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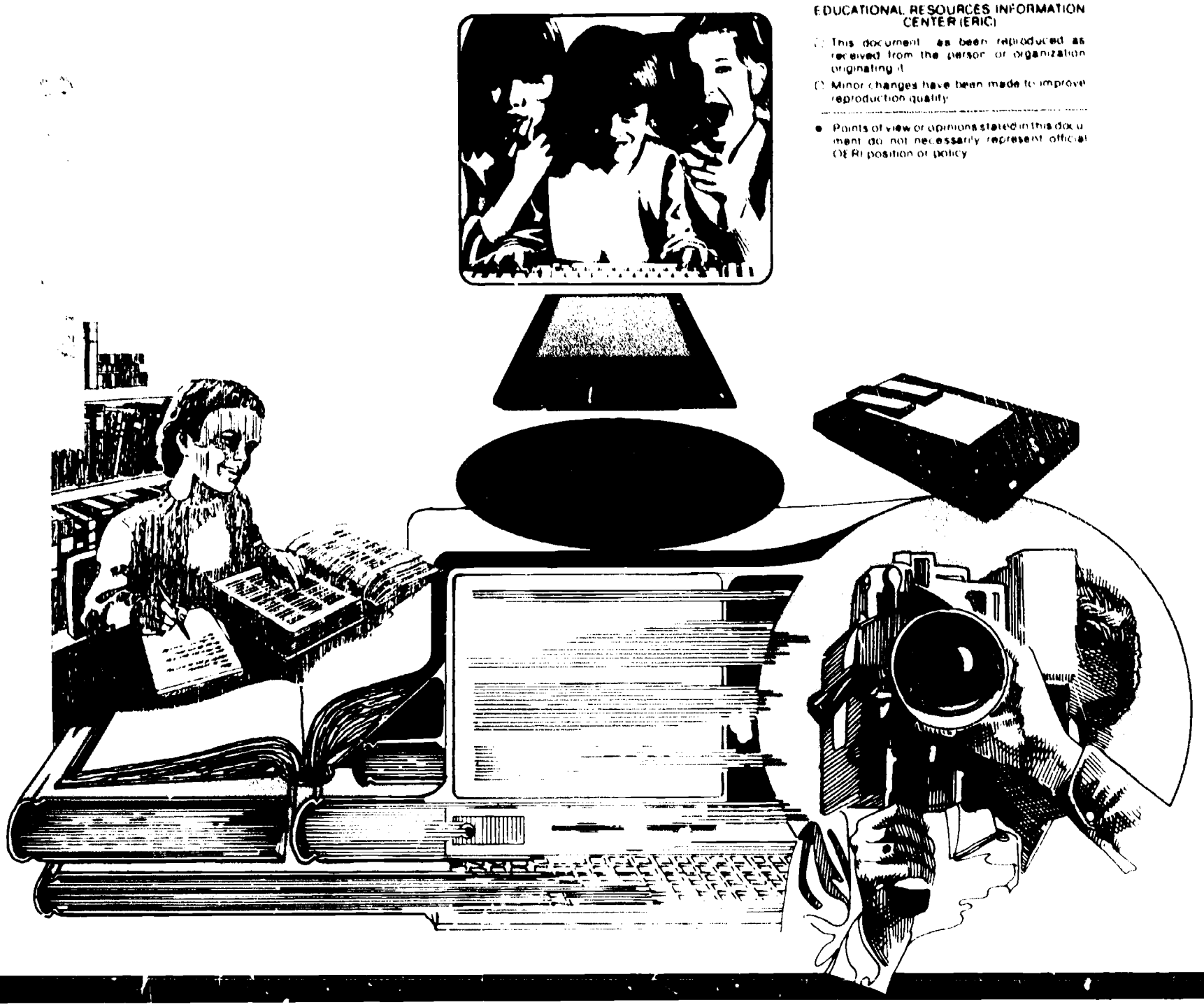
ABSTRACT

This guide provides a framework to assist all Connecticut school districts in planning effective learning resources centers and educational technology programs capable of providing: a well developed library media component; shared instructional design responsibilities; reading for enrichment; integration of computers into instruction; distance learning; access to remote databases; and use of other telecommunications technologies. The first of eight chapters discusses the role of learning resources and technology, and the second details Connecticut's common core of learning, focusing on the language arts, social studies, mathematics, science, selection of materials, instruction, and curriculum development. The process of developing a learning resources and technology program is discussed in the third chapter with emphasis on program planning and the relationship of the program to curriculum. The fourth chapter addresses instructional issues, including organizational skills, selection and use skills, comprehension skills, cooperative planning, instructional use of computers, computer locations, and indicators of success. Instructional communications technology is addressed in the fifth chapter, including distance education, Connecticut sites, instructional television, instructional television fixed service (ITFS), electronic information service, searchable databases, and emerging technologies. Focusing on learning resources, the sixth chapter discusses material selection, building-level collections, cultural diversity, evaluation of collections, print materials, equipment, and facilities. Chapter 7 reviews program management at both the district and school levels, school-level activities and staffing, fiscal considerations, and budgeting for library books and periodicals, nonprint and electronic materials, and equipment. The eighth chapter provides copyright guidelines for educators in the context of off-air copying, software copyrights, fair use for music, public domain materials, and local responsibility. The appendices contain additional information and policy statements on copyright law, computer technology, academic freedom, controversial issues, the universal right to free expression, confidentiality of library records, reevaluation of challenged materials, statewide educational goals for students (1991-95), and certification requirements. References are cited throughout the document. (DB)



A GUIDE TO PROGRAM DEVELOPMENT

LEARNING RESOURCES & TECHNOLOGY

STATE OF CONNECTICUT BOARD OF EDUCATION • 1991

State of Connecticut

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CONTENTS

FOREWORD

The State Board of Education's most fundamental commitment is to educational equity and excellence for all Connecticut students. The depth and richness of that commitment is thoughtfully, thoroughly and forcefully expressed in *Challenge for Excellence: Connecticut's Comprehensive Plan for Elementary, Secondary, Vocational, Career and Adult Education 1991-1995*. This series of curriculum guides, developed for the 1990s, represents an important element in the Board's efforts to achieve Goal VI of its Comprehensive Plan: To Improve the Quality of Instruction and Curriculum.

These books also are published to carry out the State Board's statutory responsibility to "prepare such courses of study and publish such curriculum guides . . . as it determines necessary to assist school districts to carry out the duties prescribed by law." The letter of the law which requires the Board to provide these materials is clear, and clearly important. More important, however, is the manner in which the Board embraces the task of meeting the spirit of the law.

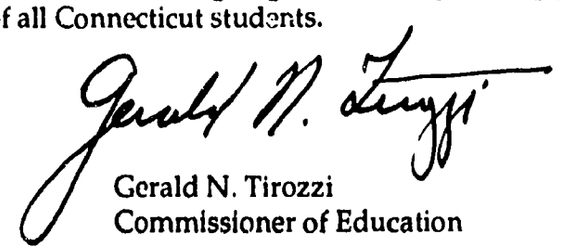
The Statewide Educational Goals for Students 1991-1995 (part of the Comprehensive Plan adopted by the State Board in April 1990) and *Connecticut's Common Core of Learning* (adopted in January 1987) together are the heart and soul of the achievement we envision for all Connecticut students. This vision can only become reality, however, at the district level through the creativity, talents and special understanding that local education professionals and citizens bring to the K-12 curriculum planning process. These curriculum guides are specifically designed to help districts develop state-of-the-art learning programs and opportunities in each of the 11 mandated curriculum areas: the arts; career education; consumer education; foreign language; health and safety; language arts; mathematics; physical education; science; social studies; and vocational education.

In these guides we have endeavored to present meaningful and up-to-date ideas consistent with the State Board's goals for public education. Central to this effort are the convictions that (1) all children can learn and are entitled to an appropriate education; (2) diversity is enriching to school systems and all students benefit from the opportunities that diversity affords; (3) no single method of instruction is adequate to meet the educational needs of all children; (4) schools share the responsibility to maximize the comprehensive development of students; (5) mastery of knowledge and the ability to manipulate ideas are essential to being productive citizens; and (6) schools are but one vehicle through which education can be fostered — the vital role families play in supporting student learning must be recognized and families and the public schools must cooperate effectively to maximize student achievement.

The Statewide Educational Goals for Students, *Connecticut's Common Core of Learning* and these curriculum guides describe what can and should happen in quality K-12 educational settings. This series seeks to firmly establish the principle that the individual student is the beneficiary of these curriculums. The State Board of Education's mission is to educate students to think, explore and apply a variety of knowledge in ways that reward them and that contribute to growth in our society.

The guides have been developed under the direction of subject-area specialists in the State Department of Education, with the assistance of advisory committee members chosen from schools, universities and, in some cases, other agencies or community groups. These individuals have brought to the task a rich variety of experience and a shared commitment to the education of Connecticut students. Procedures suggested in these guides, while strongly recommended, are optional; the content represents expert professional opinion rather than state requirements. (In cases where state statutes prescribe certain content, the appropriate statute is cited.)

It is our hope that these guides will be used as resources in an ongoing curriculum planning process that has as its focus the lifelong achievement and well-being of all Connecticut students.



Gerald N. Tirozzi
Commissioner of Education

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PREFACE

These guidelines for planning, implementing and evaluating learning resources and technology in the teaching and learning process reflect educational reform and the growing realization that the literate individual must not only read and write, but also know how to locate and use information in a wide range of formats. Technology and a plethora of information have changed the way teachers teach and the way students learn.

According to a 1985 report from the Southeastern Educational Improvement Laboratory, students at all levels are increasing their technological literacy and already use video as the communications medium of choice. A great gap exists, however, between print-oriented teachers and today's technology-oriented students. As long as this dichotomy exists, there will continue to be a great difference between teaching methods and preferred learning styles. There is every reason to believe that the use of current and new technologies will advance throughout this nation and the world. At the same time, however, there is great concern in this country over basic literacy and a decline in students' ability to read and interpret the written word.

We have moved from the industrial age through the electronic age and into the information age. Meanwhile, the basic structure of our public schools has been slow to respond to this progression of change. Technology common to the workplace gradually is finding its way into the classroom as a means of providing efficient and effective instruction. In an age in which technology already permeates every important facet of American life and promises to become even more pervasive in the future, it is critical that technology is put to the best possible use in the education of Connecticut's children.

The school library, now the library media center, has been a significant agent of educational reform. The modern library media center not only must have the traditional resources – books and periodicals – but also must incorporate a vast range of nonprint instructional resources and the equipment necessary to use them. These centers have become the point of access to a wealth of information, both in the school and, literally, throughout the world. This dramatic transformation provides the impetus for this guide: a revision of both the Connnecticut State Department of Education's *Guide to School Library Media Programs* (1982) and *A Guide to Computers in Education: Instruction* (1984).

Another indicator of the importance of information resources is the national publication, *Information Power: Guidelines for School Library Media Programs*, published jointly in 1988 by the Association for Educational Communications and Technology and the American Association of School Librarians. Connecticut's new *Guide to Program Development in Learning Resources and Technology* is not intended to replace or duplicate national guides, but rather to extend and interpret them in terms of our own needs and expectations as set forth in *Challenge for Excellence: Connecticut's Comprehensive Plan for Elementary, Secondary, Vocational, Career and Adult Education 1991-1995* and *Connecticut's Common Core of Learning* (1987).

This guide provides a framework to assist all districts in planning effective learning resources and technology programs that provide:

- a well-developed library media component;
- shared instructional responsibilities;
- reading for enrichment;
- integration of computers into instruction;
- distance learning;
- access to remote da.abases; and
- use of other technologies.

Since all schools or districts will not agree on what is common and successful practice in each of these areas, the quality of school library media programs and the integration of educational technology into Connecticut's instructional programs vary widely. This is a resource manual for administrators, board of education members, teachers, library

media specialists and others who are involved in developing or improving this vital area of education. It is specific enough to give direction but flexible enough to allow for differences in individual district goals and structures. This guide will deal specifically with current issues and standards for learning resources and technology.

A fundamental principle for this document is that all learning resources and technologies should be accessible as teaching and learning tools. While segments may be found in the context of separate programs (library media, computer, distance learning) within a school or district, it is essential that all aspects of their use be planned, coordinated and integrated into the teaching and learning process to achieve maximum benefits and greatest application to learning. Planning and coordination are essential for learning resources and technology because of the impact across all grade levels and curriculum areas. No longer are there distinct lines of definition among learning resources and technology components. The interaction of formerly discrete technologies is creating new technologies with applications for education, e.g., the interactive laser videodisc. This technology relies on the computer, video, audio and laser technology working in conjunction with one another to deliver instruction to the user. Telecommunications also encompasses a wide variety of technologies, including print, audio, video and digital resources.

Factors such as school or district size, financial resources, instructional needs and staffing patterns will influence the nature of programs. Successful integration of learning resources and technology in education requires proactive administrators, supportive boards of education and dedicated professionals, all working together to use the best possible means for educating Connecticut's students.

The Learning Resources and Technology Unit staff at the Connecticut State Department of Education is available to assist in the interpretation and implementation of the recommendations contained in this guide.

The Role Of Learning Resources And Technology 1

In order to build a common base for learning resources and technology programs, it is critical to have an understanding of the following definition of educational technology, adopted in 1983 by Connecticut's Joint Committee on Educational Technology, representing the Connecticut State Board of Education and the Board of Governors for Higher Education:

> Educational technology is that aspect of education involved in enhancing learning through the systematic identification, organization, utilization and management of a full range of learning resources.

This definition addresses not only the hardware and software, but also the instructional strategies and delivery systems needed to assure that technology can further Connecticut's educational goals. A full range of learning resources includes all resources brought to bear on the instructional process: fiscal, real and human.

When considering the breadth of the definition, it is clear that educational technology is much more than a collection of materials and hardware cataloged and distributed from a warehouse of information. It also is clear that planning and development activities for learning resources and technology programs require the consideration of staff, curriculum, instructional design, materials, equipment and facilities.

Several examples of research on learning resources and technology not only support the effective use of educational technology, but also confirm the need for a unified, integrated guide to the planning and development of these programs for Connecticut schools. A review of research in the area of learning resources and technology reveals the following:

- Results of a pilot program in Memphis, TN, showed as much as a three-year improvement on standardized tests in mathematics and language arts by students who were provided with access to computers and appropriate software both in school and at home.
- Elaine K. Didier (1982), of the University of Michigan, found that the benefit of full-time library media specialists resulted in increased student attainment in reading and study skills and that the contribution of the library media specialists to the curriculum development process had a positive relationship to student achievement.
- A 1989 study requested by the Senate Committee on Labor and Human Resources found that distance learning affects the educational process in a number of ways. Students reported having to take greater responsibility for their learning and that their experience helped them to make the transition to higher education. Students also reported that they benefited from exposure to a greater range of ideas, peers and teachers made possible through an expanded educational community.
- In a study of five New York City high schools (Zimmerman and Smith, 1987), students – as well as teachers – reported that computer-aided classrooms were more conducive to learning. A majority of students felt that they could learn more easily, felt more in control in the classrooms, and that they both understood and remembered material from computers better. These reports were reinforced by the teachers' perceptions of themselves as being facilitators, rather than purveyors of knowledge. The students were less anxious, and had fewer discipline problems, a greater sense of accomplishment and a better attitude toward the subject matter.
- Mary Sceiford of the Corporation for Public Broadcasting reports in her publication, *The Effectiveness of Television for Learning: Highlights from Summaries of Research* (1985), that both broadcast and recorded television are effective instructional tools.
- John Bransford and Ted Hasselbring (1987), of Vanderbilt University, have found as a result of a two-year project working with students at risk of school failure that the effective use of "off-the-shelf" video and computer software makes a dramatic difference in student performance in mathematics and language arts.
- A 1989 study of over 600 teachers in all 50 states reported the following changes resulted from the integration of computers into instruction: heightened expectations of student work and the ability of the teacher to present more complicated material; increased opportunity to provide individualized instruction; and emergence of student-centered classrooms, with teachers acting more as coaches or facilitators than as dispensers of information (Sheingold and Hadley, 1990).

School library media, computer education, distance learning or other technology programs functioning independently of each other and of the curriculum no longer are enough to meet the challenges facing education in Connecticut. Through the integration of these components of learning resources and technology, as well as planning for future technologies, schools can meet the needs of students and teachers as well as the expectations of the citizens of this state.■

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CONNECTICUT'S COMMON CORE OF LEARNING 2

Language Arts
Social Studies
Mathematics
Science
Selection of Materials
Instruction
Curriculum Development

The Connecticut State Board of Education, through *Connecticut's Common Core of Learning* (1987), established a vision of what all Connecticut high school graduates should know and be able to do. The Common Core is not intended to be a curriculum or set of instructional strategies, but rather a standard for an educated citizen. As its preamble states, the Common Core "represents preparation for life. It consists of abilities that are necessary not just for employment and further education, but also those that are essential to becoming a productive and contributing member of society."

Connecticut's Common Core of Learning is organized under three major headings, with subheadings that reflect significant groups of skills, knowledge and attitudes:

Attributes and Attitudes
- self-concept
- motivation and persistence
- responsibility and self-reliance
- intellectual curiosity
- interpersonal relations
- sense of community
- moral and ethical values

Skills and Competencies
- reading
- writing
- speaking, listening and viewing
- quantitative skills
- reasoning and problem solving
- learning skills

Understandings and Applications
- the arts
- careers and vocations
- cultures and languages
- history and social sciences
- literature
- mathematics
- physical development and health
- science and technology

Many Common Core outcomes refer to specific subject areas. An effective learning resources and technology program will have particular impact as the outcomes are approached in an interdisciplinary and multidisciplinary fashion. Additionally, achievement of Common Core outcomes will be influenced directly by the quality and effectiveness of learning resources and technology programs as outlined in the following skills and competencies.

Intellectual curiosity – to "demonstrate a questioning attitude, open-mindedness and curiosity;" and to "pursue lifelong learning." Learning resources and technology programs will provide students with the skills and resources that enable them to satisfy independently their intellectual curiosity. While the school library media center long has been known as a laboratory for exploring diverse ideas and issues, advances in technology now enable students to access information far beyond a school's walls. This ability to use a variety of technologies to locate information is a basic skill in our information-intensive society.

Reading – to "make critical judgments about written work including separating fact from opinion, recognizing propaganda, stereotypes and statements of bias, recognizing inconsistency and judging the validity of evidence and sufficiency of support;" and to "use the features of books and other reference materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix and bibliography." Learning resources and technology programs expand classroom instruction to include making critical judgments about materials regardless of format or delivery system. They also reinforce and promote application of skills in using the various features of both print and nonprint information sources for decision making.

Writing – to "gather information from primary and secondary sources; write a report using that information; quote, paraphrase and summarize accurately; and cite sources properly." Library media centers are access points for most of a school's instructional resources, from which students gather information for research. This information is available not only from books and other printed materials, but also from films, video- and audiotapes, computer and/or disk technology, people, remote databases and networks. In addition, the learning resources and technology program provides instruction and access to technology and materials which are designed to enhance student writing skills.

Speaking, listening and viewing – to "identify and comprehend the main and subordinate ideas in speeches, discussions, audio and video presentations, and report accurately what has been presented; comprehend verbal and nonverbal presentations at the literal, inferential and evaluative levels." An effective program of learning resources and technology skills instruction will include lessons on comprehension and interpretation of information presented orally and visually. Students need these skills to make optimal use of the full range of information available to them.

Reasoning and problem solving – to "gather, analyze, synthesize and evaluate information pertinent to the problem;" and to "use critical and creative thinking skills to respond to unanticipated situations and recurring problems." Learning resources and technology programs provide instruction and resources that assist students in developing critical thinking patterns, problem-solving skills and information search strategies.

Learning skills – to "locate and use a variety of sources of information, including print and nonprint materials, computers and other technologies, interviews and direct observations;" and to "read or listen to specific information and take effective and efficient notes." A major goal of learning resources and technology programs is to provide instruction in the skills students need to become lifelong learners. Effective programs provide equipment and resources in sufficient breadth and depth to allow students of all ability levels to achieve these outcomes.

History and social sciences – to "apply critical thinking skills and knowledge from history and the social sciences to the decision-making process and the analysis of controversial issues in order to understand the present and anticipate the future." Learning resources and technology programs provide sufficient print and nonprint materials (historic and current) to allow students to examine all aspects of a controversial issue.

Literature – to "enjoy reading as a lifelong pursuit." Through learning resources and technology programs, children and young adults are introduced to extensive reading materials which can satisfy their reading needs for leisure and information. Students should experience reading options beyond textbooks so that, in addition to knowing how to read, they will want to read.

Mathematics – to "select and use appropriate approaches and tools for solving problems, including mental computation, trial and error, paper and pencil, calculator and computer." Mathematics software allows computers to be used for drill and practice, computer-assisted instruction, simulation, games and problem solving. Supplementary activities adapted to meet each student's needs can be designed through cooperation between the learning resources and technology professional and the classroom teacher.

Science and technology – to "understand the implications of existing and emerging technologies on our society and our quality of life, including personal, academic and work environments;" and to "recognize the potential and the limitations of science and technology in solving societal problems." Learning resources and technology programs continually provide for the evaluation of emerging technologies to determine potential application to the teaching and learning process. Program components are coordinated to assure that each student has an opportunity to learn to use the technology available for the present and to obtain the skills needed for literacy in a changing society. The program also provides flexible access to facilities and resources necessary for students to apply skills learned through formal instruction.

The achievement of student outcomes found in *Connecticut's Common Core of Learning* will require change throughout the educational community. Learning resources and technology professionals must be at the forefront of a district's efforts to develop and implement strategies designed to meet the challenges of the Common Core. This process begins with a clear look at the philosophies and approaches to instruction. Examples of subject-area initiatives and how the learning resources and technology program can become integrated into four specific curriculum areas – language arts, social studies, mathematics and science – follow.■

Language Arts

Literacy is basic to a democratic society. It also is a basic tool for survival in an information-intensive society. While information is available in impressive quantities and ranges of format, educators and parents often express concern that many students lack the skills necessary to read, understand and communicate successfully. In response to these and other educational issues, educators are taking a close look at the delivery of instruction and are exploring ways to restructure the environment in which teaching and learning take place. *Whole language* is gaining acceptance as a philosophy of learning that gives new vitality to reading/language arts programs. Although *whole language* has been defined in a variety of ways, it essentially is a set of beliefs about language learning. At the heart of a *whole language* initiative is the desire to have students experience language as a whole, through the use of authentic language experiences which include reading, writing, listening and viewing.

As reading/language arts programs are redesigned or restructured, it becomes essential for each school to invest in its own learning resources and technology program to provide a sufficient quantity of instructional materials in a range of formats to support the curriculum changes. As classroom teachers are encouraged to be flexible in their approaches to teaching reading/language arts and to implement *whole language* environments, school learning resources and technology professionals should become essential partners in the process. Library media and computer specialists are knowledgeable in the field of childrens' literature and educational software and also are trained in instructional design.

When teachers become less reliant on the basal text for teaching reading, there is a corresponding increase in the dependence on trade books and other commercial materials for instruction and independent reading, viewing, writing or listening. When a library media center collection is of high quality, it becomes a primary resource for keeping classroom collections fresh and relevant. Student abilities and interests change and grow throughout a school year. Classroom collections can evolve in response to these changes as well as support

new topics of instruction when teachers borrow materials on a rotating basis.

When goals of *whole language* learning include developing a lifelong love of books and a desire to read and learn, students will need to build confidence in their abilities to locate the books and other materials they have grown to love. While classroom collections are convenient and can introduce children to good literature, students also should learn the organization of the library media and technology centers and the skills that will enable them to efficiently, purposefully and independently locate materials for completing research projects or simply locate another title by a favorite author.

Learning resources and technology professionals should encourage reading both in school and at home. Through such activities as reading motivation programs, book talks, contests, parent training, author visits, storytelling, computer programs, and other reading, listening or viewing activities, *whole language* efforts of the classroom teacher can be strengthened.■

Social Studies

"For the United States to cope successfully with its own domestic problems and to participate effectively in world affairs, its leaders and citizens must have a coherent understanding of the Earth's regions and peoples. In the United States, most educational programs today have failed utterly to provide such a structured knowledge of the world. To counteract the prevailing geographical illiteracy, major changes need to be made in precollege programs and in technical and professional training...."

Although this statement was made over two decades ago (Association of American Geographers, 1965), Americans in the 1990s remain concerned over elementary and secondary students' lack of knowledge not only about the world, but also about our own nation. Educators are responding to this challenge to expand geographic perspective, provide sufficient, relevant information and to train students in the concepts, skills and processes they need to better understand their places in the world. Organizations such as the Connecticut Geographic Alliance have as their mission equipping teachers for more effective geographic instruction by providing leadership training, workshops that focus on important geographic issues and developing materials for instructional use. One of the Alliance's goals for Connecticut is "to promote student learning of the five themes of geography (location, place, human/environment interactions, movement and regions) through curriculum materials and classroom instruction."

Guidelines for Geographic Education: Elementary and Secondary Schools (1984) elaborates on these five themes and suggests ways for them to be integrated into the curriculum. The themes, which are reprinted with permission, can be defined as follows:

Location: position on the Earth's surface. Absolute and relative location are two ways of describing the positions of people and places on the Earth's surface.

Place: physical and human characteristics. All places on the Earth have distinctive tangible and intangible characteristics that give them meaning and character and distinguish them from other places. Geographers generally describe places by their physical or human characteristics.

Relationships within places: humans and environment. All places on the Earth have advantages and disadvantages for human settlement. High population densities have developed on flood plains, for example, where people could take advantage of fertile soils, water resources and opportunities for river transportation. By comparison, population densities are usually low in deserts. Yet flood plains are periodically subjected to severe damage, and some desert areas, such as Israel, have been modified to support large populations.

Movement: humans interacting on the Earth. Human beings occupy places unevenly across the face of the Earth. Some live on farms or in the country; others live in towns, villages or cities. Yet these people interact with each other: that is, they travel from one place to another, they communicate with each other or they rely upon products, information and ideas that come from beyond their immediate environment. The most visible evidences of global interdependence and the interaction of places are the transportation and communication lines that link every part of the world. These demonstrate that most people interact with other places almost every day of their lives. This may involve nothing more than a Georgian eating apples grown in the State of Washington and shipped to Atlanta by rail or truck. On a larger scale, international trade demonstrates that no country is self-sufficient.

Regions: how they form and change. The basic unit of geographic

study is the region, an area that displays unity in terms of selected criteria. We are all familiar with regions showing the extent of political power such as nations, provinces, countries or cities, yet there are almost countless ways to define meaningful regions depending on the problems being considered. Some regions are defined by one characteristic such as a governmental unit, a language group, or a landform type, and others by the interplay of many complex features. For example, Indiana as a state is a governmental region, Latin America as an area where Spanish and Portuguese are major languages can be a linguistic region, and the Rocky Mountains as a mountain range is a landform region. A geographer may delineate a neighborhood in Minneapolis by correlating the income and educational levels of residents with the assessed valuation or property and tax rate, or distinguish others by prominent boundaries such as a freeway, park or business district. On another scale we may identify the complex of ethnic, religious, linguistic and environmental features that delineate the Arab World from the Middle East or North Africa.

From *Guidelines for Geographic Education: Elementary and Secondary Schools.* Association of American Geographers and National Council for Geographic Education, 1984. Used with permission.

Whether geography is taught as a discrete subject or integrated across the curriculum, it must be supported by a wide range of learning resources and technology that will contribute to a student's sense of place in the world and enable him or her to begin interacting with that world in a meaningful way. Through these resources, geography can come alive, not only through expanded reading or research, but also by what is seen and heard through on-line communications with the people of the world. Innovative projects, such as the National Geographic Kids Network, allow students and teachers to collaborate on scientific investigations that involve collecting data from diverse locations and then sharing that data with students in other countries through telecommunications and computer-generated maps and charts.

Other visual resources, such as the instructional television series *Global Geography*, are based on the five fundamental themes of geography and use a visual format to help students think their way through geographical issues while broadening their understanding of other places and people.

Children's literature, storytelling, videos or records can be used to enhance geographic literacy when they are accompanied by discussions that focus on geographic themes. Children can begin to understand another place by enjoying stories or music from that culture or when they are able to make the connection on a map or globe. Learning resources and technology professionals often are able to locate and suggest ways to incorporate instructional resources into the classroom experience.

When materials beyond the textbook and even beyond the school building are integrated into the social studies curriculum, the learning resources and technology professional will play a more active role as instructor and facilitator of teaching and learning.■

Mathematics

Mathematics is in a state of transition. As stated in *Everybody Counts: A Report to the Nation on the Future of Mathematics Education* (1989), "Several factors – growth of technology, increased applications, impact of computers and expansion of mathematics itself – have combined in the past quarter century to extend greatly both the scope and the application of the mathematical sciences. Together, these forces have created a revolution in the nature and role of mathematics – a revolution that must be reflected in the schools if our students are to be well prepared for tomorrow's world." Though literacy – being able to read and write – long has been considered a basic competency for an educated citizen, *numeracy* – the ability to cope confidently with the mathematical demands of adult life – is increasing in importance as a measure of an educated person.

Of all disciplines, mathematics traditionally has been most closely aligned with prescribed texts and work sheets, with little, if any, interdisciplinary application or use of supplementary resources. The last decade, however, has seen tremendous growth in materials available to teach and help students to understand the importance of acquiring math competencies. Resources such as calculators, computer programs, math manipulatives and instructional television programs have given a new dimension to mathematics. The effect on mathematics education is reflected in three transitions outlined in *Everybody Counts* (1989).

- The teaching of mathematics is shifting from preoccupation with inculcating routine skills to developing broad-based mathematical power.

- The teaching of mathematics is shifting from emphasis on p' paration for future courses to greater emphasis on topics that are relevant to students' present and future needs.
- The teaching of mathematics is shifting from primary emphasis on paper-and-pencil calculations to full use of calculators and computers.

In order to internalize and use mathematics, students must have ample opportunity to apply the mathematical skills and concepts they have learned in the classroom to other disciplines and to real-life problem solving. Learning resources and technology programs and facilities offer the resources that enable practice and exploration, giving a broader perspective and practical application to mathematics. They also can provide the means to communicate with mathematics in practical ways, such as through the production of computer-generated graphs or charts to illustrate a paper or oral presentation. Learning resources and technology professionals are trained in instructional design and should be available to assist teachers in creating interdisciplinary units of instruction. These learning opportunities will complement, but also go beyond the textbook, to resources and technology that are more akin to those that students will encounter in the world of work or advanced studies.■

Science

Paralleling the goals for literacy in the areas of language arts, social studies and mathematics is the desire for schools to produce scientifically literate citizens who possess a working knowledge of science, scientific inquiry and the impact of science in the context of society. Reform in science education involves more emphasis "... on the process of scientific inquiry and the development of concepts rather than the mere memorization of a body of facts" (*A Guide to Curriculum Development in Science*, 1991) and an effort to integrate science with other subject areas, particularly mathematics and language arts. For example, computer programs with probes allow students to use mathematics skills to measure, record data and analyze results using mathematical calculations. In other instances, computer programs are merged with video or CD-ROM discs to assist students in experimentation, specimen identification or data analysis.

There is a natural alliance between science and the language arts. Just as a *whole language* philosophy takes children from a regimented, strictly sequential study of language skills to more authentic language experiences, so modern science programs are departing from rote memorization of scientific facts in favor of developing real science experiences that teach concepts and give a framework for inquiry. Since children are generally familiar with and enjoy stories, children's literature, both fiction and nonfiction, is a natural medium to introduce science concepts and applications. The public television series *Reading Rainbow* has included nonfiction science books for children in its programming during recent years for this purpose. Learning resources and technology collections should include computer programs, books and other materials that enable students to pursue science-related hobbies or interests such as rock collecting, pet care or model building.

Learning resources and technology centers house or provide access to a wide range of up-to-date print, nonprint and electronic resources that facilitate and expand upon classroom learning. Library media centers or computer facilities permit students to explore independently or in small groups the concepts of science introduced in the classroom. There are books, periodicals, videotapes, videodiscs, CD-ROMs, computer programs and on-line databases that give depth to an area of interest or inquiry. Learning resources and technology professionals also are dedicated to teaching students and teachers how to locate, evaluate and use the wide range of resources available within the school or from other sources.

In nearly all curriculum areas there is an emphasis on the practical application of knowledge, the process of locating and using information and the interrelationship of all subjects. Learning resources and technology programs extend the classroom to a larger world of information, where these concepts can be taught, where skills and concepts are applied to the use of diverse formats, and where media are interpreted, combined or merged to communicate or solve problems. Specific resources and skills used may vary from subject to subject, but there are three major ways in which learning resources and technology professionals and programs should support these and other curriculum initiatives: selection of materials, instruction and curriculum development.■

Selection of Materials

A major goal for learning resources and technology programs is to develop collections of materials of such breadth and depth that they will ensure all students access to a wide variety of resources. Quality collections are adequate in size, breadth, depth and diversity of format to enable students of varying abilities to complete classroom assignments and explore areas of personal interest. Collections also may contain duplicates of some

classroom materials, such as math manipulatives or computer programs, that can be checked out and taken home. Learning resources and technology professionals often are able to supplement the school collection by obtaining books and other materials through interagency loan or from on-line databases. In many cases, the school library media, computer or telecommunications centers are the only such facilities that children are able to use on a regular basis. Great care should be taken to develop them so that they foster a positive attitude toward reading, listening, computing, writing and viewing.

On the practical side, it is advantageous to coordinate the purchase of trade books, software and other resources and equipment through the learning resources and technology program, as unnecessary duplication of orders can be identified and an accurate inventory of all learning resources available in the school can be maintained. Learning resources and technology professionals also can frequently get a discounted price on reading, viewing, computing, writing or listening materials through larger orders to a book jobber, or by pursuing site licenses or cooperative acquisitions programs.■

Instruction

Instruction in learning resources and technology has two facets: development of lifelong skills necessary to locate, evaluate and use information available from a library media center or computer database, and the cooperative planning and delivery of units that incorporate literature and other learning resources in a less-traditional fashion.

The learning resources and technology facilities, equipment and collections should become an extension of the classroom. Research indicates that location and use skills are learned most effectively in conjunction with a need to know them. When classroom teachers and learning resources and technology professionals work together, it is possible to cooperatively design units of instruction that incorporate a variety of materials, while at the same time allowing students opportunities to practice the skills for locating and using information that will facilitate learning throughout their lives. This instructional partnership is essential if resources and technology truly are to be integrated into instruction.■

Curriculum Development

The learning resources and technology specialist can be an asset to curriculum teams because of his or her familiarity with the extensive range of resources available to support instructional and recreational learning, and with effective strategies for integrating these resources and technologies into teaching and learning. No curriculum or unit exists solely as an idea or plan, but must be implemented through teacher effort and support materials, many of which will be located in the library media, computer or telecommunications facilities.

By including the learning resources and technology professional in the planning stages, existing resources that support the new initiatives can be evaluated, realistic budget requests for new materials can be developed and new programs can be incorporated into the collection-development plans so that sufficient resources are available when the new units of instruction are taught. This reduces frustration for students who, as a result of a failure to plan, may be unable to complete assignments that require research or finding books to read. It also provides time for preview of potentially useful materials in order to make the best selection.

Text-based instruction is rapidly being replaced by interdisciplinary, resource-based learning; learning that should develop into a way of life. Flexible approaches to instruction require creative thinking, financial commitment and new educational alliances. The learning resources and technology professionals must become partners in the instructional process if educational goals are to be realized. The beneficiaries of these collaborative efforts are the students who will learn and grow in a resource-rich environment.■

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THE PROGRAM DEVELOPMENT PROCESS 3

Program Planning
Relationship To Curriculum

District and individual school learning resources and technology programs cannot exist in isolation if they are to effectively support and become integrated into teaching and learning. They also must move beyond enrichment in order to become integral components of the educational process.

Bringing these programs into the educational mainstream means that learning resources and technology professionals need to work in partnership with other educators, especially classroom teachers. This partnership provides for an exchange of ideas and expertise, leading to a richer and better-organized curriculum as well as the quality learning resources and technology programs required for an education of excellence for our youth. While some districts have made substantial progress toward achieving this interaction, others should be working to correct situations where components of the educational program either are absent or operate independently.

The processes recommended in the current edition of the Connecticut State Department of Education's *Guide to Curriculum Development: Purposes, Practices and Procedures* provide an excellent mechanism for increased involvement by library media specialists and other technology staff in curriculum development. This publication recommends establishing a curriculum council to oversee the curriculum development process. Such a council should include representatives of several groups, including administrators, community members, students and teachers who have indicated a particular interest and expertise in curriculum issues. One or more learning resources and technology professionals should serve on the curriculum council as well as on individual subject-area curriculum committees.■

Program Planning

The first step in developing a learning resources and technology program -- the same as in building a subject-area curriculum – is to appoint an advisory committee to oversee the process. The primary purposes of the committee are to provide a link between the learning resources and technology program and other members of the educational community and to give those served an opportunity to participate in the planning, implementation and evaluation of the program's services.

Formation of the advisory committee should be initiated by the district-level person with overall responsibility for learning resources and technology. The committee should include but not be limited to representatives from the following constituencies:

- school library media specialists;
- computer or other technology teachers;
- administrators (school and district);
- classroom teachers and department chairpersons;
- students;
- parents;
- school board members; and
- public librarians.

Members should be recommended by the district learning resources and technology staff or be volunteers who have an interest in the field. The terms of appointment should be sufficient to ensure continuity, but also to provide for the periodic appointment of new members. Building-level advisory committees should be organized in a similar pattern, by the school's library media or technology specialist.

The role of the learning resources and technology advisory committee must be defined locally, since individual district circumstances such as enrollment, status of curriculum and level of program development vary. For example, the level of program development will influence the responsibilities assigned: new programs will require more planning, while established programs will necessitate concentration on evaluation and revision. A large district may find it more manageable to form subcommittees to deal with areas of specialization within the broad area of learning resources and technology.

Tasks assigned to the learning resources and technology advisory committee include the following:

- formulating goals and objectives;
- evaluating the program;
- gathering and analyzing information about the needs and expectations of constituent groups (users);
- pursuing and evaluating opportunities for networking and resource sharing;
- determining priorities for services;
- long-range planning and budgeting;
- developing, reviewing and revising learning resources and technology policies; and
- other tasks as determined by local needs.■

Relationship To Curriculum

The process of developing learning resources and technology programs should be consistent with and integrated into the curriculum development process. Both involve a systematic approach that includes the following phases:

- analysis
- planning
- design

- implementation
- evaluation
- revision

There is, however, one difference. The subject-area curriculum development process results in a curriculum based on student outcomes, i.e., learning objectives. Learning resources and technology programs, meanwhile, have four distinct components in need of consideration, including:

- consultation
- instruction
- management
- service

The advisory committee will play an important role in each phase, but committee involvement is critical in analysis, planning and evaluation. While committee members will be helpful in program design and implementation, these areas demand the day-to-day attention and expertise of learning resources and technology professionals. All elements of program development are, in fact, ultimately the responsibility of district-level directors and/or building-level learning resources and technology professionals. A brief description of the fundamental aspects of the planning process follows:

Analysis. Systematic development of a learning resources and technology program requires analysis of current programs in terms of curriculum, personnel, professional development, services, collections, facilities and equipment. An analysis can be carried out by using published evaluation instruments, consultant services or locally developed questionnaires. Implied in this component is the process of conducting a needs assessment to determine program user desires, expectations, abilities and opportunities for incorporating learning resources and technology into the instructional process. When possible, it is both practical and effective to conduct the analysis of current resources and a needs assessment of the program as each curriculum is reviewed.

Planning. This phase should begin with a review of the district's educational philosophy, goals and objectives. An effective learning resources and technology program is integrated into the total educational program. Therefore, the philosophy, goals and objectives for the overall curriculum – as well as for individual subject areas – should be reflected. Key elements for planning include development of the following:

- A statement of philosophy, defining the program's purpose. This statement should be consistent with the district's educational philosophy and with what is considered to be good practice within the learning resources and technology field.
- A list of goals to bridge the program philosophy and specific objectives. For learning resources and technology programs there will be goals for consultation, instructional outcomes, program management and services.
- A series of objectives which will provide the foundation for building and evaluating the learning resources and technology program.

Design. Program design involves a comparison of current resources and activities with those required to implement the objectives. The district's educational goals and objectives will determine the need for acquisition of materials and equipment, staffing patterns and the initiation of activities. The advisory committee should recommend priorities and a time line for their implementation.

Implementation. Activities for achieving many objectives can begin as soon as necessary resources are obtained. In other cases, such as the offering of a new service, it may be necessary to train teachers, do a pilot test and evaluate the new service prior to full-scale implementation.

Evaluation. Management, instruction and services of learning resources and technology programs should be evaluated on a regular schedule. Evaluation results can be used to identify unachieved objectives and activities that require modification in response to changes in the curriculum, class offerings or characteristics of the school population.■

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Organizational Skills
Selection and Use Skills
Comprehension Skills
Cooperative Planning
Instructional Use of Computers
Computer Locations
Indicators of Success

A vital component of any learning resources and technology program is instruction in those skills and competencies that will enable students to use information resources effectively. Instruction may take two forms: cooperatively developed and integrated instruction across discipline lines, and direct instruction in such skills as word processing.

In either situation the teaching of learning resources and technology skills should relate to the existing curriculum goals and objectives and be provided in a planned, ongoing and systematic manner. While it is the responsibility of each local school district to develop a scope and sequence that meets the needs of its unique student population, there are some common outcomes that characterize a literate citizen.

Attitudes and attributes. High school graduates should:

- have confidence in their abilities to locate and use information in a variety of formats to satisfy intellectual curiosity, life needs and enjoyment of leisure time;
- be confident and responsible users of information and information technologies;
- understand the social, economic and ethical issues related to the uses of computers and other technologies;
- be cognizant of the varied strategies and mechanisms for using information and technology for problem solving;
- be able to clarify their personal information needs and assume responsibility for meeting those needs through appropriate sources;
- value and pursue lifelong learning through a variety of information resources and technologies;
- acknowledge that information collections and technologies are rich sources of materials that promote cultural literacy, multicultural awareness and interpersonal understanding; and
- appreciate reading for enjoyment.

Competencies. High school graduates should be able to:

- locate independently and use a variety of print and nonprint resources for information and leisure needs;
- employ a systematic approach to problem solving and research;
- identify the unique characteristics of a variety of literary genres, print and nonprint formats;
- use computers and other technologies as information tools;
- apply basic knowledge of the physical organization of a library media center;
- operate equipment necessary to use information resources;
- read, view and listen critically and analytically;
- use the features of books and other media to determine content and usefulness;
- select materials and synthesize information in a variety of resources and formats that are appropriate to an identified need or interest;
- communicate information in alternate formats;
- search for, evaluate and interpret information in general and specialized reference materials; and
- employ computer/technology application skills for problem solving or communication.

Skills. Individual skills are the building blocks for developing the attitudes, attributes and competencies each student needs in order to function in an information-intensive society. Although some of these skills are unique to library media or computer education, most are related to skills already incorporated into various subject-matter curriculums. Consequently, instruction in these skills is the shared responsibility of the learning resources and technology staff and classroom teachers. Research indicates that these skills are learned most effectively when they are associated with needs or tasks.

Learning resources and technology skills that contribute to student learning as well as to the pursuit of personal interests are listed below and on pages 19 and 20. These skills are presented in three levels, those suggested by the end of Grade 5, those for middle school/junior high and those recommended by the completion of high school.■

Organizational Skills

By the end of Grade 5 a student should be able to:

- identify areas of the library media center and other technology facilities in the school;
- identify basic media formats such as print, nonprint and electronic;
- observe media center and computer facility procedures;
- check out and return materials without assistance; and
- locate and use reference materials.

By the end of middle school/junior high a student should be able to:

- identify and locate a wider range of reference materials; and
- understand the concept of the reserve system.

A high school graduate should be able to:

- identify and use interlibrary loan procedures;
- identify local, regional and national databases and procedures for using them;
- identify and use government documents; and
- identify technological advances in communications and their potential impact on learning.■

Selection and Use Skills

By the end of Grade 5 a student should be able to:

- select materials of interest and at an appropriate ability level;
- select and use a variety of media formats;
- listen to a storyteller, radio, record or audiocassette;
- distinguish among fiction, nonfiction and reference collections;
- describe and use specific parts of a book;
- identify and interpret basic symbols on maps, globes and atlases;
- load, save, retrieve and print information in a computer system;
- demonstrate the use of computer input devices;
- interpret simple charts and graphs;
- alphabetize by word;
- select appropriate equipment for using nonprint or electronic resources;
- use television as a source of information;
- develop, evaluate and manage one's viewing habits;
- describe advertising arguments and information techniques used in magazine, radio and television commercials; and
- browse purposefully to select materials.

By the end of middle school/junior high a student should be able to:

- use menus to locate information on computer software, CD-ROM or laser disks;
- begin classifying materials by literary genre;
- identify basic operational parts of a computer, peripherals and their functions;
- begin selecting appropriate software to accomplish specific tasks;
- use the card or on-line catalog to locate materials by title, author or subject;
- use "see" and "see also" references;
- use computer programs to locate and process information;
- demonstrate keyboarding proficiency;
- use word processing to create, edit, save and print text;
- use resources from the public library or other libraries in the community;
- use a video camera; and
- operate any equipment necessary to use the nonprint or electronic resources in the school.

A high school graduate should be able to:

- develop and use personal criteria for evaluating and selecting materials that are appropriate as to accuracy, breadth and depth of detail; format; illustrations and special features; level, content and purpose;
- use listening and viewing skills in selecting and evaluating materials;
- use advanced indexes;
- use special dictionaries;
- use special encyclopedias;
- use special references;
- create, sort and search for information using a database;
- use specialized reference tools associated with various disciplines;
- use a copy stand or visual maker;
- use on-line bulletin boards, databases and electronic retrieval services; and
- use key word descriptors and Boolean logic to perform on-line or CD-ROM searches.■

Comprehension Skills

By the end of Grade 5 a student should be able to:

- categorize information into appropriate subjects;
- analyze what is seen or heard;
- identify an appropriate source of information for a specific purpose;
- classify television and radio programming by type;
- become acquainted with "classic," award-winning literature, films, recordings and the arts;
- describe ways that computers and other technologies are used in our daily lives; and
- produce visuals.

By the end of middle school/junior high a student should be able to:

- distinguish among various computer applications;

- understand that copyright regulations are applicable to printed and audio materials, computer programs and other electronic information;
- organize information gathered from a variety of sources, including generalizing or summarizing information; making an outline; taking notes from print, nonprint and electronic presentations; and writing a simple bibliography;
- differentiate between fact, make-believe and opinion in television and radio programming;
- discern stereotypes and biases read, heard or viewed;
- present creative ideas through student-produced media;
- use the computer as a communications tool;
- operate simple equipment for production or presentation;
- discern propaganda techniques used in advertisements;
- recognize biases and stereotypes in materials;
- use critical evaluation skills in television viewing; and
- compare and contrast television programming components with those of a novel.

A high school graduate should be able to:

- compile information from a variety of sources for reports, papers or products;
- use footnotes and bibliographies for information and documentation;
- determine currentness and appropriateness of materials;
- understand and adhere to copyright regulations for printed, video, audio, computer programs and other electronic information;
- use the computer to solve problems, conduct research and perform other applications as appropriate;
- apply evaluation criteria to all types of resources – including accuracy, realism and truth; appropriateness of format; biases and stereotypes; continuity and currentness;
- understand means for influencing television offerings;
- prepare a storyboard;
- combine media formats for a presentation;
- prepare extensive bibliographies;
- use photography to communicate;
- interview for information; and
- use advanced skills such as computer programming and film, audio or video editing.

Skills are not assigned to a specific grade level, but rather to a range of grades, due to the following:

- The most appropriate time for instruction in a particular skill will vary among districts.
- Instruction should be related to need.
- A rigid learning resources curriculum leads to instruction in isolation and an inappropriate amount of time spent on instruction.
- Students in different courses will need different skills for locating and using information.

As a result of these considerations, a learning resources and technology scope and sequence, or curriculum, should be developed within each school district. Each district must determine which individual skills are essential for effective student learning, while keeping in mind overall student outcomes. Regardless of the skills taught, each must be related to the school curriculum and integrated into the teaching and learning process. While a learning resources and technology curriculum is developed under the direction of the professional staff in this area, it is implemented cooperatively with classroom teachers. This teacher partnership will enhance and expand classroom instruction, bring relevance to both the available learning resources and curriculum content, strengthen information skills necessary to use a variety of resources, and accommodate individual student abilities and learning styles.■

Cooperative Planning

The learning resources and technology professional(s) and classroom teacher(s) meet well in advance of the anticipated time of instruction to plan the lesson together. During the initial session the following activities should take place:

- Lesson objectives and student outcomes should be identified for each area.
- Unit objectives should be established and options for activities and teaching strategies discussed and agreed upon.
- Responsibilities for direct and reinforcing instruction should be assigned.

Following the planning meeting, all instructors should begin to pursue the development of their respective portions of the unit. The learning resources and technology professional(s) must identify, locate and, if necessary, obtain the resources necessary for the delivery of instruction, enabling students to complete the agreed-upon assignments. In planning for the location of resources, consideration must be given to the number of students involved in the learning activity; ability levels, interests

and special needs of the students; technology; media format options and a time line.

Instructional Uses of Computers

Computers have become an integral part of modern education. Computers have their greatest impact on teacher effectiveness and student learning when they are viewed and used as learning tools in subject-area instruction across all grade levels. When computers and other technologies become infused into classroom instruction, they can:

- serve as instructional vehicles, both for individual students and larger groups;
- assist in providing equity in the educational process;
- enhance experiential learning for students at all ability and grade levels;
- encourage exploratory, creative and rewarding learning activities;
- motivate students to learn; and
- provide information and instruction to students of different ability levels.

Computers are being integrated into instruction from kindergarten through Grade 12 in virtually all subject areas. Typical and appropriate uses of computers include the following:

- CAI (computer-assisted instruction)
- tutorials
- computer literacy
- desktop publishing
- music
- word processing
- databases
- spreadsheets
- simulations
- multilingual applications
- telecommunications
- CAD/CAM (computer-aided design/computer-aided machinery)
- programming
- electronics
- artificial intelligence
- presentation graphics
- laserdisc technology

Computer Locations

Computers may be located in the classroom, a computer laboratory, the library media center or be available on loan through the learning resources and technology program.

Computers in the classroom. Most schools have undertaken programs to place computers in individual classrooms for use in stimulating and enhancing subject-area instruction. Placing computers in the classroom encourages greater teacher involvement and use of the computer, more frequent individualized or paired student use and a more accurate matching of student needs with appropriate software. However, flexibility created by the presence of computers in the classroom also means that teachers must take more direct responsibility for developing computer-supported lessons and projects, evaluating and selecting appropriate software, and scheduling student access.

It is important that teachers invest time in planning and coordinating computer-supported instructional activities so that classroom computers are used equitably and not solely for reward or remediation. Used with a projection system and with one or more large monitors, classroom computers can effectively enable students and teachers to explore learning together. Classroom uses require the development of policies and/or procedures for disk storage, handling, usage and circulation for home use.

Computers in laboratories. Computer laboratories are areas within schools or library media centers that contain sizable concentrations of computers, printers and related equipment for instructional purposes. A lab usually is created by converting existing space into a dedicated area for computers. The size and organization of a computer lab will vary and depend upon available space, staffing and the purposes for which the lab will be used.

While it may be directed by a computer coordinator, computer teacher, library media specialist or classroom teacher, the computer lab is managed as a part of the total learning resources and technology program. Placing computers in a lab setting offers a number of instructional advantages. These include:

- consistency and regularity of large group instruction;
- instructional equity among classrooms;
- better coordination of computer-supported instruction;
- ability to accommodate entire classes as well as walk-in student users;
- creation of an atmosphere conducive to learning with computers by minimizing distractions;
- greater security for computer equipment;
- encouragement of self-paced learning for students; and
- availability of computers for student use beyond regular school hours.

Computers in the library media center. The placement of computers for student use in the library media center can be advantageous because it will:

- allow student use as individual schedules permit;
- provide a place for students to independently apply or practice computer skills;
- enable access when labs either are full or are being used by an entire class;
- provide a place for students to use computers to pursue leisure interests;
- provide a means for integrating computer use with other resources;
- provide a central location for access to on-line databases; and
- extend library media resources beyond those found in the center itself.

Computers for loan. Every school should have several computers and printers on rolling carts that can be brought into classrooms when they are needed. These computers provide an instant minilab opportunity for classroom instruction, encouraging shared learning experiences not available through the single computer in the classroom. They also allow the classroom teacher to set up a bank of computer workstations and to schedule several students on the computers at one time. This is particularly useful when a lesson requires students to have hands-on experiences.■

Indicators of Success

The following are indicators of success for a school's learning resources and technology instructional program:

- Learning resources and technology skills are taught in conjunction with classroom instruction and activities.
- Learning resources and technology professionals work cooperatively with classroom teachers in the instructional process.
- Each child has an opportunity to learn sufficient skills in locating and using information to enable lifelong independent learning.
- The learning resources and technology skills curriculum is evaluated and revised at least once every five years.
- Time devoted to instruction in information and technology skills is in balance with time required for consultation, effective management and provision of services.
- Appropriately certified teachers are responsible for instruction in information and technology skills.
- Learning resources and technology skills instruction is articulated from kindergarten through Grade 12.
- Students have sufficient and flexible access to learning resources and technology facilities to allow the application of learned skills for academic and personal needs.■

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INSTRUCTIONAL COMMUNICATIONS TECHNOLOGY 5

Distance Education
Connecticut Sites
Instructional Television
Instructional Television Fixed Service
Electronic Information Service
Searchable Databases
Other Technologies

For years schools have employed telephone, radio and television to expand the educational opportunities of students and teachers. The effective utilization of these basic telecommunications technologies provides homebound instruction, allows participation in events at remote locations and access to great performances. The development of the audiocassette and videocassette and, more recently, the microcomputer, the modem (modulator/demodulator) and codec (the video coder/decoder) have expanded communication capabilities even more. Chapter 5 will provide examples of telecommunications technologies applied to education.■

Distance Education

Distance education may be defined as the sharing of instruction by two or more sites using telecommunications technology while providing for interaction among the participants.

There is a place in education for the traditional use of telecommunications, e.g., instructional television, instructional radio, commercial broadcasting and now satellite distribution of instructional programs. These still are cost-effective and convenient methods of providing a vast range of learning resources and materials to students and teachers. The potential for distance education, with its capacity for interaction, is limited only by the imagination. Key elements for success are flexibility, cooperation and involvement by decision makers.

Necessary components of a distance education program include needs analysis, policy considerations and instructional development.

The needs analysis area includes:

- course offerings;
- curriculum;
- enrollment potential; and
- instructional materials.

Among the considerations in developing policy are:

- course credit;
- grading practices;
- student regulations;
- contractual agreements of teachers;
- calendars and schedules;
- evaluation of staff;
- fiscal responsibilities;
- homework;
- early dismissal and school closing; and
- copyright regulations.

Instructional development assignments should include:

- selection of appropriate technology;
- course development appropriate to the needs and technology selected;
- formative evaluation;
- selection, acquisition and/or preparation of instructional materials in print, nonprint and/or electronic formats;
- development of materials to determine student progress;
- professional development activities for teachers and administrators necessary to make effective use of distance learning;
- awareness activities for local decision makers, parents and students; and
- summative evaluation.

Distance education can cut across all curriculum areas and most grade levels, although the most common application of formal distance learning programs is at the high school level. The interactive teleconference, a less-formal distance education application, is an excellent addition to the professional development opportunities available to Connecticut educators. Although there usually is less involvement in the planning of teleconferences at the building or district level, there still are several areas of responsibility which must be addressed by the local learning resources and technology staff. These include:

- promotion of teleconference opportunities at the district and school levels;
- provision of the necessary facilities, equipment and telecommunication lines;
- scheduling of facilities;
- coordination of teleconferences; and
- provision of necessary print, nonprint and/or electronic materials.

It is important to note that any telecommunications technology can be employed to implement distance education programs. The decision as to which technology is most appropriate is a part of the instructional design phase. The learning resources and technology staff has a major responsibility to advise decision makers of the appropriate technologies to conduct distance education programs.■

Connecticut Sites

Several distance learning sites in Connecticut are using a full range of technologies to accomplish the interactive telecommunications link among classrooms. Each of these distance learning programs has the capacity for interactive audio and video. Host and remote site participants can see and talk with each other in real time.

The three telecommunications technologies employed to interconnect the classrooms are:

- full-motion video, analog, on optical fiber using telephone lines;
- full-motion video, analog, on cable using a community antenna system; and
- compressed video on T1 telephone lines.

Although there are some differences in the transmission capacity of each of these telecommunications technologies, all result in a fully interactive system suitable for instruction.

Full-motion video, analog, on optical fiber provides a high-quality system with a great deal of flexibility to vary the number of locations participating in a particular course at any time. It is not uncommon to have three classes participating in one course and, at the same time, two classes participating in another course. The optical fiber system is the most expensive telecommunications system to install, but provides a high degree of flexibility, signal quality and reliability.

Full-motion video, analog, on cable using a community antenna system provides a high-quality signal at an affordable price. There is considerably less flexibility than with the optical fiber system. The affordable price is a trade-off for the need to interconnect classrooms which are not served by the same community antenna system.

Compressed video on T1 telephone lines provides a signal of very acceptable quality and at a moderate price. The advantage of a compressed video system is the ubiquity of the T1 telephone lines. There is almost no location in Connecticut that cannot have T1 capacity. Additionally, business and industry have standardized with compressed video on T1, as the telecommunications technology used for teleconferencing becomes worldwide.

Nearly 50 courses were being taught in Connecticut using interactive telecommunications technology during the 1990-91 school year. Among the subjects offered were Chinese, astronomy, German I and II, Russian, ESL social studies, music, etymology, Japanese, literature, creative writing, philosophy and Italian. In addition, the state university system is using the telecommunications capacity of the elementary and secondary schools to offer graduate courses to their students. Contacts for Connecticut distance learning sites are available through the State Department of Education's Learning Resources and Technology Unit.

An evaluation of the distance learning component of "Links To Learning," a cooperative project of the Southern New England Telephone Company (SNET), the Connecticut State Department of Education and 25 local school districts, indicates that teachers and students using interactive video for instruction are comfortable with this technology. The quality of the video and audio are rated as good and the students at the host and remote sites participate just as they would in any other class. An analysis of the grades and comments from the pilot year (1986-87) indicates that there was no substantial difference between the host and remote site students, indicating a successful distance learning experience.■

Instructional Television

Instructional television programs are intended to be used by teachers as a part of their instructional strategies. The State Department of Education sponsors instructional television programming for Connecticut's schools as a means of providing equitable access to a wide range of quality curriculum-related materials.

Learning resources and technology staff responsibilities should include:

- providing for off-air recording of programs;
- cataloging recorded programs for easy access by students and teachers;
- ensuring that copyright policies are followed;
- providing for professional development activities, e.g., utilization workshops on specific programs;
- providing for distribution of Connecticut's *Instructional Television Schedule and Resource Guide;*
- assisting in the acquisition and distribution of teacher guide materials; and
- monitoring broadcasts and reporting any problems to the State Department of Education.■

Instructional Television Fixed Service

Instructional Television Fixed Service (ITFS) is the identification given by the Federal Communications Commission to a number of television channels set aside for use by schools for the delivery of instruction and/or instructional materials. It is a low-powered, limited-range system and television sets cannot receive the signal without the special, low-cost receiving equipment available to schools.

The Connecticut State Board of Education has entered into an agreement with the Connecticut Educa-

tional Telecommunications Corporation, the parent company of Connecticut Public Television, to operate and maintain the Connecticut ITFS system (The Knowledge Network). The system consists of 28 transmitter sites around the state, with facilities for statewide programming at the Connecticut Public Television studios in Hartford and at the Connecticut State Department of Education. Each school district was given one receiving antenna to be positioned at the school with the strongest signal reception. There are plans to make provisions for program origination at some remote transmitter sites to allow programming designed to meet the specific needs of various areas of the state. The system will be used for such activities as:

- distribution of instructional television programming to be recorded by schools;
- statewide distribution of national teleconferences;
- professional development opportunities;
- distribution of instructional materials, including computer software and distance learning;
- live meetings or addresses concerning critical educational issues; and
- other programming determined by needs assessments and technological advances.■

Electronic Information Service

An electronic information service is designed to facilitate communication among and between schools, school districts, regional educational service centers and the State Department of Education. "Bulletin boards" are designed to provide information to interested persons on a timely basis, by permitting computer users at remote sites to access a central computer in order to read or post electronic messages. For example, individual school districts may call the State Department of Education via computer and get up-to-the-minute information concerning professional development opportunities throughout the state. Through a similar process, students might become electronic pen pals or communicate about a cooperative assignment with students from another district, another state or even another country. As the needs of Connecticut educators change, the electronic mail service can be expanded to meet those needs.

Learning resources and technology staff can facilitate use of the electronic information service by:

- providing training for students, teachers and administrators;
- motivating potential users to make effective and efficient use of the system;
- assisting in the acquisition of required hardware and software; and
- requesting the installation of necessary telephone lines.

Individual school districts may wish to establish their own local electronic mail services to meet the needs of students, teachers and administrators. Members of the learning resources and technology staff are prime resources to assist in the development of these services.■

Searchable Databases

Much information, formerly available only in hard copy, is rapidly becoming available through electronic means. A computer and modem can access on-line databases using standard telephone lines, thus expanding the learning resources collection far beyond a school's walls. In addition to the extensive quantity of information available from these sources, on-line databases can provide the most recent data available and deliver it quickly. Most remote databases involve membership fees or payment either of a fixed monthly charge or an hourly rate.

Another form of searchable databases is the CD-ROM disc. Unlike on-line databases, in which content can frequently be updated, information on a CD-ROM disc is fixed. Some sources of information available on CD-ROM, however, are updated by issuing new discs on a periodic basis. CD-ROM discs enable access to an extensive body of information almost instantaneously. It also is possible to have a combination of print and visual information on a single disc.

The proliferation of information available through on-line and CD-ROM databases has made instruction in searching skills an important component of learning resources and technology programs at every level. Students, teachers and administrators need to become proficient in using these databases.

Responsibilities of learning resources and technology staff members to facilitate the use of searchable databases include:

- determining the feasibility and potential use of on-line and/or CD-ROM databases;
- coordinating the planning for selection, acquisition and implementation of services;
- providing training opportunities for students, teachers and administrators;
- assisting in the acquisition of required hardware and software;
- requesting the installation of necessary telephone lines;

- instructing users in copyright provisions and regulations; and
- coordinating the necessary contractual arrangements with database providers.■

Other Technologies

A dominant characteristic of the information age is the rapid development of new technologies and the expansion of existing ones. Some new technologies are already in use in education and training, while others await the development of appropriate courseware in order to meet the needs of students and teachers. The following list should not be considered as exhaustive, but representative of technologies which have application to elementary and secondary education:

- hypermedia
- interactive videodisc
- interactive CD-ROM
- holography
- high-resolution television
- cable television
- digital television
- satellite (both C band and KU band)
- microwave
- projection technology
- ISDN (integrated service digital network)

The learning resources and technology staff is responsible for constantly monitoring the vast range of communications technologies and for keeping decision makers informed of their potential use in education.■

Resources

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LEARNING RESOURCES 6

Selecting Materials
Building-Level Collections
Cultural Diversity
Evaluating Collections
Print Materials
Equipment
Facilities

The scope of a learning resources and technology program is dependent upon the identified needs of the school or district which the program is to serve. Quality will depend on the training and number of staff members; adequacy of space; the size, content and currency of the collection; the type and condition of equipment; and fiscal support for the program. Equitable access to learning resources is dependent upon a centralized and organized system for locating all available materials. The school library media center provides a directory of school resources, whether they are located in the library media center, computer center or elsewhere in the building, and houses a majority of the school's instructional resources.■

Selecting Materials

Instructional materials of all types must be carefully selected in order to meet the needs and interests of students and teachers. Though the selection of materials is best carried out at each school, the individual(s) responsible for selecting materials should be guided by a written districtwide policy, approved by the local board of education. This policy will ensure consistency throughout the system and serve as an informational document that can be shared with parents, teachers, school board members and others concerned with the content and quality of the district's educational programs. A policy also helps to ensure that the purchase of materials will represent the best investment of tax dollars.

The Learning Resources and Technology Advisory Committee generally is given the responsibility for developing a materials selection policy for adoption by the board of education. This group must make decisions on content and specific criteria that are relevant to the selection of materials. Every selection policy should contain statements that:

- designate the local board of education as being legally responsible for the quality of education in the school system and ultimately responsible for the selection of instructional materials (see Sec. 10-221 of the *Connecticut General Statutes*);
- delegate selection responsibility and define the role of specific personnel in the process of materials selection;
- quote and/or refer to the philosophy statement on which the policy is based and, if desired, a statement of purposes and objectives which defines the rights and responsibilities of various constituencies affected by the policy (see "Teaching About Controversial Issues," a policy statement adopted by the Connecticut State Board of Education on October 4, 1978);
- specify the scope of materials covered by the policy, e.g., gifts, software, textbooks, print and nonprint materials;
- delineate specific criteria and procedures for the selection of materials in each category covered by the policy;
- establish criteria and procedures for the removal of materials from the collection; and
- describe the process for handling cases of challenged materials.

Indicators of success in the development of this policy include the following:

- The district has a written selection policy which has been adopted by the board of education.
- The selection policy can be applied to the acquisition of all learning resources.
- The selection policy is evaluated at least once every five years.
- Procedures for addressing the issue of challenged materials are applied as needed.■

Building-Level Collections

Collections of learning resources in a variety of print and nonprint formats should be developed and maintained in every building. These collections need to be based on district goals, characteristics of individual schools and teaching strategies. Since the needs of users (students, teachers, administrators) and curricular offerings constantly are changing and expanding, these collections must be evaluated and updated regularly.

Because schools and their specific populations are different, there will be many and varied definitions of what constitutes a *quality collection*. This flexibility, however, must be balanced by the responsibility of all schools to provide a *foundation collection* of materials and equipment. This collection represents the minimum number of items that must exist to cover the diverse subject areas, formats, reading levels, reference and leisure needs of a comprehensive, developmentally appropriate educational program. Certain quantities of resources and equipment must be considered in providing learning resources and technology services.

Neither quality nor quantity can be considered in isolation from the other. Quality collections, according to parameters developed and recommended by the Connecticut State Department of Education, are:

- adequate in size, currency, breadth, depth and diversity of format to enable students to complete classroom assignments and explore areas of personal interest;

- rich in materials that support cultural awareness;
- responsive to the general educational and specific curriculum philosophies, goals and objectives established by the local board of education;
- appropriate to the ages and/or grade levels of the students in the school, for special needs students and for the gifted and talented;
- varied in presentation format to provide for students with diverse learning styles;
- acquired in accordance with a selection policy approved by the local board of education;
- listed in a centralized union catalog; and
- easily accessible.■

Cultural Diversity

In addition to supporting local school goals and objectives, the building-level learning resources and technology program can be a major force for achieving statewide educational goals for students as set forth in *Challenge for Excellence: Connecticut's Comprehensive Plan for Elementary, Secondary, Vocational, Career and Adult Education – A Policy Plan 1991-1995*. Goal Five, parts of which follow, has particular implications for the development of quality learning resources and technology collections.

> As responsible citizens, students will enrich their family, community and culture and create equal opportunity for all persons to participate in and derive the benefits of their society. Connecticut public school students will:
>
> - respect and appreciate diversity;
> - acquire and apply an understanding and appreciation of the values and achievements of their own culture and other cultures; and
> - show understanding of international issues which affect life on our planet and demonstrate skills needed to participate in a global society.

Quality learning resources and technology collections will support understanding of and appreciation for the rich ethnic diversity that exists within a community, and in Connecticut and the world, when the selection process results in the inclusion of:

- books and other resources by authors or producers representing a variety of cultures and racial and ethnic minority groups;
- periodical literature about other countries and cultures;
- resources in languages other than English;
- resources of all types that feature characters in realistic multicultural and multiethnic settings;
- current books, records, tapes and other resources from or about other countries and people;
- professional materials for teachers that model or suggest methods for including diversity and cultural understanding in classroom assignments;
- software that enables communication with students from other cultures or countries;
- resources of all types that highlight the contributions made to America by individuals from diverse ethnic groups;
- up-to-date information about world events and global issues; and
- materials that provide positive role models for students of diverse cultures and races.

The mere existence of these resources, however, will not guarantee improved cultural understanding and respect. The learning resources and technology professionals must facilitate the use of these materials. It is necessary, therefore, that staff members:

- become knowledgeable about cultural resources available in a variety of formats;
- network with other educators who have experienced success in promoting cultural awareness;
- become knowledgeable about the ethnic diversity in their school, strategies that work with special populations, and local efforts to encourage cultural understanding;
- work with teachers to incorporate instructional strategies that will encourage use of these materials;
- display and promote the diversity of materials available;
- develop programs or activities to introduce students to multicultural materials;
- conduct professional development workshops to help teachers become more familiar with the resources available to them and to their students; and
- conduct training in the use of technologies that will enable the use of available materials.■

Evaluating Collections

The challenge to learning resources and technology staff members is to evaluate collections in a way that produces data that is understandable to decision makers. The size of a school's collection of print, nonprint and electronic information can easily be assessed and compared with national and state recommendations or matched against the most current edition of prepared standard collection lists such as the *Senior High School Library Catalog*, the *Junior High School Library Catalog*, the *Children's Catalog* or the *Guide to Reference Books for School Media Centers*. While using these documents can serve as reference points, accountability for a quality collection demands a much closer examination of the collection's usefulness in meeting identified curriculum and student needs.

Regardless of the method used to evaluate the quality of a collection, the curriculum of the school or district and the teaching methodologies used in implementing the curriculum must be considered. For example, a given collection might be responsive to a reading program taught using a basal reader, but inadequate for supporting a *whole-language* program. A convenient way to look at what is being taught involves creating a curriculum time line that designates major units of study and when they occur during a school year. The time line can be created by looking at curriculum guides and talking with teachers, grade by grade at the elementary level, and by department in high schools. These units then are recorded for future reference on charts similar to the Grade 5 Time Line shown below and on page 33.

Once the curriculum is defined in terms of topical areas, the learning resources and technology staff can begin looking at the collection as it relates to specific instructional needs. Two methods are:

- charting the currency and formats of materials related to a particular unit or topic of study; and
- surveying teachers and students immediately following a unit of study that involved library media or technology to determine the responsiveness of the collection as perceived at the point of use.

Charting the currency of materials should begin by examining the copyright dates (by decade) of all types of materials throughout the collection. A graph of the collection gives an easily understood visual picture of the percentage of materials that are new, as well as the percentage of materials that may need to be questioned as to relevancy. It is important to assess currency carefully, as it may or may not be a factor in determining a school's ability to respond to the curriculum. Using the graph on page 34 as an example, a collection may be inadequate if students are studying life in modern Russia, but adequate

GRADE 5 TIME LINE

Subject	September	October	November	December	January
Art	Still life	Architecture	Color mixing	Holiday decorations	Candle making
Math	Measurement	Graphs	Time	Probability	Geometry
Music	Singing	Musical Stories		Rhythm	Pitch
Physical Education	Flag football	Soccer	Volleyball	Modified basketball	Gymnastics
Reading	Biography		Holidays	Fiction	
Science	Rocks and minerals	Particles and matter	Moving and breathing	Solar system	Ecology
Social Studies	Map and globe skills	United Nations	Elections	Colonization	Revolutionary War

if they are studying the history and customs of the people. This process must be ongoing, as a collection that may have been very responsive at one point may no longer be meeting the needs set forth in curriculum revisions.

Other factors also will influence responsiveness. Among them are the total number of students who will be using the materials at once, their learning styles and abilities, and the diversity of media formats represented in the collection. Keeping these in mind, the currency of materials can be used to target areas of the collection that are in need of attention.

It is important to take some time immediately following resource-based units of study to survey students and teachers about the outcomes of the unit and how well the learning resources of the school met their needs. This survey need not be lengthy, but should be designed to provide detailed information for the learning resources and technology staff to use in determining both strengths and weaknesses of the collection. This data, when gathered over time, can be used to determine priorities for collection building and budget requests.

This concept of graphically representing the strengths and weaknesses of a collection in a "collection map" has been developed extensively by David Loertscher (1982). Written documents and a computer program are available to assist in developing "maps" that match areas of the collection with curricular offerings. The ultimate goal is for the collection to become more responsive to the needs of the curriculum, students and teachers.■

Print Materials

In building a foundation collection, schools may use Connecticut State Department of Education numerical guidelines as reference points. For example, a school with 250 or fewer students should have approximately 6,000 volumes in its foundation collection. A school with more than 250 students should plan for 25 to 30 volumes per student. Other guidelines follow.

Periodicals. These collections also should be based on school population. The number of periodicals suggested for schools of different grade levels and numbers of students include duplicate subscriptions and professional journals. Schools with grade alignments other than those detailed in the chart on page 34 will require modification based upon careful analysis of student and teacher needs.

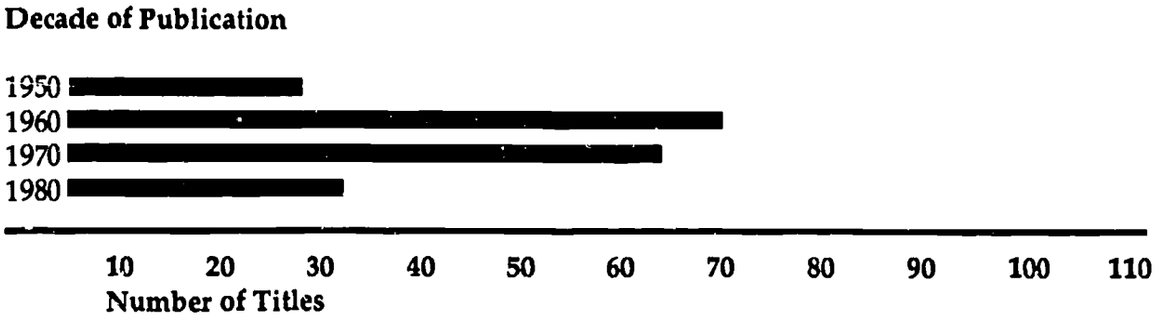
Hard copy of periodicals usually is retained as follows:

- three to five years for indexed, curriculum-related periodicals; and
- one to two years for nonindexed periodicals.

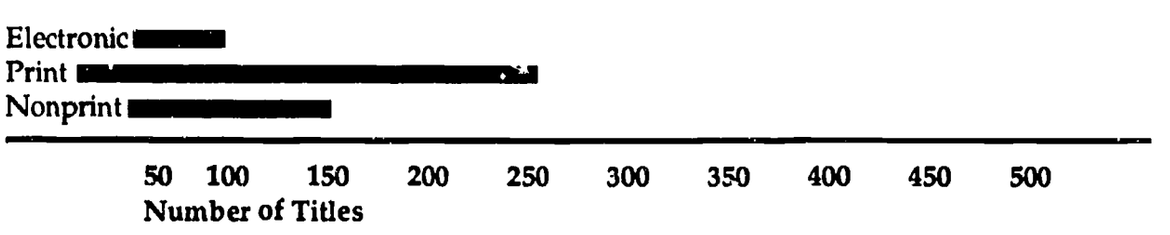
GRADE 5 TIME LINE, continued

Subject	February	March	April	May	June
Art	Composition	Perspective	Contour drawing	Enameling technique	Soft sculpture
Math	Word problems	Place value	Metric system	Computation – whole numbers/fractions	
Music	Rhythm/Pitch		Scale tones	Composers	
Physical Education	Floor hockey	Indoor /Obstacle course		Outdoor Softball/T-Ball	
Reading	Black history	Poetry	Figurative language	Newspapers	
Science	Living and growing	Energy and conservation		Water cycle	Reptiles
Social Studies	Presidents/ formation of government	Westward movement		Gold Rush	

Materials On Russia



One also may find it useful to chart the holdings according to the major format categories of print, nonprint and electronic (see below).



The use of microforms for back-issue collections can save storage space, while retaining access to these resources. Microforms only should be purchased for indexed periodicals that will continue to be used for classroom or research assignments. It may be preferable to purchase some subscriptions to periodicals – those used solely for research – only in microform format.

Newspapers. Suggested numbers of newspapers in a foundation collection are three to six for an elementary school and six to 10 for middle, junior high and high schools. Some districts use clipping services and on-line databases to provide newspaper sources for certain instructional programs at a lower cost and without adding substantially to storage space requirements.

Size of School	Periodicals Suggested
Elementary School (K-6)	
• under 250 students	25
• over 250 students	25-50
Elementary School (K-8)	
• under 250 students	40
• over 250 students	40-60
Middle School/Junior High	
• under 400 students	50-75
• over 400 students	75-100
High School	
• under 500 students	75-100
• 500 - 1,000 students	100-125
• over 1,000 students	125+

Vertical and pamphlet files. Vertical and pamphlet file resources should be current, selected with the same care as other materials and arranged for easy access. The content should be evaluated periodically and outdated materials discarded.

Nonprint and electronic formats. These materials are increasing constantly and specific number recommendations for particular formats are impractical. The most critical factor in developing nonprint collections is that the range of formats meets the learning styles and preferences of students and teachers. A variety of media formats should be represented in the collection within the school and through resource sharing. Nonprint and electronic formats include but are not necessarily limited to the following:

- videotapes
- filmstrips
- transparencies
- disc or tape recordings
- art and study prints
- slides
- kits
- games
- CD-ROM
- toys
- films
- maps
- models
- computer software (applications and instructional)
- records
- other tangible objects (realia)
- laserdiscs
- on-line services

All computer software should be cataloged in the library media center in accordance with guidelines found in the *Anglo-American Cataloging Rules, 2nd Ed.* (1988), and maintained in a central location accessible to teachers and students. In instances where site licenses are in effect and multiple copies may be made of the software collection, classroom teachers should maintain their own resource libraries of computer programs and instructional materials. Copyright restrictions may apply to certain kinds of software (see Chapter 8).

Whatever combinations of formats are selected, it is recommended that there be access to at least 4,500 titles for elementary schools and 7,000 titles for secondary schools. At least 90 percent of the user requests should be filled through the district's collection and interagency loan.

School purchases of nonprint and electronic materials should be guided by:

- relationship of the item to the school curriculum and potential for effective use;
- compatibility of format with equipment in the school and throughout the school system;
- cost-effectiveness of the particular medium;
- quality of the production, i.e., technical quality, timeliness and accuracy of the content;
- appropriateness of the concepts, language and learning level, and interests of the students;
- usefulness for students with special needs;
- availability of materials from the district, and regional and state services that may support the building collection;
- ability to meet at least 90 percent of initial requests within a reasonable time;
- need to maintain a balanced collection in a variety of areas; and
- trends in technology development.

Professional Materials. In addition to materials used in the teaching and learning process, a collection of professional materials should be available for faculty members and administrators. The purpose of these materials is to provide current information on research teaching methods and trends in education for general and specific subject areas. Materials in a professional collection include but are not limited to:

- professional books, periodicals and videos;
- computers and computer programs;
- curriculum-related materials;
- publications from professional associations (state and national);
- television program guides;
- professional development opportunities;
- selection tools;
- adequate supplies;
- on-line services; and
- equipment for previewing nonprint or electronic resources.

Indicators of success in building library media collections include the following:

- Collections are adequate in size, currency, breadth, depth and diversity of format to enable students to complete classroom assignments and explore areas of personal interest.
- Materials are selected in response to the general educational and specific curriculum philosophies, goals and objectives established by the local board of education.
- Materials in the collection are appropriate to

the ages, abilities and grade levels of the students in the school.
- Resources are varied in presentation format to provide for students with diverse learning styles.
- Materials are acquired and discarded in accordance with policies approved by the local board of education.
- All available learning resources are listed in a centralized union catalog, organized according to professional standards and are easily accessed.
- Additional resources are available from cooperatives or through interagency loan so that 90 percent of requests can be filled within a reasonable time.
- A professional collection is maintained for teachers and administrators.
- Resources are selected according to identified learning needs and interests.
- Professional selection tools and, whenever possible, an actual preview are used to evaluate materials prior to purchase.
- Teachers, students and administrators participate in collection development.
- The collection is reviewed on a regular basis.

Equipment

The specific type and quantity of equipment for any school depends upon instructional program needs and the formats of nonprint media in the collection. While all types of equipment will not be present in every school, a variety should exist in each school to accommodate a wide range of learning resources and allow teachers the greatest possible flexibility in the instructional development process. There should be a sufficient quantity of equipment to meet 90 percent of initial requests within a reasonable time.

All equipment purchases should be coordinated and inventoried through the learning resources and technology program even when items are located in other parts of a school building. As with print and nonprint resources, equipment should be purchased in accordance with a written selection policy that has been approved by the local board of education. An equipment selection policy should contain statements in the following areas:

- responsibility for equipment selection and maintenance;
- the process for equipment evaluation, selection and maintenance;
- general selection considerations for equipment purchase, as well as specific criteria for individual pieces or types of equipment;
- criteria and procedures for removing obsolete or irreparably damaged equipment;
- safety and security requirements relating to use, movement and storage; and
- means of identifying appropriate quantities of various pieces of equipment.

Curricular differences, rapid changes in technology and the availability of information in an increasing array of formats make it impractical to recommend equipment collections solely on the basis of fixed quantities. There are a number of factors that must be considered in determining appropriate quantities for equipment in a school. Among these factors are the following:

- teaching strategies and students' learning styles;
- size of staff and school population;
- number of floors in a building and presence of elevators;
- design factors, e.g., open plan, portable classroom, computer labs;
- built-in delivery systems such as closed-circuit or cable television;
- media formats in the collection;
- production facilities ;
- special learning needs;
- district office collections of backup or emergency equipment; and
- training of staff and students in the use of available equipment.

Types of instructional/production equipment normally found in an individual school include the following (while listed individually, most would be found in multiple quantities):

- 16mm sound projector
- filmstrip projector
- filmstrip viewer
- television receiver/monitor
- videocassette recorder/player
- microform reader/printer
- microcomputer/printer/modem
- CD-ROM drive
- listening station/earphones
- projection screen
- camera
- opaque projector
- security system
- videodisc player
- audiocassette player/recorder
- record player
- AM/FM radio
- equipment cart
- microcomputer projector

- CD-audio player
- telephone
- satellite dish
- 2x2 slide projector
- overhead projector
- slide viewer
- copier
- video camera/recorder/editor/tripod
- laminating machine
- lettering device
- printer
- desktop publishing equipment
- lights
- audio recorder/synchronizer
- video projector
- paper cutter
- copy stand
- darkroom equipment
- bookbinder
- transparency production/laser equipment
- fax-machine/OCR (optical character resolution) graphics
- scanner

Facilities such as a computer lab, graphic production facility or television production studio will have additional requirements for equipment. Those needs should be considered in facility and program design within the individual school district. Another variable to be considered is the availability of district facilities and services related to the production of materials.

Indicators of success in planning for equipment needs include the following:

- The school district has a written, board-approved policy for selection of equipment.
- The school district has a written policy concerning use of equipment by students, staff and the public.
- The policy lists specific criteria for the selection, maintenance and removal of all types of equipment.
- Equipment is tested and evaluated prior to purchase.
- Provisions have been made for the regular maintenance and repair of equipment.
- All equipment purchases are coordinated and inventoried through the learning resources and technology program.
- Administrators, curriculum coordinators, teachers and students have received instructions enabling them to use available equipment.
- Equipment requests can be filled within a reasonable time.
- There is sufficient equipment to use all media formats in the collection.
- Provision is made for equipment security.
- Equipment and/or peripherals are available so that students with special needs can use all available resources.
- Equipment is available for teachers to use in previewing materials.
- Equipment is available for classroom use on a short-term or extended-loan basis.
- There is an established plan for replacing equipment.

Facilities

The space allocated to learning resources and technology can be a critical factor in the success of a program. Insufficient, crowded or unattractive space not only presents a hardship for the staff, but also discourages and limits use by students and faculty members and can pose a safety hazard. While program needs should be the ultimate influence that determines the design of facilities, minimum space requirements have been established by the Connecticut State Department of Education for school library media centers, computer labs and classrooms.

According to the department's School Facilities Unit, the "1990 Space Guidelines for School Construction" recommend the allotments shown in the chart on page 38 for school library media and computer facilities for schools of about 500 students. (Note it is recommended that a minimum of 2,800 square feet be allocated in elementary schools and 3,500 square feet in secondary schools, even with enrollments falling below 300 students.)

If the design for a new learning resources and technology facility is to accommodate an effective program, two prerequisites need to be considered. First, there must be an understanding among the school community as to the role the learning resources and technology program(s) will play in the overall school program and in students' experiences. Second, it is important to communicate to the architect, before preliminary drawings are made, some specific information about the vision for the program and facilities. This information should include but is not necessarily limited to the following:

- **A descriptive overview of the learning resources and technology program.** This statement would explain the intended mission or philosophy of the program, and relate how the program would fit into the teaching and learning process of the school. It also might contain the written goals and objectives that would lead to fulfilling the philosophy of the program.
- **A delineation of the functions of the program.** This would be a listing of the major

types of activities (such as computer classes, media production, research, viewing or teleconferencing) that are expected to take place in the facilities, including separate programs that are to be accommodated, together with suggested space allocations for each activity and program.

- **A list of services to be provided.** This would include consultation, equipment distribution, recording, materials preview, satellite down-link services or on-line database searches, and space implications for each service.
- **A list of management considerations.** Space and furnishings must be provided if there is to be automation of library media functions or network participation.
- **An explanation of how the facilities will be used.** Traffic patterns can have an impact on the design of a facility. The architect should be told whether the facility will need to accommodate more than one class at a time, small groups and individual users, and if flexible scheduling will be the practice. Any special approaches to instruction, such as collaborative learning, may have space implications the architect should know about. It also is important to note whether the facilities will be open after school for adult education or other programs.
- **An overview of the types and quantities of materials to be included in the collection.** While most programs will have print, nonprint and electronic resources, it is important to give the architect an estimate of the maximum number of items to be included and how much space is required to house them.
- **Consideration for furnishings.** It is helpful to point out factors that will affect furniture in the center or lab. Factors such as the height of students, desired shelving and seat heights, lighting needs, security, safety requirements and special furnishings for storage or display need to be communicated.
- **Telecommunications considerations.** Provision must be made for anticipated telecommunications functions. These would include telephone lines for general communication, on-line database searches, telefacsimile machines or information network participation; cable television drops, satellite down-link capability, distance learning, computer networking, ITFS and adequate electrical outlets for nonprint and electronic data use in the center or lab.

Existing facilities may present physical limitations that make it difficult to provide the recommended space allocation. The State Department of Education's Learning Resources and Technology Unit is available to assist local planners in the redesign of facilities and in the planning for special needs. The district or school learning resources and technology staff should participate in the

1990 Space Guidelines For School Construction

	Recommended Maximum Number of Pupils	Recommended Range; Square Feet Per Pupil Station	Recommended Range; Net Total Square Feet
ELEMENTARY			
Library media center	one-fifth of enrollment	40-55	4,000-5,500
Computer education	24	32-40	768-960
SECONDARY			
Library media center	one-fifth of enrollment	70-100	7,000-10,000
Computer lab	20	35-48	700-960

design or redesign planning to ensure that a facility is functional and will meet a school's goals and objectives.

Regardless of their sizes, learning resources and technology facilities should have:

- aesthetically pleasing design and decor;
- clearly labeled areas and directions;
- lighting appropriate to the function of each area;
- adequate electrical outlets;
- adequate telecommunication facilities, including telephones and cable television;
- access to all resources by the handicapped;
- furniture and shelving appropriate to the function and age and height of the student population;
- the ability to seat at least one and one-half classes (based on the largest class size in the building);
- appropriate work space for the professional staff;
- enough space to accommodate the program functions;
- flexible arrangement of furniture;
- controlled acoustics;
- a safe environment;
- adequate storage;
- space for display and promotional materials; and
- climate control equipment.

As with collections and equipment, the design of facilities should be dependant upon the goals and objectives of the learning resources and technology program and the instructional goals of the school. It is essential to remember that effective programs require adequate space for operation. As learning resources and technology programs become more complete in scope, appropriate facilities must be allocated. New programs, in order to run effectively, may require the renovation of existing facilities.

The following generally accepted guidelines and special considerations for program and function areas are endorsed by the Connecticut State Department of Education:

Circulation. Should be near the main entrance, office and work area; should have electrical outlets for computerized management and occupy 600-800 square feet.

Reading, listening, viewing, browsing, etc. Mixed seating (lounge, tables and carrels); flexible distribution system for electrical cable, coaxial cable and audio cable, such as cable duct under the floor or a computer-type floor; stacks and furniture spaced to allow wheelchair access; stacks and other storage areas to accommodate the maximum collection anticipated; computers for independent student use or data retrieval; switches for electrical outlets with controls at the charge desk; carrels require at least 10 square feet; display area for new materials and student art; storytelling area included for elementary schools.

Small group areas. Should have electrical outlets, television and computer outlets and inputs, light control, wall screen and acoustical treatment; may serve as telecommunication or conference area or house special collections and should occupy 150 square feet per area; if enclosed, should have windows for supervision.

Work area. Should be near circulation area; include desk space for media professionals, plus cabinets, sink, running water, telephone, computer access and counters; 200-400 square feet depending on staff.

Equipment storage, repair and distribution. Should be a secure area near corridor, loading dock and elevator; provide storage for bulbs and spare parts and work area for minor repairs and storage for computer carts; should occupy 500-800 square feet.

Media production lab. Houses production equipment and supplies and should be adjacent to media storage and distribution area; requires sinks, running water, electrical outlets, counters and adequate ventilation; sound control is needed for production; if a darkroom facility is included, refrigeration and a light lock should be provided; area should occupy 800 square feet for production and a minimum of 150 square feet for a darkroom.

Professional collection area. May include space for faculty group meetings or conferences; a computer workstation; space and equipment for selection and preview of materials; has a lounge atmosphere and occupies at least 600 square feet.

Instruction and group projects. Should be adjacent to reference area, catalogs and indexes and have good visual control from main center; should have flexible space and be of classroom size; should have microcomputers and sufficient electrical outlets; should be suitable for viewing and teleconferencing; should occupy 900-1,200 square feet.

Television studio. Should be convenient to media production area; must be soundproof; studio may be provided at the district level; mini-studios and portable equipment may be used; must be a secure area of 1,600 square feet (40 by 40 feet with a 15-foot ceiling and wide doors) with smooth, unobstructed thresholds.

Audio studio. Should be adjacent to television studio; must be soundproof; must include storage for equipment and supplies; must be a secure area and occupy at least 150 square feet.

Computer laboratory. Should be the size of a regular classroom to permit ample room for computer workstations; area should be secure and computers should be compatible with others in the school; one printer provided for every two to four computers and a projec-

tion system or large monitor to accommodate group instruction; surge protectors must be installed and a master switch located at the teacher's desk/station; note: computers may begin to malfunction as room temperature rises beyond 80 degrees Fahrenheit or the humidity increases – air conditioning unit and/or fans will help to maintain a constant humidity and temperature; special consideration should be given to subject-related laboratories. Porcelain boards should be used in computer labs.

In addition to the square-foot allotments to specific areas, great care must be taken to furnish learning resources and technology facilities with shelving and seating appropriate to specific functions, to the height of the students using the facility and to handicapped access.

Indicators of success in the design of appropriate facilities include the following:

- Facilities are designed to accommodate all identified functions of the learning resources and technology program.
- Library media facilities comply with state space standards.
- Facilities are attractive and easy to use.
- Facilities are flexible in design to accommodate changes in program and emerging technologies.
- Facilities are accessible to the handicapped.
- Facilities provide a safe learning environment.
- Facilities contain furniture, storage, shelving and other furnishings appropriate to the age range of the student body.
- Facilities are of sufficient size to afford equitable access to resources by all students and teachers.
- Facilities are assessed every five years for ability to accommodate program activities.
- Learning resources and technology professionals are active participants in planning and designing new facilities or renovations.■

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PROGRAM MANAGEMENT 7

District-Level Management
School-Level Management
School-Level Activities
School-Level Staffing
Fiscal Considerations
Budgets – Library Books and Periodicals
Budgets – Nonprint and Electronic Materials
Budgets – Equipment

The transition from bookroom/library and audiovisual storeroom to a comprehensive learning resources and technology program has been made in some school districts under the direction of district-level supervisors, while, in other districts, schools have developed their own programs without supervision. Both models of program development can yield excellent results but, without district-level guidance and supervision, there is a greater chance that all schools in a district will not have the same quality of learning resources and technology program. Leadership provided by district-level staff members results in programs that function more equitably. For this reason, districts with multibuilding learning resources and technology programs are encouraged to employ district-level management to help ensure comparable and effective programs.■

District-Level Management

District-level activities generally can be grouped into three categories: leadership, management and services. The following activities and responsibilities are characteristic of a district-level learning resources and technology staff member:

Leadership. The district-level staff member:

- coordinates and gives guidance to all school-level programs;
- initiates short- and long-range planning and strategies;
- coordinates activities of the learning resources and technology advisory committee;
- promotes and/or designs professional development activities for the learning resources and technology professional staff, and for administrators and teachers;
- serves on curriculum development, budget and facilities planning committees at the district level;
- coordinates policy and standards development for learning resources and technology programs;
- initiates public relations efforts on behalf of learning resources and technology programs;
- applies for appropriate grants;
- explores and evaluates new technologies for potential educational or management applications;
- coordinates development of scope and sequence and/or curriculum for learning resources and technology skills instruction;
- prepares reports for and makes presentations to the board of education;
- promotes and interprets the learning resources and technology program for the educational community;
- directs district involvement in information networks;
- assists building-level staff members in developing goals and objectives for their school programs; and
- conducts a systematic and comprehensive evaluation of programs.

Management. The district-level staff member:

- pursues and negotiates cooperative or discount purchasing agreements and site licenses;
- develops job descriptions for learning resources and technology personnel and assists in hiring for professional positions;
- reviews and consolidates budget requests from individual schools;
- supervises and evaluates district learning resources and technology staff members;
- coordinates the acquisition of district materials and equipment collections;
- provides for appropriate compatibility of materials and equipment;
- maintains district inventories;
- establishes budget priorities for the district learning resources and technology programs;
- manages centralized technical processing;
- designs and coordinates district-level services; and
- communicates new additions to collections, professional development opportunities, issues and trends in the profession, etc., to learning resources and technology staff members, administrators and the educational community, as appropriate.

Services. The district-level staff member:

- assists building-level personnel in collection development, management techniques, skills instruction and integration, policy implementation, and orientation of new learning resources and technology professional staff members;
- provides for database searches;
- conducts professional development activities for learning resources and technology staff members and other teachers, as appropriate;
- coordinates the application of technology to the teaching and learning process;
- coordinates centralized ordering and processing;
- negotiates contracts for the purchase, installation and repair of equipment, including volume discounts;

- coordinates interagency loans;
- arranges for the preview of materials;
- supervises production of instructional materials to support the curriculum; and
- determines and implements program components that are efficiently and/or economically offered on a districtwide basis.

Staffing. An effective learning resources and technology program at the district level requires appropriately certified staff with the training and experience necessary to manage the program professionally. The number of district-level staff members and their responsibilities will vary with the needs of a district and will depend on the degree of program development. District-level personnel can play a significant role in helping school programs to grow in a coordinated fashion, resulting in quality and equality throughout the system.

Positions which may be considered for district-level staffing are learning resources and technology director; library media, computer or technology coordinators; subject-area specialists; media technicians and clerical personnel. A learning resources and technology director is a middle-level administrator (requiring an intermediate administrator or supervisor certificate) charged with responsibility for administration, budgeting, staff development, planning and evaluation for the overall district program.

District facilities. District-level management activities require appropriate facilities. Unlike school facilities which have state-recommended formulas as to size, district facilities will depend upon the services offered and the collections housed. For example, a district which provides professional staff materials will need space for processing and storage. Space for district-level facilities may be found in school learning resources and technology centers, district administrative offices or in a separate facility.■

School-Level Management

While it may be possible for district-level personnel to provide the latest in educational technologies and complete collections of print, nonprint and electronic materials, it is not possible for absentee management to make programs run effectively or relate to the curriculum in meaningful ways. The most sophisticated facilities can be meaningless unless they are well used. The effective operation of any learning resources and technology program is a day-to-day job and must be the responsibility of certified personnel.

The primary responsibilities (or goals) for learning resources and technology program managers at the individual school level are to:

- provide for the systematic selection, acquisition or development, organization and utilization of instructional materials and equipment to support the school curriculum;
- encourage the effective use of instructional materials in teaching through participation in curriculum planning and the development of instructional strategies;
- provide an atmosphere which encourages productive utilization of the learning resources and technology facilities and materials by students for a variety of purposes;
- provide systematic and integrated instruction for students in the skills necessary to utilize learning resources and technology programs for classroom studies, for personal interests and for the development of an appreciation of the value of lifelong learning; and
- promote and interpret the learning resources and technology program for the educational community.

Each school learning resources and technology professional should work with district personnel, a local school learning resources and technology advisory committee (similar in composition to the district-level group), and the principal to develop program goals and objectives. While a school may adopt goals as general as those previously stated, objectives should be more specific and focused on the needs and circumstances of the individual school.

For example, the goal of providing *an atmosphere which encourages productive utilization of learning resources and technology facilities and materials by students for a variety of purposes* would be carried out very differently in a high school and in an elementary school. In an elementary school, objectives for reaching this goal would require close cooperation with classroom teachers because students need considerable guidance and supervision. High school students, on the other hand, can be more independent and assume greater individual responsibility. Consequently, the school learning resources and technology program can include activities that appeal directly to students, as well as those developed in cooperation with the instructional staff.■

School-Level Activities

School-level activities fall into four categories: consultation, instruction, management and services. Examples of each of these types of activities follow.

Consultation. The school-level staff member:

- participates in curriculum and course development; and
- works with teachers in planning instructional strategies.

Instruction. The school-level staff member:

- teaches and/or directs instruction in learning resources and technology skills;
- conducts in-service programs for staff members, as appropriate; and
- trains support and volunteer staff members.

Management. The school-level staff member:

- implements district policies for selection of materials and equipment, copyright, circulation, etc.;
- develops learning resources and technology policies where district policies do not exist;
- defines goals and objectives for the school learning resources and technology program based on the district philosophy, goals and objectives;
- develops budget requests for the program;
- evaluates the effectiveness of program facilities, services, instruction and collections;
- evaluates members of the learning resources and technology support staff;
- develops and implements a systematic process for acquiring materials;
- organizes materials for easy use by students and teachers;
- maintains an accurate card or electronic catalog, shelf list and utilization record;
- works with district personnel or an architect in designing new or remodeled facilities;
- sets priorities for acquisitions and program activities; and
- pursues cooperative purchasing opportunities.

Services. The school-level staff member:

- cooperates with all appropriate constituencies;
- plans for services or materials for students with special needs;
- arranges for intradistrict or interagency loan of materials;
- produces or arranges for the production of instructional materials;
- arranges for the preview of materials when possible;
- coordinates the use of instructional equipment;
- conducts database searches;
- informs students, teachers and administrators of new materials or services that will help in meeting their information needs; and
- provides reviews and selection tools for materials in a variety of subject areas.■

School-Level Staffing

Because quality leadership of the school-level program is critical to its effectiveness and contributes to the educational mission of the school, these programs must be directed by one or more learning resources and technology professionals and have the support of the school administration.

Library media specialist. Certification is required for anyone serving in the employ of a board of education as a school library media specialist. The determining factor is job function and not necessarily job title. The certified school library media specialist is trained not only in the area of library media and instructional technology, but also in the fundamentals of curriculum and instruction. Connecticut certification requirements list six competencies (responsibilities or functions) of the library media specialist. These include:

- design, implement and evaluate media programs;
- evaluate, select, acquire, organize, produce and retrieve media information;
- teach students, staff and faculty to utilize media and its accompanying technology by applying valid instructional methods and techniques;
- assist students in the interpretation of print and nonprint materials;
- apply principles of administration and supervision for effective leadership and operation of the media center program; and
- formulate the educational specifications and contribute to the design of school media facilities.

These major areas of responsibility can be the basis for determining the amount of a library media specialist's time that is needed to serve each teacher (and the teacher's class) in a school. The first step is to determine the amount of time each function requires. If, for example, one estimates that approximately 20 minutes are needed for each of the functions except for that concerning facilities, then each teacher and class would require one hour and 40 minutes per week of the school library media specialist's time. A school with 15 teachers,

therefore, would require approximately 25 hours of a library media specialist's time per week. Additional professional staff members may be required for special services such as graphic and/or television production, computer utilization instruction and other technical areas or features of the educational program.

Computer specialist. The scope and forms of computer education and use vary significantly among school districts. In view of the wide variation in course design and orientation, it has been deemed impractical to issue a specific certificate endorsement for computer specialist. Connecticut certification regulations apply as follows (as of July 1, 1989):

> **Sec. 10-145d-163. When required.** A certificate shall be required for anyone serving in the employ of a board of education as a teacher of computer technology, computer literacy, computer programming or electronics, data processing or related courses.
>
> **Sec. 10-145d-164. Certificate requirements.** Courses taught at the elementary level shall be taught by teachers holding elementary level certification, and secondary level courses shall be taught by teachers holding secondary certification.

Each superintendent of schools is responsible for determining what particular computer experience and/or education is appropriate for computer positions within a district.

Support staff. Regardless of the stage of development or size, every learning resources and technology program requires assistance from an adequate support staff. Working under the direction of certified professionals, support staff members perform numerous clerical and technical tasks that free the certified staff to work directly with students and teachers. While the exact number of support staff members needed and specific duties assigned are determined by the level of program development, facilities design, school population and number of professional staff members, there never should be less than one full-time support staff member for each learning resources and technology program or program component.

While specific responsibilities may vary from school to school, the following from *Information Power* (1988) may serve as guidelines when developing job descriptions for the support staff:

- *Technicians* usually have some formal academic and technical training at the undergraduate or technical institution level, or experience in a specialized area of media production, maintenance or use. These areas may include graphics and displays; photography; operation, maintenance and repair of instructional hardware; video and audio production and storage; installation and maintenance of video, audio, computer and other communications systems.
- *Paraprofessionals* usually have a general background in learning resources and technology routines, acquired primarily from on-the-job experience and training, with limited formal training required. They may work directly with teachers and students in activities coordinated by the learning resources and technology professionals.
- *Clerical staff members* usually have some formal training at the high school or technical institution level and experience in secretarial and basic business operations. They perform routine tasks in the areas of materials and hardware acquisition, file and records maintenance, circulation, and use of materials and equipment. Some of the competencies they should demonstrate include: typing, word processing and duplicating; filing, sorting, organizing and shelving; maintaining records, inventorying and accounting; and computer searching for cataloging and interagency loan.

Adapted from *Information Power: Guidelines for School Library Media Programs*. Chicago, IL, and Washington, DC: American Association of School Librarians and Association for Educational Communications and Technology, 1988. Used with permission.

Volunteers such as community members, parents and students can provide beneficial services to a learning resources and technology program if they are used to supplement an already adequate staff. Because most volunteers do not have formal backgrounds or experience in the field, they will require training and supervision by certified personnel.

Indicators of success in the development of effective school-level learning resources and technology programs include the following:

- All students, teachers and administrators in every school have access to a full range of learning resources and technology services and resources under the direction of full-time certified learning resources and technology professionals.
- Each school employs at least one full-time support staff member for the learning resources and technology program, or for each program component.
- An appropriate ratio of professional and support personnel to teachers is maintained.
- Appropriate learning resources and technology staff members are employed as new program components are added.
- Accurate job descriptions exist for certified, support and volunteer staff members.
- The criteria by which learning resources and technology staff members are evaluated reflect their responsibilities for consultation, management and services, as well as their teaching performances.
- Learning resources and technology facilities and resources are available in sufficient quantity and schedules are flexible in order to afford access by faculty and students at points of need.■

Fiscal Considerations

An important consideration for every learning resources and technology program is the development of a budget and accountability standards in the expenditure of allocations. Because these programs affect every other curriculum area and, ultimately, student learning, it is essential that attention be given to the development of a budget that will provide the staff, materials, equipment and facilities necessary to achieve the goals and objectives that have been established.

Although learning resources and accompanying equipment may be located in different areas of a learning resources and technology facility, or be on long-term loan throughout a school, the acquisition of all materials and equipment should be coordinated through the director of the school learning resources and technology program. The advantages of this include:

- maintaining an accurate centralized inventory of all learning resources and technology collections;
- addressing needs in order of priority;
- eliminating unnecessary duplication of expensive or seldom-used materials or equipment;
- promoting greater compatibility of equipment and software throughout the building;
- encouraging greater economy through quantity purchases, cooperative purchasing agreements and site licenses; and
- maintaining a centralized vendor file containing contacts, pricing practices, discounts, maintenance contracts and other pertinent data.■

Budgets – Library Books and Periodicals

Expenditures for library books and periodicals traditionally have been recommended only in terms of dollars per pupil. As a very general guideline this may be effective; however, several factors will affect the appropriateness of such a guideline.

Most important is the current status of the library media program. Before a program budget can be deemed appropriate, it must be examined with respect to its ability to respond to the curriculum needs of the school and to what is considered good practice for school library media programs. What may be an adequate per pupil expenditure for a school with a library media collection that is current and sufficient in breadth and depth may be woefully lacking in a school that is trying to improve its collection, or in a program that has been neglected.

Another factor is the decrease that each school collection will sustain each year due to loss, damage or wear that is beyond repair. Approximately five percent of a collection must be replaced annually for these reasons. The costs of replacing of old materials and adding new materials will be affected by current prices. Over the past few years book prices have increased at a rate greater than the general inflation rate for the nation. In addition, a minimum collection must be maintained regardless of the number of students in a school. Consequently, a very small school may find that additional funds per pupil are necessary.

Given these factors, the formula on page 47 is presented as a model for calculating budget recommendations for the print section of the library media budget.

In the example, also on page 47, the previously explained formula is applied to a model elementary school of 250 pupils with a professional staff of 20. It is assumed that the library media center contains a basic collection of resources that meets curriculum and leisure needs of both students and staff. There are 6,000 volumes in the book collection for this model.

FORMULA

Factor A: **Replacement of books lost, damaged, out of date or containing inaccurate information**

Five percent (or actual percentage) X number of books in the collection X average price of a library book for the particular school level $_____

Factor B: **Periodical subscriptions**

Number of periodical subscriptions X average price of a periodical subscription for the school level, or actual cost for subscriptions needed (microforms should be included here) $_____

Factor C: **Growth and expansion of the book collection based on its current status**

1. If the book collection fulfills 90 percent or more of state guidelines, use 3-5 percent in equation below.
2. If the book collection fulfills 75 to 90 percent of guidelines, use 10-15 percent.
3. If the book collection falls below 75 percent of state guidelines, use 15-25 percent.

Percentage X number of books in the collection X average price of a library book for the school level $_____

Factor D: **Reference materials**

Actual dollar amount for the materials needed $_____

EXAMPLE

Factor A: Five percent, or 300 volumes, would need to be replaced due to loss, damage or wear. The average price of an elementary-level hard-bound book is $13.75 for both fiction and nonfiction.

300 x $13.75 = $4,125 — $4,125

Factor B: Twenty-five periodical subscriptions would need to be renewed or started. The average price of an elementary-level periodical subscription is $11.

25 x $11 = $275 — 275

Factor C: Three percent, or 180 volumes, would be added for leisure reading and to give the collection greater breadth and depth. The average price of an elementary library book is $13.75. 180 x $13.75 = $2,475 — 2,475

Factor D: A new edition of an encyclopedia and other reference books total $1,100. — 1,100

Total amount requested for library books and periodicals — $7,975

This formula also may be applied to middle school, junior high and high school budgets, using the average costs for books and periodicals for the appropriate academic level. Prices vary according to level and tend to increase each year.

There are a number of additional variables that will affect budget requests for learning resources and technology materials. Among those requiring consideration are the following:

- **Age of the collection.** Careful examination may reveal that many materials need to be removed from a collection because there are newer editions or unnecessary duplications, or because the content no longer is accurate or complete.
- **Strengths and weaknesses.** The collection may not meet the needs of all curriculum areas. Special budget increases may be needed when curriculums are revised, new courses are introduced or new technologies are incorporated into the instructional process.
- **Changes in school population.** Situations that result in a substantial increase in the number, type or grade level of the student population may require a special infusion of funds to supply resources that meet teaching and learning needs.
- **Inflation.** Costs of learning resources and technology materials have increased at a rate greater than the national inflation rate.
- **Instructional strategies.** For schools utilizing instructional strategies such as cooperative learning or whole language, additional resources may be required.■

Budgets – Nonprint and Electronic Materials

Because prices vary significantly and schools access nonprint and electronic materials in a variety of ways it is difficult to arrive at a simple formula for calculating an annual budget request. Some of the options for nonprint and electronic resources include the following:

- **Purchase.** Frequently used materials that are integral to curriculum areas generally are purchased and housed within individual schools. Consideration should be given to the availability of site licenses and lab packs, updated versions, vendor support and replacement of broken disks.
- **Central office collection.** Expensive items and those used less frequently but still related directly to curriculum areas may be purchased and circulated by the district learning resources and technology program. District collections also may provide on-line database services, special subject collections and professional development materials.
- **Cooperatives.** It sometimes is practical for several neighboring school districts to combine fiscal resources to maintain a film or video cooperative.
- **Regional centers or materials rentals.** Regional educational service centers, cooperating library service units or materials libraries frequently can serve the needs of schools for nonprint materials more economically than by school or district purchase. Regional organizations often can negotiate cooperative acquisition programs or group purchases for members.
- **Networks.** Access to information and resources in other institutions can be expanded through library or other information networks.
- **On-line databases.** Subscriptions to remote databases can provide extensive information in a timely fashion and are especially practical in locating current information or otherwise very expensive materials.
- **Broadcast materials.** Instructional television, satellite, cable and ITFS broadcasts provide resources that can be recorded (see Chapter 8) and added to the school or district collection; some only temporarily and some permanently.

The following considerations should be evaluated in the development of an annual budget request for nonprint and electronic materials:

- actual cost of items purchased or leased by the school – computer software, film, video, microfiche, filmstrips, records, videodiscs and others as applicable;
- cost for memberships in regional organizations or film and video services;
- cost of cooperative memberships;
- rental fees based on prior use and unfilled requests or contract fees for special rental agreements;
- actual fixed monthly cost or estimated hourly cost for on-line database services, whichever applies;
- postage;
- cost of state and/or local site licenses for computer software;
- actual cost of lab packs for computer programs;
- annual fees for participation in a library or information network;
- cost for the purchase of blank tapes or disks;
- cost of telephone (including fax machines) or

other telecommunications lines, when applicable; and
- duplication and distribution costs.■

Budgets – Equipment

Since the amount and type of equipment needed to carry out a successful learning resources and technology program will vary from school to school, it is impossible to calculate an equipment budget request on the basis of a simple formula. There are, however, expenditures that should be considered each time a budget request is developed. Among these are the following:

- replacement costs for equipment that has been lost or stolen, is beyond repair or that has become obsolete;
- additional pieces of equipment necessary to expand an existing program or implement a new program;
- cost to upgrade equipment for existing programs;
- equipment needed to use new media formats;
- service contracts;
- new equipment to meet increased student and teacher demand;
- equipment necessary to implement telecommunications, networks or on-line data retrieval activities;
- lamps and other consumable items;
- blank audio- and videotapes and disks;
- rental fees for special equipment;
- installation of satellite or ITFS dish, electronic or phone lines, etc; and
- spare parts.

Factors that will affect an individual school's equipment budget include:

- useful life and types of existing equipment;
- equipment available from the district office;
- equipment repair services available from the district;
- physical layout of the school;
- range of media formats available in the school or district;
- school population; and
- curriculum changes.

Indicators of success for calculating budgets for learning resources and technology programs include the following:

- The entire learning resources and technology budget for a school is coordinated by the learning resources and technology professional.
- The school-level budget becomes part of the district-level budgeting process.
- The learning resources and technology budget is program based.
- The learning resources and technology budget is adequate to meet identified resources and equipment needs.
- The learning resources and technology budget is sufficient to maintain collections of materials and equipment that are adequate in quantity and quality.■

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COPYRIGHT 8

Guidelines for Educators
Off-Air Copying
Software Copyright
Fair Use Guidelines for Music
Public Domain
Local Responsibility

Library media specialists, computer specialists and other information providers traditionally have been dedicated to creating maximum access to information and materials for their patrons. Access to information remains a goal for school library media specialists, and indeed all librarians, and is reflected in the first two challenges found in the national guidelines for school library media programs (American Library Association and Association for Educational Communications and Technology, 1988).

- **Challenge 1:** To provide intellectual and physical access to information and ideas for a diverse population whose needs are changing rapidly.
- **Challenge 2:** To ensure equity and freedom of access to information and ideas, unimpeded by social, cultural, economic, geographic or technological constraints.

The dearth of information available in a wide range of formats and the technology that easily can duplicate these resources has caused library media personnel to face the dilemma of balancing access to information and the ethical use of the materials for which they are responsible. Although the issue is not entirely new, it has become more extensive and complex as more and more resources have been added to the responsibilities of the library media and, indeed, all technology professionals.

The first federal copyright law was enacted in 1790 (with general revisions in 1831, 1870 and 1909), and covered maps, charts and books. Its purpose was "to promote the progress of science and useful arts" by granting an author the *exclusive right* to benefit from and make copies of his or her work, including derivative works. In 1909, the potential for an individual to violate the law was limited. However, as time passed and communication technology advanced, new issues arose relating to the use of copyrighted materials. Unfortunately, the limited scope of the 1909 revision of the copyright law offered little, if any, assistance in dealing with new information formats.

In 1976, the copyright law was revised to, among other things, more clearly define an author's rights, with Sections 105, 107, 108, 110 and 117 (see Appendix B) having particular relevance to school library media specialists and other technology professionals. However, the law also was revised in order to define the limitations of an author's exclusive right to allow for reasonable use of copyrighted materials for educational purposes. This is the concept of "fair use," copying without permission from or payment to the author of a work.

Section 107 of the copyright law delineates four factors that must be considered when attempting to determine whether use of a particular work is indeed "fair use." These factors are:

- the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit education purposes;
- the nature of the copyrighted work;
- the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
- the effect of the use upon the potential market value of the copyrighted work.■

Guidelines for Educators

While the copyright law defined in general terms the limitations on the exclusive rights of copyright holders, there remained some confusion as to the interpretation of fair use guidelines for educators. The House Committee on the Judiciary, during its 1975 hearings into copyright law revision, attempted to clarify what constituted fair use by educators, with the urging of three groups to "achieve a meeting of the minds" on a series of guidelines. Representatives of the Ad Hoc Committee of Educational Institutions and Organizations on Copyright Law Revision, and of the Authors League of America, Inc. and the Association of American Publishers, Inc. delivered their report in March 1976.

The report from these groups – "Agreement on Guidelines for Classroom Copying in Not-For-Profit Education Institutions With Respect to Books and Periodicals" – was printed as part of the House committee's report (94-1476). While the guidelines are not law, they represent commonly accepted practice. (See Appendix B for applicable excerpts of the copyright law.) The full text of the classroom copying agreement and guidelines follows:

Agreement on Guidelines for Classroom Copying In Not-For-Profit Educational Institutions With Respect To Books And Periodicals

The purpose of the following guidelines is to state the minimum and not the maximum standards of educational fair use under Section 107 of H.R. 2223. The parties agree that the conditions determining the extent of permissible copying for educational purposes may change in the future; that certain types of copying permitted under these guidelines may not be permissible in the future; and conversely that in the future other types of copying not permitted under these guidelines may be permissible under revised guidelines.

Moreover, the following statement of guidelines is not intended to limit the types of copying permitted under the standards of fair use under judicial decision and which are stated in Section 107 of the Copyright Revision Bill. There may be instances in which copying which does not fall within the guidelines stated below may nonetheless be permitted under the criteria of fair use.

GUIDELINES

I. Single Copying for Teachers

A single copy may be made of any of the following by or for a teacher at his or her individual request for his or her scholarly research or use in teaching or preparation to teach a class:

A. A chapter from a book;
B. An article from a periodical or newspaper;
C. A short story, short essay or short poem, whether or not from a collective work;
D. A chart, graph, diagram, drawing, cartoon, or picture from a book, periodical or newspaper;

II. Multiple Copies for Classroom Use

Multiple copies (not to exceed in any event more than one copy per pupil in a course) may be made by or for the teacher giving the course for classroom use or discussion, *provided that:*

A. The copying meets the tests of brevity and spontaneity as defined below; *and,*
B. Meets the cumulative effect test as defined below; *and*
C. Each copy includes a notice of copyright.

DEFINITIONS

Brevity

(i) Poetry: (a) A complete poem if less than 250 words and if printed on not more than two pages, or (b) from a longer poem, an excerpt of not more than 250 words.

(ii) Prose: (a) Either a complete article, story or essay of less than 2,500 words, or (b) an excerpt from any prose work of not more than 1,000 words or 10 percent of the work, whichever is less, but in any event a minimum of 500 words.

(Each of the numerical limits stated in "i" and "ii" above may be expanded to permit the completion of an unfinished line of a poem or of an unfinished prose paragraph.)

(iii) Illustration: One chart, graph, diagram, drawing, cartoon or picture per book or per periodical issue.

(iv) "Special works": Certain works in poetry, prose, or "poetic prose" which often combine language with illustrations and which are intended sometimes for children and at other times for a more general audience [and] fall short of 2,500 words in their entirety. Paragraph "ii" above notwithstanding, such "special works" may not be reproduced in their entirety; however, an excerpt comprising not more than two of the published pages of such special work and containing not more than 10 percent of the words found in the text thereof may be reproduced.

Spontaneity

(i) The copying is at the instance and inspiration of the individual teacher, and

(ii) The inspiration and decision to use the work and the moment of its use for maximum teaching effectiveness are so close in time that it would be unreasonable to expect a timely reply to a request for permission.

Cumulative Effect

(i) The copying of the material is for only one course in the school in which the copies are made.
(ii) Not more than one short poem, article, story, essay, or two excerpts may be copied from the same author, nor more than three from the same collective work or periodical volume during one class term.
(iii) There shall not be more than nine instances of such multiple copying for one course during one class term.

(The limitations stated in "ii" and "iii" above shall not apply to current news periodicals and newspapers and current news sections of other periodicals.)

III. Prohibitions as to I and II above

Notwithstanding any of the above, the following shall be prohibited:

(A) Copying shall not be used to create or to replace or substitute for anthologies, compilations or collective works. Such replacement or substitution may occur whether copies of various works or excerpts there-from are accumulated or are reproduced and used separately.
(B) There shall be no copying of or from works intended to be "consumable" in the course of study or of teaching. These include workbooks, exercises, standardized tests, test booklets, answer sheets and like consumable material.

(C) Copying shall not:

(a) substitute for the purchase of books, publishers' reprints or periodicals;
(b) be directed by higher authority;
(c) be repeated with respect to the same item by the same teacher from term to term.

(D) No charge shall be made to the student beyond the actual cost of the photo-copying.■

Off-Air Copying

Revisions in the copyright law opened the door to another set of questions in the area of off-the-air copying of television programs. The following guidelines, adopted by and reprinted with the permission of the Association for Educational Communications and Technology, have gained general acceptance and apply only to off-the-air recording by nonprofit educational institutions.

Off-Air Copying Guidelines

1. A broadcast program may be recorded off-air simultaneously with broadcast transmission (including simultaneous cable re-transmission) and retained by a nonprofit educational institution for a period not to exceed forty-five (45) calendar days after date of recording. Upon conclusion of such retention period, all off-air recordings must be erased or destroyed immediately. "Broadcast programs" are television programs transmitted by television stations for reception by the general public without charge.
2. Off-air recordings may be used once by individual teachers in the course of relevant teaching activities, and repeated once only when instructional reinforcement is necessary, in classrooms and similar places devoted to instruction within a single building, cluster or campus, as well as in the homes of students receiving formalized home instruction during the first ten (10) consecutive school days in the forty-five (45) calendar day retention period. "School days" are school session days – not counting weekends, holidays, vacations, examination periods, or other scheduled interruptions – within the forty-five (45) calendar day retention period.

3. Off-air recordings may be made only at the request of individual teachers for their own use and may not be regularly recorded in anticipation of requests. No broadcast program may be recorded off-air more than once at the request of the same teacher, regardless of the number of times the program may be broadcast.
4. A limited number of copies may be reproduced from each off-air recording to meet the legitimate needs of teachers under these guidelines. Each such additional copy shall be subject to all provisions governing the original recording.
5. After the first ten (10) consecutive school days, off-air recordings may be used up to the end of the forty-five (45) calendar day retention period only for teacher evaluation purposes, i.e., to determine whether or not to include the broadcast program in the teaching curriculum. They may not be used in the recording institution for student exhibition or other evaluation purpose without authorization.
6. Off-air recordings need not be used in their entirety, but the recorded programs may not be altered from their original content. Off-air recordings may not be physically or electronically combined or merged to constitute teaching anthologies or compilations.
7. All copies of off-air recordings must include the copyright notice on the broadcast program as recorded.
8. Educational institutions are expected to establish appropriate control procedures to maintain the integrity of these guidelines.

Editor's Note: Extended rights are available for many instructional television programs sponsored by the Connecticut State Department of Education. Please refer to the current *Instructional Television Schedule and Resource Guide* concerning rights for specific programs.■

Software Copyright

Changes in the educational computer and software markets have made it critical that school districts adopt copyright policies in this area. One model policy that has been accepted by school districts throughout the world was developed by the International Society for Technology in Education (ISTE), located at the University of Oregon.

The ISTE Software Copyright Committee is composed of educators, industry associations, hardware vendors, software developers and vendors, and attorneys. The text of selected portions of the committee's 1986-87 revision, which is used with permission, follows:

School District Copyright Policy

The Committee recommends that school districts approve a District Copyright Policy that includes both computer software and other media. It is also recommended that only one person in the district be given the authority to sign software licensing agreements. This implies that such a person should become familiar with licensing and purchasing rights of all copyrighted materials.

Suggested Software Guidelines

The 1976 U.S. Copyright Act and its 1980 Amendments remain vague in some areas of software use and its application to education. Where the law itself is vague, software licenses tend to be much more specific. It is, therefore, imperative that educators read the software's copyright page and understand the licensing restrictions printed there. If these uses are not addressed, the following Guidelines are recommended.

These Guidelines do not have the force of law, but they do represent the collected opinion on fair software use by nonprofit educational agencies from a variety of experts in the software copyright field.

Back-up Copy. The Copyright Act is clear in permitting the owner of software a back-up copy of the software to be held for use as an archival copy in

the event the original disk fails to function. Such back-up copies are not to be used on a second computer at the same time the original is in use.

Multiple-loading. The Copyright Act is most unclear as it applies to loading the contents of one disk into multiple computers for use at the same time. In the absence of a license expressly permitting the user to load the contents of one disk into many computers for use at the same time, it is suggested that you *not* allow this activity to take place. The fact that you physically can do so is irrelevant. In an effort to make it easier for schools to buy software for each computer station, many software publishers offer lab packs and other quantity buying incentives. Contact individual publishers for details.

Local Area Network Software Use. It is suggested that before placing a software program on a local area network or disk-sharing system for use by multiple users at the same time, you obtain a written license agreement from the copyright holder giving you permission to do so. The fact that you are able to physically load the program on the network is, again, irrelevant. You should obtain a license permitting you to do so before you act.

Model District Policy on Software Copyright

It is the intent of [district] to adhere to the provisions of copyright laws in the area of microcomputer software. It is also the intent of the district to comply with the license agreements and/or policy statements contained in the software packages used in the district. In circumstances where the interpretation of the copyright law is ambiguous, the district shall look to the applicable license agreement to determine appropriate use of the software [or the district will abide by the approved Software Use Guidelines].

We recognize that computer software piracy is a major problem for the industry and that violations of copyright laws contribute to higher costs and greater efforts to prevent copying and/or lessen incentives for the development of effective educational uses of microcomputers. Therefore, in an effort to discourage violation of copyright laws and to prevent such illegal activities:

1. The ethical and practical implications of software piracy will be taught to educators and school children in all schools in the district (e.g., covered in fifth grade social studies classes).
2. District employees will be informed that they are expected to adhere to Section 117 of the 1976 Copyright Act as amended in 1980, governing the use of software (e.g., each building principal will devote one faculty meeting to the subject each year).
3. When permission is obtained from the copyright holder to use software on a disk-sharing system, efforts will be made to secure this software from copying.
4. Under no circumstances shall illegal copies of copyrighted software be made or used on school equipment.
5. [Name or job title] of this school district is designated as the only individual who may sign license agreements for software for schools in the district. Each school using licensed software should have a signed copy of the software agreement.
6. The principal at each school site is responsible for establishing practices which will enforce this district copyright policy at the school level.■

Fair Use Guidelines For Music

Several groups interested in the application of copyright law revisions for music educators have published a booklet containing guidelines for the use of copyrighted music materials. The February 1986 publication entitled *The United States Copyright Law: A Guide for Music Educators* was issued jointly by the Music Educators National Conference, Music Publishers' Association of the United States, Music Teachers National Association, National Music Publisher's Association and National Association Of Schools of Music. The following guidelines are reprinted with permission from the above organizations:

Music Copying Guidelines

The purpose of the following guidelines is to state the minimum and not the maximum standards of educational fair use under Section 107 of H.R. 2223. The parties agree that the conditions determining the extent of permissible copying for educational purposes may change in the future; that certain types of copying permitted under these guidelines may not be permissible in the future; and conversely that in the future other types of copying not permitted under these guidelines may be permissible under revised guidelines.

Moreover, the following statement of guidelines is not intended to limit the types of copying permitted under the standards of fair use under judicial decision and which are stated in Section 107 of the Copyright Revision Bill. There may be instances in which copying which does not fall within the guidelines stated below may nonetheless be permitted under the criteria of fair use.

A. Permissible uses

1. Emergency copying to replace purchased copies which for any reason are not available for an imminent performance, provided purchased replacement copies shall be substituted in due course.
2. For academic purposes other than performances, multiple copies of excerpts of works may be made, provided that the excerpts do not comprise a part of the whole which would constitute a performable unit such as a section, movement or aria, but in no case more than 10 percent of the whole work. The number of copies shall not exceed one copy per pupil.
3. Printed copies which have been purchased may be edited OR simplified provided that the fundamental character of the work is not distorted or the lyrics, if any, altered, or lyrics added if none exist.
4. A single copy of recordings of performances by students may be made for evaluation or rehearsal purposes and may be retained by the educational institution or individual teacher.
5. A single copy of a sound recording (such as a tape, disc or cassette) of copyrighted music may be made from sound recordings owned by an educational institution or an individual teacher for the purpose of constructing aural exercises or examinations and may be retained by the educational institution or individual teacher. (This pertains only to the copyright of the music itself and not to any copyright which may exist in the sound recording.)

B. Prohibitions

1. Copying to create or replace or substitute for anthologies, compilations or collective works.
2. Copying of or from works intended to be "consumable" in the course of study or teaching such as workbooks, exercises, standard tests and answer sheets and like material.
3. Copying for the purpose of performance, except as in A-1 above.
4. Copying for the purpose of substituting for the purchase of music except as in A-1 and 2 above.
5. Copying without inclusion of the copyright notice which appears on the printed copy.■

Public Domain

Any material, regardless of format, that either is no longer or never has been under copyright protection is considered to be in the public domain and may be duplicated for educational use without permission from or payment to the copyright holder. Materials that generally are included in the public domain include:

- United States government documents;
- other documents created through the use of federal dollars;
- materials published prior to January 1, 1978, without the notice of copyright required by the Act of 1909;
- works whose copyright protection has expired; and
- public domain software.

For works published prior to January 1, 1978, copyright expires 28 years from the date the copyright was secured, unless renewed. If renewed, copyright protection extends 75 years after the date protection was first secured.

It should be noted that, in accordance with the Copyright Act of 1976, works created after January 1, 1978, are protected from the moment of conception whether published or not, and regardless of copyright registration or identification by copyright notice.

Even with this interpretation, it is not possible to cover every situation that may arise with respect to the duplication of materials. It is equally impossible to expect the library media specialist or any other learning resources and technology professional to police every instance of copying within a school or district. It is, however, reasonable for the learning resources and technology staff to take positive steps to encourage compliance with the copyright law and to educate members of their educational community about proper and legal ways of using certain copyrighted resources for educational purposes.■

Local Responsibility

One of the most effective means of informing the educational community of its rights and responsibilities concerning the use of copyrighted materials is through the development and dissemination of local board of education-approved policies. Such policies should include but not be limited to statements:

- indicating the district's intent to adhere to the copyright law and accepted guidelines for fair use of materials for educational purposes;
- making school employees and students responsible for their own actions;
- prohibiting the use of school equipment to make or use illegal copies;
- designating a district copyright officer;
- forbidding any employee from directing any other employee to willfully violate fair use guidelines;
- describing the scope of the law;
- concerning "gifts" which may have been produced in a manner which violates copyright law;
- delineating applicable sections of the copyright law and appropriate "fair use" guidelines; and
- indicating the intent to post appropriate copyright warnings.

The following example of a copyright notice appeared in the Federal Register, Vol. 42, No. 221, Wednesday, Nov. 17, 1977 (pp. 59264-5):

Notice
Warning Concerning
Copyright Restrictions

> The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted material. Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship or research." If a user makes a request for, or later uses, a photocopy or other reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement. This institution reserves the right to refuse to accept a copying order if, in its judgment, fulfillment of the order would involve violation of the copyright law.

Once a copyright policy has been developed and approved by a local board of education, there are many ways to encourage ethical use of materials. Among them are the following:

- conduct professional development workshops for faculty members on rights and responsibilities of copyright;
- include copyright sections in teacher and student handbooks;

- include copyright education as part of library media, computer or other technology skills instruction;
- place appropriate warnings on duplicating equipment;
- write newsletters or articles about new developments concerning copyright;
- develop and support budgets that will ensure adequate collections;
- explore site licenses or quantity discounts;
- assist administrators, teachers and students in obtaining copyright releases, when needed;
- insist that learning resources and technology staff members set good examples; and
- encourage extensive proper use of materials.

Copyright issues and guidelines will continue to be a part of the world of learning resources and technology as new technologies are developed and interpretations of the copyright law are made. It is essential that all learning resources and technology professionals maintain current information about the law and inform the educational communities they serve.■

Resources

American Library Association. *30 Questions Librarians Ask about Taping Copyrighted Television Programs for Educational Use: Interpreting the Guidelines for Off-Air Taping.* Chicago, IL: American Library Association, 1982.

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Talab, R.S. *Copyright and Instructional Technologies: A Guide to Fair Use and Permissions Procedures.* Washington, DC: Association for Educational Communications and Technology, 1989.

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APPENDIX A
LEGISLATION

The following is the text from the *Connecticut General Statutes* that learning resources and technology professionals will need to be aware of:

Sec. 10-4. Duties of board. Reports. Comprehensive plan for elementary, secondary, vocational, career and adult education. (a) Said board shall have general supervision and control of the educational interests of the state, which interests shall include preschool, elementary and secondary education, special education, vocational education and adult education; shall provide leadership and otherwise promote the improvement of education in the state, including research, planning and evaluation and services relating to the provision and use of instructional technology by school districts; shall prepare such courses of study and publish such curriculum guides including recommendations for textbooks, materials, instructional technological resources and other teaching aids as it determines are necessary to assist school districts to carry out the duties prescribed by law; shall conduct workshops and related activities, including programs of intergroup relations training, to assist teachers in making effective use of such curriculum materials and in improving their proficiency in meeting the diverse needs and interests of pupils; shall keep informed as to the condition, progress and needs of the schools in the state; and shall develop or cause to be developed evaluation and assessment programs designed to measure objectively the adequacy and efficacy of the educational programs offered by public schools and shall selectively conduct such assessment programs annually and report to the joint standing committee of the general assembly having cognizance of matters relating to education, on an annual basis.

Sec. 10-16b. Prescribed courses of study. (a) In the public schools the program of instruction offered shall include at least the following subject matter, as taught by legally qualified teachers, the arts; career education; consumer education; health and safety, including, but not limited to, human growth and development, nutrition, first aid, disease prevention, community and consumer health, physical, mental and emotional health, including youth suicide prevention, substance abuse prevention and safety and accident prevention; language arts, including reading, writing, grammar, speaking and spelling; mathematics; physical education; science; social studies, including, but not limited to, citizenship, economics, geography, government and history; and in addition, on at least the secondary level, one or more foreign languages and vocational education.

Sec. 10-28a. Advice and assistance to school library media centers. The state board of education shall give to communities advice and assistance in the organization, establishment and administration of school library media centers, shall extend to school library media centers, and to the media specialist and teachers of any public school, aid in selecting and organizing library media center collections and in management of library media services and may, for the purposes of this section, visit and evaluate library media centers organized under the provisions of section 10-221, and make recommendations for their improvement. Said board is authorized to purchase and organize books and other educational media to be loaned to such school library media centers, associations and individuals as the board may select.

Section 10-221. Boards of education to prescribe rules. (a) Boards of education shall prescribe rules for the management, studies, classification and discipline of the public schools and, subject to the control of the state board of education, the textbooks to be used; shall make rules for the control, within their respective jurisdictions, of school library media centers and approve the selection of books and other educational media therefor, and shall approve plans for public school buildings and superintend any high or graded school in the manner specified in this title.

APPENDIX B
COPYRIGHT LAW

Before the adoption in 1978 of the revised United States Code, Title 17, Copyrights, there was much speculation in educational circles about the potential effect of the new law. Some feared the new law would forbid or drastically inhibit teachers from making copies of copyrighted materials for classroom use. To the contrary, the law allows for a degree of copying that has been standard practice for teachers. Sections 105, 107, 108, 110 and 117 delineate certain types of permissible copying by educators.

Sec. 105. Subject Matter of Copyright: United States Government Works. Copyright protection under this title is not available for any work of the United States Government, but the United States Government is not precluded from receiving and holding copyrights transferred to it by assignment, bequest or otherwise.

Sec. 107. Limitations on Exclusive Rights: Fair use. Notwithstanding the provisions of Section 106, the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright. In determining whether the use made of a work in any particular case is a fair use, the factors to be considered shall include:

(1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
(2) the nature of the copyrighted work;
(3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
(4) the effect of the use upon the potential market for or value of the copyrighted work.

Sec. 108. Limitations on exclusive rights: Reproduction by libraries and archives. (a) Notwithstanding the provisions of Section 106, it is not an infringement of copyright for a library or archives, or any of its employees acting within the scope of their employment, to reproduce no more than one copy or phonorecord of a work, or to distribute such copy or phonorecord, under the conditions specified by this section, if:

(1) the reproduction or distribution is made without any purpose of direct or indirect commercial advantage;
(2) the collections of the library or archives are (i) open the public, or (ii) available not only to researchers affiliated with the library or archives or with the institution of which it is a part, but also to other persons doing research in a specialized field; and
(3) the reproduction or distribution of the work includes a notice of copyright.

(b) The rights of reproduction and distribution under this section apply to a copy or phonorecord of an unpublished work duplicated in facsimile form solely for purposes of preservation and security or for deposit for research use in another library or archives of the type described by clause (2) of subsection (a), if the copy or phonorecord reproduced is currently in the collections of the library or archives.
(c) The right of reproduction under this section applies to a copy or phonorecord of a published work duplicated in facsimile form solely for the purpose of replacement of a copy or phonorecord that is damaged, deteriorating, lost or stolen, if the library or archives has, after a reasonable effort, determined that an unused replacement cannot be obtained at a fair price.

(d) The rights of reproduction and distribution under this section apply to a copy, made from the collection of a library or archives where the user makes his or her request or from that of another library or archives, of no more than one article or other contribution to a copyrighted collection or periodical issue, or to a copy or phonorecord of a small part of any other copyrighted work, if:

(1) the copy or phonorecord becomes the property of the user, and the library or archives has had no notice that the copy or phonorecord would be used for any purpose other than private study, scholarship or research; and
(2) the library or archives displays prominently, at the place where orders are accepted, and includes on its order form, a warning of copyright in accordance with requirements that the Register of Copyrights shall prescribe by regulation.

(e) The rights of reproduction and distribution under this section apply to the entire work, or to a substantial part of it, made from the collection of a library or archives, if the library or archives has first determined, on the basis of a reasonable investigation, that a copy or phonorecord of the copyrighted work cannot be obtained at a fair price, if:

(1) the copy or phonorecord becomes the property of the user, and the library or archives has had no notice that the copy or phonorecord would be used for any purpose other than private study, scholarship or research; and
(2) the library or archives displays prominently, at the place where orders are accepted, and includes on its order form, a warning of copyright in accordance with requirements that the Register of Copyrights shall prescribe by regulation.

(f) Nothing in this section:

(1) shall be construed to impose liability for copyright infringement upon a library or archives or its employees for the unsupervised use of reproducing equipment located on its premises: *Provided*, That such equipment displays a notice that the making of a copy may be subject to the copyright law;
(2) excuses a person who uses such reproducing equipment or who requests a copy or phonorecord under subsection (d) from liability for copyright infringement for any such act, or for any later use of such copy or phonorecord, if it exceeds fair use as provided by Section 107;
(3) shall be construed to limit the reproduction and distribution by lending of a limited number of copies and excerpts by a library or archives of an audiovisual news program, subject to clauses (1), (2) and (3) of subsection (a); or
(4) in any way affects the right of fair use as provided by Section 107, or any contractual obligations assumed at any time by the library or archives when it obtained a copy or phonorecord of a work in its collections.

(g) The rights of reproduction and distribution under this section extend to the isolated and unrelated reproduction or distribution of a single copy or phonorecord of the same material on separate occasions, but do not extend to cases where the library or archives, or its employee:

(1) is aware or has substantial reason to believe that it is engaging in the related or concerted reproduction or distribution of multiple copies or phonorecords of the same material, whether made on one occasion or over a period of time, and whether intended for aggregate use by one or more individuals or for separate use by the individual members of a group; or

(2) engages in the systematic reproduction or distribution of single or multiple copies or phonorecords of material described in subsection (d): *Provided*, That nothing in this clause prevents a library or archives from participating in interlibrary arrangements that do not have, as their purpose or effect, that the library or archives receiving such copies or phonorecords for distribution does so in such aggregate quantities as to substitute for a subscription to or purchase of such work.

(h) The rights of reproduction and distribution under this section do not apply to a musical work, a pictorial, graphic or sculptural work, or a motion picture or other audiovisual work other than an audiovisual work dealing with news, except that no such limitation shall apply with respect to rights granted by subsections (b) and (c), or with respect to pictorial or graphic works published as illustrations, diagrams, or similar adjuncts to works of which copies are reproduced or distributed in accordance with subsections (d) and (e).

(i) Five years from the effective date of this Act, and at five-year intervals thereafter, the Register of Copyrights, after consulting with representatives of authors, book and periodical publishers, and other owners of copyrighted materials, and with representatives of library users and librarians, shall submit to the Congress a report setting forth the extent to which this section has achieved the intended statutory balancing of the rights of creators, and the needs of users. The report should also describe any problems that may have arisen, and present legislative or other recommendations, if warranted.

Section 110. Limitations on exclusive rights: Exemption of certain performances and displays. Notwithstanding the provisions of Section 106, the following are not infringements of copyright:

(1) performance or display of a work by instructors or pupils in the course of face-to-face teaching activities of a nonprofit educational institution, in a classroom or similar place devoted to instruction, unless, in the case of a motion picture or other audiovisual work the performance, or the display of individual images, is given by means of a copy that was not lawfully made under this title, and that the person responsible for the performance knew or had reason to believe was not lawfully made;

(2) performance of a nondramatic literary or musical work or display of a work, by or in the course of a transmission, if:

(A) the performance or display is a regular part of the systematic instructional activities of a governmental body or a nonprofit educational institution; and

(B) the performance or display is directly related and of material assistance to the teaching content of the transmission; and

(C) the transmission is made primarily for:

(i) reception in classrooms or similar places normally devoted to instruction, or

(ii) reception by persons to whom the transmission is directed because their disabilities or other special circumstances prevent their attendance in classrooms or similar places normally devoted to instruction, or

(iii) reception by officers or employees of governmental bodies as a part of their official duties or employment;

(3) performance of a nondramatic literary or musical work or of a dramatico-musical work of a

religious nature, or display of a work, in the course of services at a place of worship or other religious assembly;

(4) performance of a nondramatic literary or musical work other than in a transmission to the public, without any purpose of direct or indirect commercial advantage and without payment of any fee or other compensation for the performance to any of its performers, promoter or organizers, if:

(a) there is no direct or indirect admission charge; or

(b) the proceeds, after deducting the reasonable costs of producing the performance, are used exclusively for educational, religious or charitable purposes and not for private financial gain, except where the copyright owner has served notice of objection to the performance under the following conditions;

(i) the notice shall be in writing and signed by the copyright owner or such owner's duly authorized agent; and

(ii) the notice shall be served on the person responsible for the performance at least seven days before the date of the performance, and shall state the reasons for the objection; and

(iii) the notice shall comply, in form, content and manner of service, with requirements that the Register of Copyrights shall prescribe by regulation;

(5) communication of a transmission embodying a performance or display of a work by the public reception of the transmission on a single receiving apparatus of a kind commonly used in private homes, unless:

(a) a direct charge is made to see or hear the transmission; or

(b) the transmission thus received is further transmitted to the public;

(6) performance of a nondramatic musical work by a governmental body or a nonprofit agricultural or horticultural organization, in the course of an annual agricultural or horticultural fair or exhibition conducted by such body or organization; the exemption provided by this clause shall extend to any liability for copyright infringement that would otherwise be imposed on such body or organization, under doctrines of vicarious liability or related infringement, for a performance by a concessionaire, business establishment, or other person at such fair or exhibition, but shall not excuse any such person from liability for the performance;

(7) performance of a nondramatic musical work by a vending establishment open to the public at large without any direct or indirect admission charge, where the sole purpose of the performance is to promote the retail sale of copies or phonorecords of the work and the performance is not transmitted beyond the place where the establishment is located and is within the immediate area where the sale is occurring;

(8) performance of a nondramatic literary work, by or in the course of a transmission specifically designed for and primarily directed to blind

or other handicapped persons who are unable to read normal printed material as a result of their handicap, or deaf or other handicapped persons who are unable to hear the aural signals accompanying a transmission of visual signals, if the performance is made without any purpose of direct or indirect commercial advantage and its transmission is made through the facilities of:

(i) a governmental body;
(ii) a noncommercial educational broadcast station (as defined in Section 397 of Title 47);
(iii) a radio carrier authorization (as defined in 47 CFR 73.293-73.295 and 73.593-73.595); or
(iv) a cable system (as defined in section 111 (f));

(9) performance on a single occasion of a dramatic literary work published at least 10 years before the date of the performance, by or in the course of a transmission specifically designed for and primarily directed to blind or other handicapped persons who are unable to read normal printed material as a result of their handicap, if the performance is made without any purpose of direct or indirect commercial advantage and its transmission is made through the facilities of a radio subcarrier authorization referred to in clause (8)(iii), *Provided*, That the provisions of this clause shall not be applicable to more than one performance of the same work by the same performers or under the auspices of the same organization;

(10) notwithstanding paragraph 4 above, the following is not an infringement of copyright: performance of a nondramatic literary or musical work in the course of a social function which is organized and promoted by a nonprofit veterans' organization or a nonprofit fraternal organization to which the general public in not invited, but not including the invitees of the organizations, if the proceeds from the performance are used exclusively for charitable purposes and not for financial gain. For purposes of this section the social functions of any college or university fraternity or sorority shall not be included unless the social function is held solely to raise funds for a specific charitable purpose.

Section 117. Limitations on exclusive rights: Computer programs. Notwithstanding the provisions of Section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

(1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or
(2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

Any exact copies prepared in accordance with the provisions of this section may be leased, sold or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner.

APPENDIX C
COMPUTER TECHNOLOGY

The following resolution on computer technology was adopted by the Connecticut State Board of Education on November 5, 1981.

> The growing impact that computer technology has on society has brought with it the realization that elementary and secondary schools have an important role to play in using the technology to improve education. The computer in the teaching/learning process is a problem-solving tool as well as a medium of instruction. To assure that all students leave secondary school with an understanding of the scope, potential and importance of computer technology in their adult lives is an essential goal of education today.
>
> Therefore, the State Board of Education, in recognition of the growing influence of computers on society and the potential for improving the quality of education, supports the programs and activities of department personnel to develop a communication network to assist schools to keep abreast of the rapid developments in the field and to share successful practices and products, to coordinate and develop in-service training opportunities for teachers and administrators, to provide school districts with guidelines for both equipment and program selection, to assist school districts in the development and implementation of plans for the incorporation of the computer in the instructional program and to promote cooperative efforts among educators, government and business and industry in addressing the need for computer literacy.

APPENDIX D
ACADEMIC FREEDOM

The following resolution on Academic Freedom and Public Education was adopted by the Connecticut State Board of Education on September 9, 1981.

Academic freedom is the freedom to teach and to learn. In defending the freedom to teach and to learn, we affirm the democratic process itself. American public education is the source of much that is essential to our democratic heritage. No other single institution has so significantly sustained our national diversity, nor helped voice our shared hopes for an open and tolerant society. Academic freedom is among the strengths of American public education. Attempts to deny the freedom to teach and to learn are, therefore, incompatible with the goals of excellence and equity in the life of our public schools.

With freedom comes responsibility. With rights come obligations. Accordingly, academic freedom in our public schools is subject to certain limitations. Therefore, the STATE BOARD OF EDUCATION affirms that:

Academic freedom in our public schools is properly defined within the context of law and the constraints of mutual respect among individuals. Public schools represent a public trust. They exist to prepare our children to become partners in a society of self-governing citizens. Therefore, access to ideas and opportunities to consider the broad range of questions and experiences which constitute the proper preparation for a life of responsible citizenship must not be defined by the interests of any single viewpoint. Teachers, school administrators, librarians, and school media specialists must be free to select instructional and research materials appropriate to the maturity level of their students. This freedom is itself subject to the reasonable restrictions mandated by law to school officials and administrators. At the same time, local school officials must demonstrate substantial or legitimate public interest in order to justify censorship or other proposed restrictions upon teaching and learning. Similarly, local boards of education cannot establish criteria for the selection of library books based solely on the personal, social or political beliefs of school board members. While students must be free to voice their opinions in the context of a free inquiry after truth and respect for their fellow students and school personnel, student expression which threatens to interfere substantially with the school's function is not warranted by academic freedom. Students must be mindful that their rights are neither absolute nor unlimited. Part of responsible citizenship is coming to accept the consequences of the freedoms to which one is entitled by law and tradition. Similarly, parents have the right to affect their own children's education, but this right must be balanced against the right other parent's children have to a suitable range of educational experiences. Throughout, the tenets of academic freedom seek to encourage a spirit of reasoned community participation in the life and practices of our public schools.

Since teaching and learning are among the missions of our public schools, the STATE BOARD OF EDUCATION affirms the distinction between teaching and indoctrination. Schools should teach students how to think, not what to think. To study an idea is not necessarily to endorse an idea. Public school classrooms are forums for inquiry, not arenas for the promulgation of particular viewpoints. While communities have the right to exercise supervision over their own public school practices and programs, their participation in the educational life of their schools should respect the constitutional and intellectual rights guaranteed school personnel and students by American law and tradition.

Accordingly, the STATE BOARD OF EDUCATION, in order to encourage improved educational practices, recommends that local school boards adopt policies and procedures to receive, review, and take action upon requests that question public school practices and programs. Community members should be encouraged, and made aware of their rights to voice their opinions about school practices and programs in an appropriate administrative forum. The STATE BOARD OF EDUCATION further recommends that local school boards take steps to encourage informed community participation in the shared work of sustaining and improving our public schools.

Finally, the STATE BOARD OF EDUCATION affirms that community members and school personnel should acknowledge together that the purpose of public education is the pursuit of knowledge and the preparation of our children for responsible citizenship in a society that respects differences and shared freedom.

APPENDIX E
CONTROVERSIAL ISSUES

The following policy statement on Teaching About Controversial Issues was adopted by the Connecticut State Board of Education on October 4, 1978.

Learning to deal with controversial issues is one of the basic competencies all students should acquire. Controversial issues are those problems, subjects or questions about which there are significant differences of opinion based for the most part on the differences in the values people bring to the appraisal of the facts of the issue.

Controversy is inherent in the democratic way of life. The study and discussion of controversial issues is essential to the education for citizenship in a free society. Students can become informed individuals only through the process of examining evidence, facts and differing viewpoints, by exercising freedom of thought and moral choice, and by making responsible decisions. The perpetuation of the fundamental principles of our society requires the guarantee that there be opportunity for students to read, to gather information, to speak and to hear alternative viewpoints, and to reach honest judgments according to their individual ability.

In order for students to learn these competencies, teachers must be free to help students to identify and evaluate relevant information to learn the techniques of critical analysis, and to make independent judgments. They must reinforce the students' rights to present and support their conclusions before persons who have opposing points of view. Teachers should also endeavor to develop a flexibility of viewpoint in students so that they are able to recognize the need for continuous and objective re-examination of issues in the light of changing conditions in society and as new and significant evidence becomes available to support a change in point of view. Further, teachers should direct the attention of learners, at the appropriate levels of maturity, to significant issues and to promote a lively exchange of ideas about them. Although teachers have the right to express their own viewpoints and opinions, they do not have the right to indoctrinate students with their personal views.

It is recommended that all Connecticut boards of education develop and disseminate a written policy which supports the concept of Teaching About Controversial Issues.

APPENDIX F
THE UNIVERSAL RIGHT TO FREE EXPRESSION

The following statement, "The Universal Right to Free Expression," is an interpretation of the Library Bill of Rights and was adopted by the American Library Association's Council at its 1991 midwinter meeting.

Freedom of expression is an inalienable human right and the foundation for self-government. Freedom of expression encompasses the freedoms of speech, press, religion, assembly, association and the corollary right to receive information.

The American Library Association endorses this principle, which is also set forth in the UNIVERSAL DECLARATION OF HUMAN RIGHTS, adopted by the United Nations General Assembly. The Preamble of this document states that ". . . recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world . . ." and ". . . the advent of a world in which human beings shall enjoy freedom of speech and belief and freedom from fear and want has been proclaimed as the highest aspiration of the common people . . . ."

Article 18 of this document states:
Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.

Article 19 states:
Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media regardless of frontiers.

Article 20 states:
1. Everyone has the right to freedom of peaceful assembly and association.
2. No one may be compelled to belong to an association.

We affirm our belief that these are inalienable rights of every person, regardless of origin, age, background, or views. We embody our professional commitment to these principles in the LIBRARY BILL OF RIGHTS and CODE OF PROFESSIONAL ETHICS, as adopted by the American Library Association.

We maintain that these are universal principles and should be applied by libraries and librarians throughout the world. The American Library Association's policy on International Relations reflects these objectives: ". . . to encourage the exchange, dissemination, and access to information and the unrestricted flow of library materials in all formats throughout the world."

We know that censorship, ignorance and limitations on the free flow of information are the tools of tyranny and oppression. We believe that ideas and information topple the walls of hate and fear and build bridges of cooperation and understanding far more effectively than weapons and armies.

The American Library Association is unswerving in its commitment to human rights and intellectual freedom; the two are inseparably linked and inextricably entwined. Freedom of opinion and expression is not derived from or dependent on any form of government or political power. This right is inherent in every individual. It cannot be surrendered, nor can it be denied. True justice comes from the exercise of this right.

We recognize the power of information and ideas to inspire justice, to re-

store freedom and dignity to the oppressed, and to change the hearts and minds of the oppressors.

Courageous men and women, in difficult and dangerous circumstances throughout human history, have demonstrated that freedom lives in the human heart and cries out for justice even in the face of threats, enslavement, imprisonment, torture, exile and death. We draw inspiration from their example. They challenge us to remain steadfast in our most basic professional responsibility to promote and defend the right of free expression.

There is no good censorship. Any effort to restrict free expression and the free flow of information aids the oppressor. Fighting oppression with censorship is self-defeating.

Threats to the freedom of expression of any person anywhere are threats to the freedom of all people everywhere. Violations of human rights and the right of free expression have been recorded in virtually every country and society across the globe.

In response to these violations, we affirm these principles:

- The American Library Association opposes any use of governmental prerogative that leads to the intimidation of individuals which prevents them from exercising their rights to hold opinions without interference, and to seek, receive, and impart information and ideas. We urge libraries and librarians everywhere to resist such abuse of governmental power, and support those against whom such governmental power has been employed.

- The American Library Association condemns any governmental effort to involve libraries and librarians in restrictions on the right of any individual to hold opinions without interference, and to seek, receive, and impart information and ideas. Such restrictions pervert the function of the library and violate the professional responsibilities of librarians.

- The American Library Association rejects censorship in any form. Any action which denies the inalienable human rights of individuals only damages the will to resist oppression, strengthens the hand of the oppressor, and undermines the cause of justice.

- The American Library Association will not abrogate these principles. We believe that censorship corrupts the cause of justice, and contributes to the demise of freedom.

APPENDIX G

CONFIDENTIALITY OF LIBRARY RECORDS

The following American Association of School Librarians statement on Confidentiality of Library Records is codified as American Library Association Policies 52.5 and 54.15.

> The members of the American Library Association, recognizing the right to privacy of library users, believe that records held in libraries which connect specific individuals with specific resources, programs, or services, are confidential and not to be used for purposes other than routine record keeping: i.e., to maintain access to resources, to assure that resources are available to users who need them, to arrange facilities, to provide resources for the comfort and safety of patrons, or to accomplish the purposes of the program or service. The library community recognizes that children and youth have the same rights to privacy as adults.
>
> Libraries whose record-keeping systems reveal the names of users would be in violation of the confidentiality of library record laws adopted in many states. School library media specialists are advised to seek the advice of counsel if in doubt about whether their record-keeping systems violate the specific laws in their states. Efforts must be made within the reasonable constraints of budgets and school management procedures to eliminate such records as soon as reasonably possible.
>
> With or without specific legislation, school library media specialists are urged to respect the rights of children and youth by adhering to the tenets expressed in the Confidentiality of Library Records, Interpretation of the Library Bill of Rights and the ALA Code of Ethics.

APPENDIX H
REEVALUATION OF CHALLENGED MATERIALS

The following procedure is recommended by the Connecticut State Department of Education for use in requesting the reevaluation of instructional materials:

1. Contact the building learning resources and technology professional who will explain the original selection procedure and provide proper forms for the request for reevaluation, plus copies of reviews of the material in question, when available.
2. When completed forms are returned to the building learning resources and technology professional, the material will be reviewed by the district's Learning Resources and Technology Advisory Committee. A report of its review will be sent to the person requesting reevaluation and to the school principal.
3. If the person requesting reevaluation is not satisfied, a written request may be made to the superintendent of schools. This request must include copies of the completed request form and of the Learning Resources and Technology Advisory Committee reply, and should indicate the areas of dissatisfaction.
4. The superintendent shall establish an ad hoc review committee, broadly representative of teachers competent in the area of the content covered by the print or nonprint materials, and administrators, directors and supervisors appropriate to the level and/or subject for which the material is used.
5. The superintendent's action shall be taken no later than 15 school days after receipt of the request. The requester will be notified of the date of the review at least 10 days before the review.
6. The requesting person may submit a request to make an oral presentation of 15 minutes or less through the superintendent's office.
7. A written report from the review committee shall be submitted to the superintendent. The superintendent then shall communicate the decision to the person requesting the reevaluation.
8. Should the decision of the superintendent not satisfy the person requesting the reevaluation, the Board of Education may hold a special hearing to review the superintendent's decision.
9. Once instructional materials have been adopted and reevaluated, the material cannot be subject to further review without special authorization by the Board of Education. Challenged instructional materials shall remain in use in the school pending final decision.

(See sample request form on page 80.)

REQUEST TO REEVALUATE INSTRUCTIONAL MATERIALS
(Sample Form)

Print Materials

Author_____

Title_____

Publisher _____ Date of Publication_____

Nonprint Materials

Title_____

Producer_____

Audiovisual Software_____ Computer Software _____

Request initiated by _____

Address _____

City _____ Telephone _____

School(s) in which material is used_____

To what in the material do you object (Please be specific) _____

_____

_____

In your opinion, what harmful effects upon pupils might result from use of this material? _____

_____

_____

Did you review or examine the material in its entirety?_____

If not, what selections? _____

_____

Do you see any instructional value in the use of this material? _____

In the place of this material would you care to recommend other material which you consider to be of superior quality? _____

_____

Person making request represents: _____

(Individual) (Group or Organization)

_____ _____

Signature Date

APPENDIX I
STATEWIDE EDUCATIONAL GOALS FOR STUDENTS – 1991-1995

Goal One: Motivation to Learn

Students must be motivated to learn and to respond to the high expectations of their parents, teachers and school administrators and to their own inherent need to grow and develop. Connecticut public school students will:

- develop self-understanding and a positive self-concept;
- understand and strive to fulfill their own personal aspirations;
- develop positive feelings of self-worth which contribute to self-reliance, responsible behavior, personal growth, health and safety;
- demonstrate strong motivation and persistence to learn; and
- exhibit an inquisitive attitude, open-mindedness and curiosity.

Goal Two: Mastery of the Basic Skills

Proficiency in the basic skills is essential for acquiring knowledge and for success in our society. Connecticut public school students will:

- learn to communicate effectively in speech and writing;
- listen, view and read with understanding;
- acquire knowledge of and ability in mathematics;
- demonstrate skills necessary to locate and effectively use a variety of sources of information, including print materials, media, computers and other technology;
- demonstrate decision-making, reasoning and problem-solving skills alone and in groups; and
- demonstrate good study skills and skills necessary for lifelong learning.

Goal Three: Acquisition of Knowledge

Acquiring knowledge leads to fuller realization of individual potential and contributes to responsible citizenship. Connecticut public school students will:

- acquire the knowledge of science and technology, mathematics, history, social sciences, the creative and performing arts, literature and languages;
- acquire the knowledge necessary to use computers and other technologies for learning and problem solving;
- acquire an understanding and appreciation of the values and the intellectual and artistic achievements of their culture and other cultures; and
- take full advantage of opportunities to explore, develop and express their own uniqueness and creativity.

Goal Four: Competence in Life Skills

As adults, students will be challenged to function successfully in multiple roles – as a citizen, family member, parent, worker and consumer. Connecticut public school students will:

- demonstrate an ability to make informed career choices;
- understand the responsibilities of family membership and parenthood;
- demonstrate the ability to undertake the responsibilities of citizenship in their communities, in the state, in the nation and the world;
- understand human growth and development, the functions of the body, human sexuality and the lifelong value of physical fitness;
- understand and apply the basic elements of proper nutrition, avoidance of substance abuse, prevention and treatment of illness and management of stress;
- understand and develop personal goals and aspirations; and
- upon completion of a secondary-level program, demonstrate the skills, knowledge and competence required for success in meaningful employment, and be qualified to enter postsecondary education.

Goal Five: Understanding Society's Values

As responsible citizens, students will enrich their family, community and culture and create equal opportunity for all persons to participate in and derive the benefits of their society. Connecticut public school students will:

- respect and appreciate diversity;
- understand the inherent strengths in a pluralistic society;
- recognize the necessity for moral and ethical conduct in society;
- understand and respond to the vital need for order under law;
- acquire the knowledge to live in harmony with the environment, and actively practice conservation of natural resources;
- respect the humanity they share with other people and live and work in harmony with others;
- acquire and apply an understanding and appreciation of the values and achievements of their own culture and other cultures; and
- show understanding of international issues which affect life on our planet and demonstrate skills needed to participate in a global society.

From *Challenge For Excellence: Connecticut's Comprehensive Plan for Elementary, Secondary, Vocational, Career and Adult Education: A Policy Plan 1991-1995.* Connecticut State Board of Education, April 1990.

APPENDIX J
CERTIFICATION REQUIREMENTS (1989)

School Library Media

Sec. 10-145d-156. When required. This certificate is required for anyone serving in the employ of a board of education as a school library-media specialist.

Sec. 10-145d-157. Validity of certificates. Certificates shall be endorsed for prekindergarten through Grade 12.

Sec. 10-145d-158. Initial educator certificate requirements. To receive an initial certificate to serve as a school library-media specialist, an applicant must meet one of the following requirements in addition to meeting the general conditions:

(a) Meet all the following conditions:

(1) Holds a bachelor's degree from an approved institution; and
(2) Holds or is eligible for a Connecticut teaching certificate;
(3) Has completed at least one year of successful teaching; and
(4) Has completed a minimum of 24 semester hours of graduate credit in an approved graduate program of certification for school library-media specialists, which shall include at least 12 semester hours' credit of study in the following areas:

(A) Design, implementation and evaluating of media programs. Media programs are here defined as all the instructional and other services furnished to students and teachers by a media center and its staff;
(B) Evaluation, selection, acquisition, organization, production and retrieval of media. Media are here defined as printed and audiovisual forms of communications and their accompanying technology;
(C) Teaching students, staff and faculty to utilize media and its accompanying technology by applying valid instructional methods and techniques;
(D) Assisting students in the interpretation of print and nonprint materials;
(E) Application of principles of administration and supervision for effective leadership and operation of the school library-media center program; and
(F) Formulation of the educational specifications and contribution to the design of school library-media facilities; **or**

(b) Meet all of the following conditions:

(1) Holds a bachelor's degree from an approved institution; and
(2) Has completed a minimum of 18 semester hours of credit in professional education, of which at least six semester hours of credit are full-time responsible student teaching in a school library-media center, and the remainder which shall include foundations of education, educational psychology, and curriculum and methods of teaching; and
(3) Has completed a minimum of 24 semester hours of graduate credit in an approved graduate program of certification for school library-media specialists, which shall include at least 12 semester hours of credit of study in the

following areas:

(A) Design, implementation and evaluation of media programs. Media programs are here defined as all the instructional and other services furnished to students and teachers by a media center and its staff;

(B) Evaluation, selection, acquisition, organization, production and retrieval of media. Media are here defined as printed and audiovisual forms of communications and their accompanying technology;

(C) Teaching students, staff and faculty to utilize media and its accompanying technology by applying valid instructional methods and techniques;

(D) Assisting students in the interpretation of print and nonprint materials;

(E) Application of principles of administration and supervision for effective leadership and operation of the school library-media center program; and

(F) Formulation of the educational specifications and contribution to the design of school library-media facilities; or

(c) Meet all of the following conditions:

(1) Holds a bachelor's degree from an approval institution; and

(2) Holds a current school library-media specialist certificate or its equivalent from another state; and

(3) Has completed a minimum of 18 semester hours of credit in professional education of which at least six semester hours' credit are full-time responsible student teaching in a school library-media center, and the remainder which shall include foundations of education, educational psychology, and curriculum and methods of teaching; and

(4) Has completed a minimum of 24 semester hours of graduate credit; and

(5) Has completed at least 12 semester hours of graduate credit in study in the following areas:

(A) Design, implementation and evaluation of media programs. Media programs are here defined as all the instructional and other services furnished to students and teachers by a media center and its staff;

(B) Evaluation, selection, acquisition, organization, production and retrieval of media. Media are here defined as printed and audiovisual forms of communications and their accompanying technology;

(C) Teaching students, staff and faculty to utilize media and its accompanying technology by applying valid instructional methods and techniques;

(D) Assisting students in the interpretation of print and nonprint materials;

(E) Application of principles of administration and supervision for effective leadership and operation of the school library-media center program; and

(F) Formulation of the educational specifications and contribution to the design of school library-media facilities.

Sec. 10-145d-159. Provisional educator certificate requirements. To receive a provisional educator certificate for school library-media an applicant shall present evidence of meeting the general requirements and preparation and eligi-

bility requirements for an initial certificate, in addition to meeting the following requirements:

(a) Has successfully completed such beginning educator support and assessment program as may have been made available by the Board, and one school year of satisfactory service under the initial certificate, interim initial certificate, or durational shortage area permit; or
(b) Has completed as least three years of successful experience as a school library-media [specialist] in a public, approved nonpublic school or nonpublic school approved by the appropriate governing body in another state, within ten years prior to application for such provisional educator certificate;
(c) Has successfully served under a temporary emergency permit for the school year 1988-89 and has met the preparation and eligibility requirements for an initial educator certificate.

Sec. 10-145d-160. Professional educator certificate requirements. To receive a professional educator certificate for school library-media an applicant shall present evidence of having met the general requirements in addition to meeting the following requirements:

(a) Has completed three years of successful teaching under the provisional educator certificate, interim provisional educator certificate, or provisional teaching certificate; and
(b) Has completed a master's degree in school library-media or a sixth year program in school library-media at an institution approved for the preparation of school library-media specialists, or holds a master's degree from an approved institution in another field and has completed 30 semester hours of credit in school library-media at an institution approved for the preparation of media specialists.

Computer Education

Sec. 10-145d-163. When required. A certificate shall be required for anyone serving in the employ of a board of education as a teacher of computer technology, computer literacy, computer programming or electronics, data processing, or related courses.

Sec. 10-145d-164. Certificate requirements. Courses taught at the elementary level shall be taught by teachers holding elementary level certification, and secondary level courses shall be taught by teachers holding secondary certification.

Connecticut State Department of Education

Division of Curriculum and Professional Development

Betty J. Sternberg, Director

Robert G. Hale, Assistant Director

Learning Resources and Technology Unit

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