000 F Basic.

Reibstein, Larry. "It's the Year of the Talker, Electronically Speaking." Boston Globe, Dec 17, 1980, p. 63-64.

Surveys talking technology, from adult games to educational games to futuristic kitchen gadgets.

Rigsby, Michael A. "Dissecting the T.I. 'Speak and Spell'." Byte 5, 9 (Sep 1980):76, 84.

Analyses the electronics of the spelling electronic learning aid.

Roberts, Nancy. Simulation Gaming: A Critical Review. Cambridge, MA: Lesley College, Graduate School of Education; Massachusetts Institute of Technology, Sloan School of Management, 1976. ED 137 165.

In reviewing the empirical literature on simulation/gaming, the author describes good, bad, and ambivalent facets of gaming when used for educational purposes.

Rosenberg, Ron. "Electronics Under the Xmas Tree." Boston Globe, Nov 30, 1980, p. 64-69.

Details the 'war' between Milton Bradley and Parker Brothers to capture the electronic games Christmas market.

Rutherford, Malcolm. "The Use of Computer Games in Education: A Critique." Economics 12, 53 (Spr 1976):31-36.

Examines assumptions that concrete to abstract learning patterns are effective and that simulations/games can assist students in educational achievement.

Schneider, Lee and Todd Voros. "The Invasion of Kingdom." People's Computers 7, 2 (Sep/Oct 1978):8-15.

Describes the process by which the computer simulation game Kingdom was designed.

Schreiner, Scott C. Simulating American Social Structure: An Interactive Game/Simulation for Career and Life Cycle Decisions. Paper presented at the 6th Annual Conference on Instructional Computing Applications of the Indiana University, South Bend. ED 178 070.

Describes an interactive computer based simulation, CALIS, where players confront career and life path choices.

"Talking Chips: An Explosion of New Products." Business Week, May 19, 1980, p. 44D-44E.

Documents the different ways in which Texas Instruments has become involved with speech technology.

Vernon, Peter. "A Closer Look at the T.I. Speak and Spell." Byte 6, 4 (Apr 1981):150.

Corrects some of the misassumptions of an earlier Byte article ("Dissecting the T.I. Speak and Spell'--Sep 1980) and decodes the secret of Speak and Spell.

Walker, Charles. "Amusement Centers." Real Estate Appraiser 44, 5 (May/Jun 1978):29-31.

Describes how the electronics games industry is changing the face of amusement centers.

Zinn, Karl L. "Speak and Spell Spelling B." Creative Computing 4, 5 (Sep/Oct 1978):60-61.

Documents general directions in the development of hand-held learning aids, and specifically describes two electronic spelling aids.

Computer Literacy

"Adventure of the Mind."

A series of six 15-minute videotapes on personal computing designed to be used in the classroom and produced by ITV CO-OP and the Applied Physics Laboratory of Johns Hopkins University, this series of six 15-minute videotapes on personal computing for the junior/high school level has been broadcast on public television.

Backer, Cathy. "The Computer in Our Lives: Education--Here Comes a New Literacy." Infosystems 27, 1 (Jan 1980):54.

Describes the state of Minnesota's experiment with CAI.

Billings, Karen and David Moursund. Are You Computer Literate? Portland, OR: Dilithium Press, 1979.

Paperback text for a literacy program complete with quizzes and a final exam for the novice that includes a historical perspective, applications, comparative information, and both print and non-print resources.

Brumbaugh, Ken E. "Computer Literacy--1985." The Computing Teacher 8, 4 (1980-81):49-50.

Argues that more Americans should become computer literate if we are to maximize our problem-solving abilities and be more productive in our daily lives.

Diem, Richard A. "Developing Computer Education Skills: An Inservice Training Program." Educational Technology 21, 2 (Feb 1981):26-28.

Cites lack of teacher training in technological education as the major obstacle in developing a computer literate society, reviews 'quick-fix' alternatives, and proposes a systematic, inservice instructional design program that integrates a scope and sequence of skills.

Dwyer, Thomas and Margo Critchfield. A Bit of Basic. Reading, MA: Addison Wesley, 1980.

Useful, clearly comprehensible course in Basic--from simple to advanced programming--with diagrams and examples that are entertaining as well as excellent teaching tools. Can be used both for self-learning and as a classroom text.

Horn, Carin E. and James L. Poirot. Computer Literacy. Austin, TX: Sterling Swift Publishing Co., 1981.

Thirteen chapters, each containing a backup of self testing questions, provide a basic introduction to the technology, history, and operations of microcomputers.

Johnson, Mildred F. "Computer Literacy: What Is It?" Business Education Forum 35 (Dec 1980):18-22.

Discusses philosophy, facts, and opinions regarding the definition of computer literacy, and suggests basic computer literacy course content. Recommends delivery systems/methodologies that can be utilized for instructional purposes.

Klitzner, Carol. "Coming to Terms with Computer Literacy." Personal Computing 5, 8 (Aug 1981):57-72.

Pleads for a new kind of literacy which includes using the computer as a problem-solving tool. Also discusses divergence of notions as to what computer literacy is.

Kurshan, Barbara. "Computer Technology and Instruction: Implications for Instructional Designs." Educational Technology 21, 8 (Aug 1981):28-30.

Warns of the need for educators to prepare to take control of micros and their uses in schools, particularly in their use for instructional purposes.

Lawson, Harold. Understanding Computer Systems. Linkopeng, Sweden: Lawson Publishing Co., 1980.

An entertaining and informative text for computer literacy. It uses extensive illustrative material drawn from daily life woven into explanations of technological functions.

Lewis, Theodore. Pascal Programming for the Apple. Reston, VA: Reston Publishing Co., 1981.

A how-to-do-it guide to the PASCAL programming language with concrete examples and some explanation of the nature of higher level programs.

Linderholm, Owen. "A Beginning for Britain and Computers--with the BBC." Creative Computing 7, 10 (Oct 1981):122-123.

A new BBC project in the field of computer literacy to introduce interested adults to the world of computers and computing.

Lopez, Antonio M., Jr. "Computer Literacy for Teachers: High School and University Cooperation." Educational Technology 21, 6 (Jun 1981):15-18.

Despite lowered costs in computer technology, the majority of teachers in schools today are not computer-literate. Describes awareness programs at two high schools in New Orleans attempting to demystify notions of computer literacy.

Lubar, David. "Sliding." Creative Computing 7, 10 (Oct 1981):40.

Describes "BASIC: An Introduction to Computer Programming," a slide presentation that comprises two carousels of slides, two audio cassettes, two long-playing records, and a teacher's guide. The story of a man who finds a genie in a bottle is used to underscore the importance of communication skill.

Molnar, Andrew R. "The Coming of Computer Literacy: Are We Prepared for It?" Educational Technology 21, 1 (Jan 1981): 26-28.

In the name of equity, all citizens and not just specialists, should have access to information, should be able to

understand how to gain access to it, and should use it intelligently for problem solving.

Molnar, Andrew R. "The Next Great Crisis in American Education: Computer Literacy." THE Journal: Technological Horizons in Education 5, 4 (Jul 1978):35-38.

Declining enrollments, increased costs, ineffective teacher support and back-to-basics accompany the change from an industrial society to an information society. In such a society, the need for computer literacy is obvious.

Moursund, David. Basic Programming for Computer Literacy. New York: McGraw-Hill, 1978.

A well-rounded approach to programming on a conceptual as well as practical level stresses the understanding of programs, the writing of programs, and the ability to read them.

Neights, Gary. "Pennsylvania's Statewide Initiative." Instructional Innovator 26, 6 (Sep 1981):26-27.

At the initiative of the Secretary of Education, Pennsylvania's administrators, media directors, and teachers are learning about microcomputers for computer operation and computer instruction.

"Portents of Future Learning." Time Magazine, Sep 21, 1981, p. 65.

With the emergence of low-cost personal computers, school administrators and educators need to ensure computer literacy for all students.

Ricketts, Dick and Jean A. Seay. "Assessing Inexpensive M/C's for Classroom Use: A Product-Oriented Course to Promote Instructional Computing Literacy." AEDS Journal 13, 1 (Fall 1979):89-99.

The need to make teachers intelligent consumers by direct experience is advocated in this paper.

"Students Use Computers in 1 of 4 Schools." Education USA 23, 32 (Apr 6, 1981):250.

The National Center for Educational Statistics reports that the most frequent use of computers in schools is to teach computer literacy.

Watt, Daniel H. "'Computer Literacy': What Should Schools Be Doing About It?" Classroom Computer News 1, 2 (Nov/Dec 1980):1, 26-27.

Presents another definition of "computer literacy"--"that collection of skills, knowledge, understandings, values and relationships that allows a person to function comfortably as a productive citizen of a computer-oriented society"--and stresses the future importance of people controlling the computers.

Future Prospects

"An Intelligent Robot." USA Today 109, 2427 (Dec 80):11-12.

Describes the "personality" of Hans Moravec's table-sized mobile robot, which is remotely controlled through a radio link, and equipped with a TV camera and transmitter.

Cornish, Blake M. "The Smart Machines of Tomorrow: Implications for Society." The Futurist 15, 4 (Aug 1981):5-13.

Documents the potentialities for micros in the future and how their application to robots will greatly decrease blue collar assembly line work. Deals only with change, not consequences.

Hald, Alan P. "Toward the Information-Rich Society." The Futurist 15, 4 (Aug 1981):20-24.

Advanced microcomputer technology will revolutionize the future--particularly in homes where it will monitor and alert subtle changes in the environment.

Leveridge, Leo L. "The Potential of Interactive Optical Videodisc Systems for Continuing Education." Educational and Industrial Television 11, 4 (Apr 1979):35-38.

Describes the advantages of videodisc over videotape, as well as the benefit of optical videodisc as an educational tool permitting random access to information.

Molnar, Andrew R. "Microcomputers and Videodisc: Innovations of the Second Kind." THE Journal: Technological Horizons in Education 7, 6 (Nov 1980):58-62.

Documents growing interest in use of microcomputers in high schools, the home, and science education.

Parks, William R. "What Will Computing Be in 50 Years?" Personal Computing 5, 1 (Jan 1981):24.

Unfolds predictions of how computers will have changed society in the years 2030 and 2080.

Pollack, Andrew. "Next, a Computer on Every Desk." New York Times, Aug 23, 1981, p. 14-15.

With IBM's entry into the personal computer market, the age of the microcomputer is imminent. The "new generation" will be faster and capable of handling more complex tasks, and have larger memories.

Sigel, Efrem, ed. Videotext: The Coming Revolution in Home/Office Information Retrieval. New York: Harmony Books, 1980.

This state-of-the-art written for the lay person looks at teletext, viewdata, and the global experimentation. It argues that as computers combine with the written word, the electronic waves will reverberate through societal institutions. This is not a thought piece but an explanation with extensive and useful appendices.

Sneed, Charles. "The Video Disc Revolution: What's Ahead for Libraries?" Wilson Library Bulletin, 55, 3 (Nov 1980):186-189+.

Describes the potential of videodisc technology and the Massachusetts Institute of Technology Aspen project, while questioning the availability of software and the two giants fighting for control.

Stockton, William. "Creating Computers That Think, Part I." New York Times, Magazine Section, Dec 7, 1980, p. 40+.

Discusses the trends in the current electronic age and warns of the dependency man may place on machines.

Stockton, William. "Computers That Think: Part 2." New York Times, Magazine Section, Dec 14, 1980, p. 48+.

Scientists now believe they have already begun to produce programs that will give machines human-like intelligence, at least in a primitive sense. Artificial intelligence researchers believe that future computers will be capable of highly advanced thinking and will be able to simulate, if not duplicate, a wide range of human emotions.

Sustik, Joan M. "The University of Iowa Intelligent Videodisc Project." Pipeline 5, 3 (Fall 1980).

Describes interactive learning using randomly accessible pictorial, audio, and alphanumeric information with a greater capacity and newer capabilities than previous technologies.

Wagschal, Peter H. "Illiterates with Doctorates: The Future of Education in an Electronic Age." The Futurist 12, 4 (Aug 1978):243-244.

Pleads for a return to basics, not to emphasize the 3 R's, but the goals and skills the 3 R's were intended to serve.

Wicklein, John. Electronic Nightware: The New Communications and Freedom. New York: Viking, 1981.

An exciting glimpse into the potential and present dangers of new interative technologies. Wicklein's strength lies in vivid use of the language and command of the material. His conclusions serve as both a warning and a hope for a coherent United States policy to deal with technology.

Journals

AEDS Journal
The Association for
Educational Data Systems
1126 16th Street, N.W.
Washington, DC 20036
Quarterly ($15/yr. nonmembers)

Boston Computer Update
The Boston Computer Society
Educational Resource Exchange
Three Center Plaza
Boston, MA 02108

Byte
70 Main Street
Peterborough, NH 03458
Monthly ($19/yr.)

Calculators/Computers
DYMAX
P.O. Box 3120, Dept. 42
Menlo Park, CA 94025
Monthly ($12/yr.)

Classroom Computer News
P.O. Box 266
Cambridge, MA 02138
Bimonthly ($9/yr.)

Compute Magazine
P.O. Box 5406
Greensboro, NC 27403
Monthly ($20/yr.)

Computers and Education
Pergamon Press
Maxwell House
Fairview Park
Elmsford, NY 10523
Quarterly ($95/yr.)

Computers and the Humanities
Pergamon Press
Fairview Park
Elmsford, NY 10523
Quarterly ($59/yr.)

Computers and People
formerly: Computers
and Automation
Berkeley Enterprises
815 Washington Street
Newtonville, MA 02160
Monthly ($14.50/yr.)

Computer Graphics and
Applications
National Computer Graphics
Association
2033 M Street N.W., Suite 330
Washington, DC 20036

Computer Shopper
P.O. Box F
Titusville, FL 32780

Computerworld
797 Washington Street
Newton, MA 02160
Weekly ($18)

Computing Teacher
Eastern Oregon State College
La Grande, OR 97850
7 issues/yr. ($14.50)

Conduit
Computation Center
University of Texas at Austin
Austin, TX 78712

Creative Computing
P.O. Box 789-M
Morristown, NJ 07960
Monthly ($20/yr.)

Data Pro Directory of Microcomputer Software
DATAPRO Research Corporation
1805 Underwood Boulevard
Delran, NJ 08075

Dr. Dobb's Journal
1263 El Camino Real
Menlo Park, CA 94025
Monthly ($21/yr.)

Educational Technology
140 Sylvan Avenue
Englewood Cliffs, NJ 07632
Monthly ($49/yr.)

80 Microcomputing
80 Pine Street
Peterborough, NH 03458
Monthly ($18/yr.)

Electronic Education
Suite 220
1311 Executive Center Drive
Tallahassee, FL 32301
10 issues/yr. ($10)

Electronic Learning
Scholastic, Inc.
50 West 44th Street
New York, NY 10036

InfoWorld
530 Lytton Avenue
Palo Alto, CA 94301
Biweekly ($18/yr.)

Instructional Innovator
Association for Educational Communications and Technology
(formerly, Audio Visual Instructor)
1126 16th Street, NW
Washington, DC 20036
9 issues/yr. ($18.00 nonmembers)

Intelligent Machines Journal
345 Swett Road
Woodside, CA 94062
Fortn. ($18/yr.)

Interface Age
16704 Marquardt Avenue
Cerritos, CA 90701
Monthly ($18/yr.)

Interface: The Computer Education Quarterly
Mitchell Publishing, Inc.
116 Royal Oak
Santa Cruz, CA 95066
Quarterly ($24/yr.)

Journal of Computer-Based Instruction
Executive Secretary
ADCIS International Headquarters
Computer Center
Western Washington University
Bellingham, WA 98225
Quarterly ($12/yr. nonmembers)

Journal of Computers in Science Teaching
Association for Computers in Science Teaching
P.O. Box 4825
Austin, TX 78765

Journal of Educational Technology
Baywood Publishing Co.
120 Marine Street, P.O. Box D
Farmingdale, NY 11735
Quarterly ($31/yr. personal;
$51/institutions)

Kilobaud Microcomputing
80 Pine Street
Peterborough, NH 03458
Monthly ($25/yr.)

MACUL Journal
33500 Van Born Road
Wayne, MI 48184

The Mathematics Teacher
National Council of Teachers
of Mathematics
1906 Association Drive
Reston, VA 22091
9 issues/yr. ($28)

Microcomputers in Education
Queue, Inc.
5 Chapel Hill Drive
Fairfield, CT 06432
Monthly ($28/yr.)

OnComputing
Byte Publications
70 Main Street
Peterborough, NH 03458
Quarterly ($8.50/yr.)

Output
Technical Publishing Co.
666 Fifth Avenue
P.O. Box 1172
Radio City Station
New York, NY 10101
Monthly

Peelings II
P.O. Box 188
Las Cruces, NM 88004
9 issues/yr. ($21)

Personal Computing
Circulation Dept.
Benwill Publishing Corp.
1050 Commonwealth Avenue
Boston, MA 02215
Monthly ($14/yr.)

Pipeline
CONDUIT
P.O. Box 388
Iowa City, IA 52244
2 issues/yr.

Recreational Computing
1263 El Comino Real
Menlo Park, CA 94025
Bimonthly ($12/yr.)

Robert Purser's Magazine
P.O. Box 466
El Dorado, CA 95623
$6.00 postpaid; subscriptions not
available.
Note: The Winter 1980 issue
contains a software directory
for TRS-80, Apple II, PET,
and ATARI.

School Microware Directory
Dresden Associates, Dept. CCN
P.O. Box 246
Dresden, ME 04342
Directory, 3 updates ($25/yr.)

School Microware Reviews
Dresden Associates
P.O. Box 246
Dresden, ME 04342
2 issues/yr. ($20 each)

Software Digest
EDP News Services, Inc.
7620 Little River Turnpike
Suite 414
Annandale, VA 22003
Bi-weekly ($98/yr.)

Software Exchange
Box 55056
Vancia, CA 91355

The S-Eighty
6 South Street
Milford, NH 03055

Sigue Bulletin
1133 Avenue of the Americas
New York, NY 10036

T.H.E. Journal
(Technological Horizons in Education)
Information Synergy Inc.
Acton, MA 01720
6 issues/yr. ($15/yr.)

Queue
5 Chapel Hill Drive
Fairfield, CT 06432
$8.95.
Catalog of educational software from 40 publishers for Apple, Atari, PET, and TRS-80 microcomputers.

Author Index