TECHNOLOGY-ENHANCED CURRICULUM FOR THE ELEMENTARY
SCHOOL LIBRARY

by

Kris A. McAllister

A Master's Research Project submitted in partial fulfillment
of the requirement for the degree

Master of Arts

LIBRARY - OTTAWA UNIVERSITY
OTTAWA, KANS.

OTTAWA UNIVERSITY

August, 1999
TECHNOLOGY-ENHANCED CURRICULUM FOR THE ELEMENTARY SCHOOL LIBRARY/MEDIA CENTER

by

Kris Ann McAllister

has been approved

August/1999

APPROVED

John Y. Mansour

Karenne K. Edwards

ACCEPTED:

Frederick Ramey

Dean
ABSTRACT

The purpose of this project was to design a technologically enhanced library curriculum. The need for this project was determined by the rapid development of technology and the realization that the library/media curriculum did not address new technologies and did not refer to the new state standards for technology.

A study of magazine and journal articles and a review of the American Association of School Librarians' publication Information Power: Building Partnerships for Learning showed that the role of the school librarian is ever expanding to include new technologies. The benefit of teaching technology in the library/media center are outlined in many of the articles. By teaching the technology standards that are mandated by the state, students are on the road to achieving the goal of becoming lifelong learners. The state standards for technology clearly show the need to include technology in the library/media center curriculum.

The methodology chosen for this project was that of descriptive design. The purpose of the project was to examine the existing library curriculum, to look at technology and its uses and to see how they can be integrated. When examined, the existing curriculum was found to be lacking in the subject area of
technology. It was concluded that the library curriculum needed to be enhanced to include the new technologies. It is recommended that the enhanced curriculum be implemented in the 1999-2000 school year.
# TABLE OF CONTENTS

## CHAPTER 1- THE PROBLEM

- Introduction .............................................. 1
- Development of the problem ....................... 2
- Need for the study .................................. 3
- Purpose of the study ................................ 4
- Research question ..................................... 4

## CHAPTER 2- LITERATURE REVIEW

- Introduction .............................................. 5
- Role of the library/media specialist ............ 6
- Benefits of technology ................................. 9
- Role of Arizona State Technology Standards ... 11
- Summary .................................................. 12

## CHAPTER 3- METHODOLOGY

- Purpose of the study ................................ 14
- Research Design ........................................ 14
- Population and sample ............................. 15
- Assumptions and limitations ..................... 16
- Procedure ............................................... 16
- Curriculum Design .................................... 17

## CHAPTER 4- PRESENTATION OF THE CURRICULUM

- Curriculum ............................................. 18
  - Kindergarten ....................................... 19
  - First Grade ......................................... 21
  - Second Grade ....................................... 23
  - Third Grade ......................................... 25
  - Fourth Grade ....................................... 28
  - Fifth Grade ......................................... 31
  - Sixth Grade ......................................... 34
  - Seventh and Eighth Grade ....................... 37

## CHAPTER 5- SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

- Summary .................................................. 38
- Conclusions ............................................. 39
- Recommendations ..................................... 39

## REFERENCE LIST

- .......................................................... 40
APPENDIX A- ARIZONA STANDARDS:
TECHNOLOGY STANDARDS ................................................. .42
Authorization letter ...................................................... .43
Technology standards rationale .................................... .44
Standard 1 ................................................................. .45
Standard 2 ................................................................. .48
Standard 3 ................................................................. .51
Standard 4 ................................................................. .54

APPENDIX B- PEORIA UNIFIED SCHOOL DISTRICT #11
ELEMENTARY SCHOOL LIBRARY/MEDIA OUTCOMES .............. .56
First Grade ................................................................. .59
Second Grade ............................................................ .60
Third Grade ............................................................... .61
Fourth Grade ............................................................. .62
Fifth Grade ................................................................. .63
Sixth Grade ................................................................. .64
CHAPTER 1

THE PROBLEM

Introduction

As the field of education moves into the 21st century, students need to be educated on how to utilize the newest technology. This is not only the case for the classroom setting, but is also vitally important for the library/media center. In order for students in the elementary school to be successful in high school and in life, they need to know how to access, evaluate and utilize information.

Technology is developing so rapidly that schools have a hard time keeping up with it. As new technology arrives at the school, it is often the library/media specialist who is called upon to embrace it and teach it to students and to teachers. Prior to 1969, the library/media specialist was merely a keeper and manager of resources. Today's library/media specialist also has the job of working with the teachers and educating the students in the use of new technology.

Curriculum for the library, prior to today, has been vague and very general in nature (Peoria School District, 1990). In order to integrate technology into the library curriculum, the curriculum itself needs to be more specific, more fully developed and expanded. By looking into state standards for technology, by
studying what other schools have regarding integration and by showing the educational benefits of a well-developed program, a technologically enhanced library curriculum may be designed.

**Development of the Problem**

The role of the library/media specialist in the past has been that of a resource manager. Over the past two decades since 1980, the role has evolved into a consultant and teacher. Library/media specialists are working with teachers and curriculum specialists to develop programs that support the curriculum. "Information literacy-- the ability to find and use information -- is the keystone of lifelong learning. Creating a foundation for lifelong learning is at the heart of the school library media program" (American Association of School Librarians (AASL) & Association for Educational Communications and Technology, (AECT), 1998, p. 1). With the electronic age, the role of the library/media specialist has, among other things, included teaching students to access, evaluate, and utilize information, whether it be a print resource or now an on-line resource. When new technologies arrive on campus, it is the library/media specialist who is often expected to become the expert.

The students in school today are living and learning in a world that has become radically changed by the availability of information in a vast array of formats. The new electronic technologies give the student many more options in the ways he/she acquires information . The new technology has altered the
knowledge and the abilities that are needed to be skillful consumers and producers of information. A major concern of the library/media program in the school district in this study, is to help students thrive in the world. One of the major goals of a library program is to "...assist all students in becoming active and creative locators, evaluators and users of information to solve problems and to satisfy their own curiosity" (AASL & AECT, 1998, p. 2). Students can then become independent, ethical lifelong learners who can achieve personal satisfaction and can contribute responsibly and productively in the next century (AASL & AECT, 1998).

The library/media specialist uses technology from the perspective of a technologist, one who unites people, learning and the tools of technology. The library/media program could be designed, implemented and continually refined to be an effective student centered technology plan. This plan could focus on helping students and others become independent learners who use information and information technology effectively and ethically.

Need for the Study

The library curriculum in a kindergarten through eighth grade elementary school in Peoria, Arizona is generic and does not specifically include teaching any new technologies (Peoria School District, 1990).

In order to give the students the best education and the chance to be successful and productive, the library curriculum should give the instruction in
how to best access, evaluate and utilize information from various print and electronic resources. Therefore, the library curriculum must be enhanced to include new technologies.

It is vital to research how other elementary school library curriculums have designed to embrace the electronic age. It is also imperative to look at the Standards for Technology developed by the State of Arizona and apply them to the library curriculum.

Purpose of the Study

The purpose of this project was to design a technologically enhanced library curriculum.

Research Question

What are the components of a technologically enhanced library curriculum?
CHAPTER 2

LITERATURE REVIEW

Introduction:

Technology is the "knowledge, ideas and the need to create tools by which
new experiences are constructed" (Garfield and McDonough, 1996, pg.1).
Educational technology may be defined as "those effective technological tools
combined with a curriculum that manages and maximizes the teaching and
learning approaches" (Garfield and McDonough, 1996, p.2).

Technology encompasses almost every aspect of people's lives. From
microwaves, cash registers, Internet and e-mail to computers in the classroom.
Educational and information technology is growing in schools in the United
States. Computers, Internet hook-ups, videos and multimedia tools are being
placed in our classrooms and are being used in many of the schools in the nation.
The role of the library/media specialist has changed from being a manager of the
library collection to that of a curriculum consultant, teacher/librarian, technologist
and a myriad of other roles depending on the school.
The literature suggests that the role of the library/media specialist is vital to the health of the school and that technology should be integrated into all areas of the curriculum. This review shows how the role of the school librarian has evolved over the years to that of a library/media specialist and the benefits of technology to the elementary school. The state standards show the expectation of the State of Arizona in regards to integrating technology into the curriculum (Arizona Department of Education, 1997).

Role of the Library/Media Specialist

Until the 1960's, the role of the library/media specialist has been a passive one. The library/media specialist managed and maintained a collection of print materials, acted as a clerk checking in and out materials, functioned as a reader and supporter of books and literature (AASL & AECT, 1988). There was a shift in the perception of the school library/media specialist in the 1960s. In addition to emphasizing service to teachers and students to enhance their personal and instructional activities, the role of teacher became one of importance. The integration of library skills with the classroom curriculum became an important part of the library/media specialists role (AASL & AECT, 1988).

In 1969, the Standards for School Media Programs sponsored by the American Association of School Librarians and the Department of Audiovisual Instruction of the National education Association included the term media and media specialist and expanded the focus of a school library program.
The school library/media specialist role included helping students develop competency in reading skills, listening and viewing. By 1975 new standards were introduced which provided a framework of standards and principals for the school library program (AASL & AECT, 1988).

A significant publication was produced in 1988 that set the standards for the new library program. Information Power: Guidelines for School Library Media Programs (1988) which continued the work started in the 1960s & 1970s, broadened the access to and use of information by students, teachers and parents. (AASL & AECT, 1988). These guidelines stressed that the roles of the library/media specialist were that of information specialist, teacher and instructional consultant. A revised and updated version of the guidelines was published by AASL & AECT in 1998.

The library/media specialist has always been at the forefront of new technology. These new guidelines, explained in Information Power: building partnerships for learning (1998), explain how the "profession has pioneered in identifying and meeting learning needs brought about by the rapid and continuing expansion of information delivered through a variety of new technologies" (AASL & AECT, 1998, p. 5). The library/media specialist must work collaboratively with teachers, administrators and others to help move the students effectively into the electronic age. The library/media specialist is a partner in the learning community. Playing a role that
...begins with promoting and reinforcing students' interests and abilities in reading, listening and viewing, expands to include fostering the full range of information concepts, strategies, and abilities students must master to profit from the global resources that are quite literally at their fingertips, includes developing the full range of abilities that students need to interact effectively with information and to construct meaningful knowledge. (AASL & AECT, 1998, p. 3)

This role also includes teaching students to analyze information, appreciate viewpoints other than their own, use information effectively to problem solve and make decisions, and to act responsibly when using and evaluating information. The all encompassing role is to "develop life-long learners who can assimilate varying viewpoints, accommodate change, and contribute to the well-being of the community" (AASL & AECT, 1999, p. 4).

As a teacher, the library/media specialist teaches library skills in conjunction with the classroom curriculum. By teaching the students how to access, evaluate and utilize information, the library/media specialist collaborates with the classroom teacher in order to make the learning authentic. As an instructional partner, the library/media specialist works with classroom teachers and others to connect student information needs with the curriculum, learning outcomes and a variety of print, non-print, and electronic resources. As an information specialist, the library/media specialist is expected to be knowledgeable in acquiring and evaluating resources in all formats and to model the use of technology to the rest of the learning community. By being an advocate for technology, the library/media specialist takes a leadership role in the school (AASL & ACET, 1998).
Benefits of Technology

The earliest information technologies, whether the card catalog or the microfiche, has brought the library media/specialist to the head of technology use to guide information access and utilization.

Since the invention of stone tools, technological applications have provided and will continue to provide, humans the ability to modify their environment. Because advances in technology affect all of earth's living and nonliving systems, it is vital that students understand the interrelationships of technology and human activity. (Arizona Department of Education, 1997, p. 1)

Technology encompasses all aspects of society. From microwaves and cash register to Internet and e-mail, it is evident that the use of technology is only going to grow. The library/media specialist plays a unique role in "designing student experiences that focus on authentic learning, information literacy and curricular mastery" (AASL & AECT, 1998, p. 1). If students are to develop into productive and literate adults, the schools need to "prepare individuals to create, gather, retrieve, store, analyze, synthesize and present information to solve problems" (Arizona Department of Education, 1997, p.1). Technology in the classrooms and the library media/center can assist students in using technology as a means to apply academics within a real-world context. For technology to be successful and to have an impact on learning, it cannot stand alone. Technology needs to be integrated and made a normal and usual part of the curriculum.

There are the three stages that new technologies pass through. The first stage is the line of least resistance. The second stage is the use of technology to
improve or replace previous technologies. The third stage is to find new functions for the technology. The users in stage three ask themselves "What can we do now that we weren't able to do before" (p.1)? (John Naisbitt in *Megatrends* as cited in Peck & Dorricott, 1994)

Educators who have moved into the third stage are looking at how the new technologies can contribute to a more complete and authentic experience. They use technology as an integral component of learning. Those educators in the third stage have a list of the top ten reasons for using technology.

1. Students learn and develop at different rates.
2. Graduates must be proficient at accessing, evaluating, and communicating information.
3. Technology can foster an increase in the quantity and quality of students' thinking and writing.
4. Graduates must solve complex problems.
5. Technology can nurture artistic expression.
6. Graduates must be globally aware and able to use resources that exist outside the school.
7. Technology creates opportunities for students to do meaningful work.
8. All students need access to high-level and high-interest courses.
9. Students must feel comfortable with the tools of the Information Age.
10. Schools must increase their productivity and efficiency. (Peck & Dorricott, 1994, p. 2)
When educators allow students to interact with technology in meaningful ways for a period of time, the growth that follows will encourage educators to try even more new things. Once they see the students so intent on learning that they lose track of time and see them coming in early and staying after school to try things, educators will be inspired to delve into stage three more frequently.

The use of technology in the schools and the library/media center can benefit the students in many ways.

Role of Arizona State Technology Standards

The Arizona Department of Education adopted state standards in technology in March of 1997. The rationale for these standards states that technology goes beyond computers into complex technological advances such as genetic engineering; mechanical and construction equipment and tool; and the production, preparation and disposal of food. It also includes everyday applications such as the design of athletic shoes, space age fabrics, entertainment centers and smoke detectors. It is necessary for graduates to consider legal, social and environmental issues when considering technological solutions. Business seeks employees who are literate in technology and able to participate in a high-performance work force that adapts readily to constantly changing technology. (Arizona Department of Education, 1994, p. 1)

The four technology standards, determined by the State of Arizona, are arranged in five different levels depending on the competency expected and grade level.

The five levels are: Readiness (Kindergarten), Foundations (grades 1-3), Essentials (grades 4-8), Proficiency (grades 9-12) and Distinction (honors).

Standard 1 is that "students develop the essential technology skills for using and
understanding conventional and current tools, materials and processes" (Arizona Department of Education, 1994, p. 3). Standard 2 is that "students know how to solve problems by using current technologies to conduct research, analyze solutions and present results" (Arizona Department of Education, 1994, p. 7). Standard 3 is that "students evaluate the impact of technology (e.g. benefits, costs, risks) on individuals, society and the environment " (Arizona Department of Education, 1994, p. 10). Standard 4 is that "students understand the interrelationships of knowledge and how they are used to solve technology problems in school, the workplace and society" (Department of Education, 1994, p. 13).

The State of Arizona expects and mandates that the schools teach the Technology Standards developed by the Department of Education. The schools are responsible for graduating students who are technologically literate among other things. One area that can teach and incorporate these standards is the library/media center with a technology enhanced library curriculum in place.

Summary

The role of the school librarian has evolved into the school library/media specialist. This role is ever expanding to include new technologies. The school library/media specialist is often the first one to use the new technologies. It is up to the library/media specialist to train teachers and teach the students how to use the technologies. The benefits of teaching technology in the library/media center
are outlined in many of the articles. By teaching the technology standards that are mandated by the state, students are on the road to achieving the goal of becoming lifelong learners. The state standards for technology clearly show the need to include technology in the library/media center curriculum.
CHAPTER 3

METHODOLOGY

Purpose

The purpose of this project was to design a technologically enhanced library curriculum. Students need to become information-literate and to be able to access, evaluate and utilize information gathered from a variety of sources. The elementary school needs to prepare students for the future. State Standards in Technology were developed by the Arizona State Department of Education state that "we must help students gain knowledge about technology, develop skills to use the technology and to apply and interact with technology." (Arizona Department of Education, 1997, p.1) A technology enhanced library curriculum helps meets this rationale set up by the state.

Research Design

The project was developed on the basis of descriptive design. This design type was chosen because the purpose of the project is to examine the existing library curriculum, to look at technology and its uses and to see how they can be integrated. Some of the benefits of the descriptive design are:
...its ease of use. It produces data that are accurate and representative. It describes "what is." ...A second advantage is that it allows the researcher to study relationships or events as they happen in human life situations. ...A third advantage is the exploratory nature of the descriptive methods. Not only can variables be studies that indicate probable cause, but additional variables may be discovered that shed new light upon the phenomenon. (Merriam & Simpson, 1994, p.71)

Descriptive design is the best choice for this type of project. The disadvantages of descriptive design do not apply to this project. This type project does not need to predict because the project is in part discovering the details of the program. The disadvantage regarding statistics and the application of, does not apply either, since the researcher will not be gathering data. The strength of descriptive design is that it allows for exploration of the topic.

Population and Sample

The population for this project is a kindergarten through eighth grade elementary school in Peoria, Arizona. The population of the school is 1078. The ethnic make up of the school is 54% White, 4% African American, 40% Hispanic, 1% Native American and 1% Asian. The elementary school is located in an area that has both lower income and middle to upper middle income families.
Assumptions and Limitations

The researcher is a librarian whose goal is to involve teachers and students in the evolving technology. This curriculum project was chosen because the library curriculum at the elementary school was vague and had not been updated to include newer technologies. Integrating technology into the library curriculum was seen to be a method to help students become information literate and who will be able to be locators, evaluators and utilizers of information. The new curriculum will be implemented in the 1999-2000 school year.

Procedure

In order to develop a technologically-enhanced curriculum many areas of curriculum development were examined. An overview of existing curriculum was done and areas lacking in technology were identified. The State Standards for Technology were also studied and standards that could be applied to the library were identified. A blending of the existing curriculum and the state standards was developed and adjusted for a kindergarten through eighth grade elementary school. By taking a look at 5 other school districts library curriculum, it could be seen what others are doing about integrating technology into the library curriculum.
Curriculum Design

The end product of this project is a library/media center curriculum that may be used over the course of a school year in a kindergarten through eighth grade elementary school. The division in the curriculum will be by grade level: Kindergarten through 2nd grade; 3rd & 4th grade; 5th & 6th grade; 7th & 8th grade. The curriculum is in an outline with four main outcome areas. The outcome areas are; Library procedure & behavior; Literature; Information Access Skills; and Technology Integration. Research showed that the school districts that had a curriculum for the library/media program had not addressed the issues of Technology Standards as of this time.
CHAPTER 4

PRESENTATION OF THE CURRICULUM

A technologically-enhanced library curriculum was designed based on existing curriculum and the requirements set forth by the Arizona Department of Education in its adopted Technology Standards.

By reviewing the existing library curriculum for the Peoria School District it was found that although it listed technology in the table of contents, no technology outcomes were specifically within the curriculum. Technology standards were examined regarding the areas that would be applicable to the Library Media Center. It was found that Standards 1 and 2 of the Technology Standards had many aspects that would be better addressed in the Library Media Center than in the Technology Lab, Computer Lab, or the classroom. It was found that Standards 3 and 4 would be better addressed in the classroom, Technology Lab or the Computer Lab as opposed to the Library Media Center (Arizona Department of Education, 1997). The curriculum was then enhanced and sent to a committee of three District Library Media Specialists who evaluated the effectiveness of the proposed curriculum. The curriculum will be implemented in the 1999-2000 school year.
LIBRARY/MEDIA PROGRAM CURRICULUM FOR A K-8 ELEMENTARY SCHOOL

KINDERGARTEN

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books

   The student will:
   1. Demonstrate and/or discuss proper care and handling of books

B. Circulation

   The student will:
   1. Be able to check out and return materials according to the library's procedure
   2. Be able to identify a barcode

C. Library Rules

   The student will:
   1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement

   The student will:
   1. Be able to locate the Easy section of the library
   2. Be able to locate the circulation desk and book return

II. LITERATURE

A. Literature Appreciation

   The student will:
   1. View and listen to a variety of types of children's literature
   2. Develop an awareness of nursery rhymes
   3. Develop an awareness of fairy tales
B. Viewing and Listening Skills

The student will:

1. Develop the ability to attend and respond to the sights and sounds of storytime

III. TECHNOLOGY INTEGRATION

A. Standard 1 (Students develop essential technology skills for using and understanding conventional and current tools, materials and processes.)

The student will:

1. Demonstrate knowledge on how to start and exit computer programs

2. Identify a variety of machines at home and school.

B. Standard 2 (Students know how to solve problems by using current technologies to conduct research, analyze solutions and present results)

The student will:

1. Relate technology experiences in stories

2. Describe their own experiences with technology
FIRST GRADE

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books
   The student will:
   1. Demonstrate and/or discuss proper care and handling of books

B. Circulation
   The student will:
   1. Be able to check out and return materials according to the library's procedure
   2. Be able to identify a barcode

C. Library Rules
   The student will:
   1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement
   The student will:
   1. Be able to locate the Easy section of the library
   2. Be able to locate the circulation desk and book return

II. LITERATURE

A. Literature Appreciation
   The student will:
   1. View and listen to a variety of types of children's literature
   2. Develop an awareness of nursery rhymes
   3. Develop an awareness of fairy tales
B. Viewing and Listening Skills

   The student will:

   1. Develop the ability to attend and respond to the sights and sounds of storytime

III. TECHNOLOGY INTEGRATION

A. Standard 1 (Students develop essential technology skills for using and understanding conventional and current tools, materials and processes.)

   The Student will:

   1. Operate peripheral devices (such as CD-ROMS, printers)
   2. Use electronic encyclopedias to access information
   3. Employ search strategies to retrieve information using CD-ROMs

B. Standard 2 (Students know how to solve problems by using current technologies to conduct research, analyze solutions and present results)

   The student will:

   1. Create documents using word processing skills and writing process steps
   2. Use local networks and communication systems to access information and send messages
   3. Use electronic information sources such as encyclopedias indexes, databases and CD-ROMs
SECOND GRADE

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books
   The student will:
   1. Demonstrate and/or discuss proper care and handling of books

B. Circulation
   The student will:
   1. Be able to check out and return materials according to the library's procedure
   2. Be able to identify a barcode

C. Library Rules
   The student will:
   1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement
   The student will:
   1. Be able to locate the Easy Fiction and Non-Fiction areas of the library
   2. Be able to locate the circulation desk and book return

II. LITERATURE

A. Types of Literature
   The student will:
   1. Be able to differentiate between fiction and non-fiction areas of the library

B. Literature Appreciation
   The student will:
   1. View and listen to a variety of children's literature
   2. Know that a variety of books are available
3. Develop an awareness of folktales
4. Develop an awareness of Caldecott Award Books

III. TECHNOLOGY INTEGRATION

A. Standard 1 (Students develop essential technology skills for using and understanding conventional and current tools, materials and processes.)

The Student will:
1. Operate peripheral devices (such as CD-ROMs, printers)
2. Use electronic encyclopedias, almanacs, indexes and catalogs to access information
3. Employ search strategies to retrieve information using CD-ROMs

B. Standard 2 (Students know how to solve problems by using current technologies to conduct research, analyze solutions and present results)

The student will:
1. Create documents using word processing skills and writing process steps
2. Use local networks and communication systems to access information and send messages
3. Use electronic information sources such as encyclopedias indexes, databases and CD-ROMs
THIRD GRADE

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books

   The student will:
   1. Demonstrate and/or discuss proper care and handling of books

B. Circulation

   The student will:
   1. Be able to check out and return materials according to the library's procedure
   2. Be able to identify a barcode

C. Library Rules

   The student will:
   1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement

   The student will:
   1. Be able to locate the two main sections of the library:
      a. Fiction
      b. Non-Fiction

II. LITERATURE

A. Types of Children's Literature

   The student will:
   1. Be able to differentiate between fiction and non-fiction
   2. Develop an awareness of primary periodicals as a source of pleasure reading

B. Literature Appreciation

   The student will:
   1. View and listen to a variety of children's literature
2. Know some favorite authors and their works
3. Develop an awareness of tall tales
4. Develop an awareness of poetry

III. TECHNOLOGY INTEGRATION

A. Standard 1 (Students develop essential technology skills for using and understanding conventional and current tools, materials and processes.)
   The Student will:
   1. Operate peripheral devices (such as CD-ROMS, printers)
   2. Use electronic encyclopedias, almanacs, indexes and catalogs to access information
   3. Employ search strategies to retrieve information using CD-ROMs

B. Standard 2 (Students know how to solve problems by using current technologies to conduct research, analyze solutions and present results)
   The student will:
   1. Create documents using word processing skills and writing process steps
   2. Use local networks and communication systems to access information and send messages
   3. Use electronic information sources such as encyclopedias indexes, databases and CD-ROMs

IV. INFORMATION ACCESS SKILLS

A. On-line catalog
   The student will:
   1. Be able to locate books by using the on-line catalog
B. Systems Organization

The student will:
1. Know and understand how the non-fiction books are arranged in the library
2. Know and understand how the fiction and paperback books are arranged in the library

C. Reference Skills

The student will:
1. Locate, paraphrase, and summarize information from factual sources
2. Use print and/or electronic encyclopedias and dictionaries to access information

D. Parts of a Book

The student will:
1. Identify text components
   a. title page
   b. table of contents
   c. glossary
   d. index
2. Identify author and illustrator from book cover or title page
FOURTH GRADE

I. LIBRARY PROCEDURE AND BEHAVIOR

A. Care and handling of books
   The student will:
   1. Be able to take proper care of books

B. Circulation
   The student will:
   1. Be able to check out and return materials according to the library's procedure
   2. Be able to renew a book according to the library's procedure

C. Library Rules
   The student will:
   1. Demonstrate an awareness of library rules and behavior

D. Library Arrangement
   The student will:
   1. Be able to locate the Reference Collection
   2. Be able to locate the Biography Collection
   3. Be able to locate the Special Collections

II. LITERATURE

A. Types of Literature
   The student will:
   1. Be able to identify a biography, an autobiography, and a collective biography
   2. Develop an awareness of fantastic fiction and realistic fiction

B. Literature Appreciation
   The student will:
   1. Develop an awareness of poetry
   2. Develop an awareness of fantasy
3. Develop an awareness of contemporary realism

C. Materials Selection

The student will:

1. Be able to select materials with a specific purpose in mind
2. Begin to evaluate a book for quality

III. TECHNOLOGY INTEGRATION

A. Standard 1 (Students develop essential technology skills for using and understanding conventional and current tools, materials and processes.)

The Student will:

1. Present a definition of technology and explain it's meaning
2. Examine information from electronic media and determine its correctness and worth
3. Identify copyright laws that pertain to technology and apply them appropriately
4. Understand "Fair Use Guidelines for Educational Multimedia" regarding using audio, video and electronic media
5. Use organizational features of electronic information

B. Standard 2 (Students know how to solve problems by using current technologies to conduct research, analyze solutions and present results)

The student will:

1. Cite resources (e.g. bibliography, reference list) in written documents and presentations
2. Use software features (spelling checker, grammar checker)

IV. INFORMATION ACCESS SKILLS

A. Catalog

The student will:
1. Be able to locate books by using the on-line catalog
2. Be able to identify the parts of the on-line catalog record

B. Systems Organization

The student will:

1. Know and understand how the non-fiction books are arranged in the library
2. Know and understand how the fiction and paperback books are arranged in the library

C. Reference Skills

The student will:

1. Locate, paraphrase, and summarize information from factual sources
2. Use print and/or electronic encyclopedias and dictionaries to access information

D. Parts of a Book

The student will:

1. Identify text components
   a. title page
   b. table of contents
   c. glossary
   d. index
2. Identify author and illustrator from book cover or title page
FIFTH GRADE

I. LIBRARY PROCEDURE AND BEHAVIOR

A. Care and handling of books

The student will:

1. Be able to take proper care of books

B. Circulation

The student will:

1. Be able to check out and return materials according to the library's procedure
2. Be able to renew a book according to the library's procedure

C. Library Rules

The student will:

1. Demonstrate an awareness of library rules and behavior

D. Library arrangement

The student will:

1. Be able to locate all sections of the library

II. LITERATURE

A. Types of literature

The student will:

1. Develop an awareness of the different kinds of realistic fiction and fantastic fiction

B. Literature Appreciation

The student will:

1. Develop an awareness of humor
2. Develop an awareness of mystery
3. Develop an awareness of adventure

C. Materials Selection

The student will:
1. Be selective when choosing materials for leisure reading

III. TECHNOLOGY INTEGRATION

A. Standard 1 (Students develop essential technology skills for using and understanding conventional and current tools, materials and processes.)

The Student will:

1. Present a definition of technology and explain it's meaning
2. Examine information from electronic media and determine its correctness and worth
3. Identify copyright laws that pertain to technology and apply them appropriately
4. Understand "Fair Use Guidelines for Educational Multimedia" regarding using audio, video and electronic media
5. Use organizational features of electronic information

B. Standard 2 (Students know how to solve problems by using current technologies to conduct research, analyze solutions and present results)

The student will:

1. Cite resources (e.g. bibliography, reference list) in written documents and presentations
2. Use software features (spelling checker, grammar checker)

IV. INFORMATION ACCESS SKILLS

A. Catalog

The student will:

1. Be able to locate books by using the on-line catalog
2. Be able to identify the parts of the on-line catalog record

B. Systems Organization

The student will:
1. Know and understand how the non-fiction books are arranged in the library
2. Know and understand how the fiction and paperback books are arranged in the library

C. Reference Skills

The student will:

1. Use a wide variety of reference sources appropriately
2. Use print and/or electronic biographical, geographical and statistical resources
3. Use factual information in a new context

D. Parts of a book

The student will:

1. Identify text components
   a. title page
   b. introduction
   c. bibliography
SIXTH GRADE

I. LIBRARY PROCEDURE AND BEHAVIOR

A. Care and handling of books
   The student will:
   1. Be able to take proper care of books

B. Circulation
   The student will:
   1. Be able to check out and return materials according to the library’s procedure
   2. Be able to renew a book according to the library’s procedure

C. Library Rules
   The student will:
   1. Demonstrate an awareness of library rules and behavior

D. Library arrangement
   The student will:
   1. Be able to locate all sections of the library

II. LITERATURE

A. Types of Literature
   The student will:
   1. Develop an awareness of the different kinds of realistic fiction and fantastic fiction

B. Literature Appreciation
   The student will:
   1. Develop an awareness of Newbery Award books
   2. Develop an awareness of historical fiction
   3. Develop an awareness of fantasy fiction

C. Materials Selection
The student will:
1. Be selective when choosing materials for leisure reading

III. TECHNOLOGY INTEGRATION
A. Standard 1 (Students develop essential technology skills for using and understanding conventional and current tools, materials and processes.)
   The Student will:
   1. Present a definition of technology and explain it's meaning
   2. Examine information from electronic media and determine its correctness and worth
   3. Identify copyright laws that pertain to technology and apply them appropriately
   4. Understand "Fair Use Guidelines for Educational Multimedia" regarding using audio, video and electronic media
   5. Use organizational features of electronic information

B. Standard 2 (Students know how to solve problems by using current technologies to conduct research, analyze solutions and present results)
   The student will:
   1. Cite resources (e.g. bibliography, reference list) in written documents and presentations
   2. Use software features (spelling checker, grammar checker)

IV. INFORMATION ACCESS SKILLS
A. Catalog
   The student will:
   1. Be able to locate books by using the on-line catalog
   2. Be able to identify the parts of the on-line catalog record
B. Systems Organization

The student will:

1. Know and understand how the non-fiction books are arranged in the library
2. Know and understand how the fiction and paperback books are arranged in the library

C. Reference Skills

The student will:

1. Use a wide variety of reference sources appropriately
2. Use print and/or electronic biographical, geographical and statistical resources
3. Use factual information in a new context

D. Parts of a book

The student will:

1. Identify text components
   a. title page
   b. introduction
   c. bibliography
SEVENTH AND EIGHTH GRADE

The advanced level (7th-8th grades) consists of independent use of the library and information skills developed in previous years with an occasional class session for learning to use a specific tool or concept.

They will continue to work on the technology standards outcomes as they progress through elementary school.
CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this project was to design a technologically-enhanced library curriculum. The need for this project was determined by the rapid development of technology and the realization that the library/media curriculum did not address new technologies and did not refer to the new state standards for technology.

A study of magazine and journal articles and a review of the American Association of School Librarians' publication Information Power: building partnerships for learning showed that the role of the school librarian is ever expanding to include new technologies. The benefit of teaching technology into the library/media center are outlined in many of the articles. By teaching the technology standards that are mandated by the state, students are on the road to achieving the goal of becoming lifelong learners. The state standards for technology clearly show the need to include technology in the library/media center curriculum.

The methodology chosen for this project was that of descriptive design. The purpose of the project was to examine the existing library curriculum, to look
at technology and its uses and to see how they can be integrated. When examined, the existing curriculum was found to be lacking in the subject area of technology. It was concluded that the library curriculum needed to be enhanced to include the new technologies. It is recommended that the enhanced curriculum be implemented in the 1999-2000 school year.

Conclusions

The existing curriculum did not address the state standards for technology. The finished product addresses the standards that pertained to the library/media center. The success of this curriculum will be determined when it is implemented in the 1999-2000 school year. Modifications may need to be made as the year progresses or after a review of the effectiveness of the curriculum at the end of the school year.

Recommendation

It is recommended that the Technologically-Enhanced Library Curriculum be implemented in the 1999-2000 school year with modifications made as needed.
REFERENCE LIST


APPENDIX A

ARIZONA STANDARDS: TECHNOLOGY STANDARDS
May 5, 1999

Dear Ms. McAllister:

As you know, the Arizona Academic Standards are public documents to be used for educational purposes. The State Department of Education grants permission for you to include a copy of the Arizona Technology Standards into the library curriculum for your Masters thesis.

Please feel free to communicate if you have other questions or concerns.

Sincerely,
Carolyn R. Watson, Director
Academic Standards Division
Arizona Standards

Technology Standards
(Adopted 3/24/97)

Technology Rationale

Since the invention of stone tools, technological applications have provided, and will continue to provide, humans the ability to modify their environment. Because advances in technology affect all of earth's living and nonliving systems, it is vital that students understand the interrelationships of technology, the environment and human activity.

Technology encompasses the tools and strategies for solving problems, using information, increasing productivity and enhancing personal growth. Knowledge and skills that were unheard of a decade ago, such as using databases to locate material in public libraries, communicating through global networks, and understanding how to access information stored electronically, are critical for today's citizens. Technology goes beyond computers into complex technological advances such as genetic engineering; mechanical and construction equipment and tools; and the production, preparation and disposal of food. It also includes everyday applications such as the design of athletic shoes, space age fabrics, entertainment centers and smoke detectors. It is necessary for graduates to consider legal, social and environmental issues when considering technological solutions.

Business seeks employees who are literate in technology and able to participate in a high-performance work force that adapts readily to constantly changing technology. In addition, business requires personnel who are able to think analytically. The public schools must prepare individuals to create, gather, retrieve, store, analyze, synthesize and present information to solve problems. Graduates lacking these skills will be isolated from information that fuels the world of work and civic life.

The challenge for Arizona schools: How do we educate students to utilize technology for solving problems and meeting needs?

To meet the challenge, we must help students

- gain knowledge about technology
- develop skills to use the technology
- apply and interact with technology

Research on transfer of learning strongly supports the position that instruction and educational activities should closely parallel the final desired behavior. Because society needs people adept at using technology, we should incorporate technology as students develop problem-solving skills and strategies in their classrooms and school-to-work environments. Understanding that students learn in different ways, we can help them use technology as a means to apply academics within a real-world context. Technology instruction should be an integral part of a student's educational experience.
Arizona Standards

Technology Standards
(Adopted 3/24/97)

Standard 1

Students develop the essential technology skills for using and understanding conventional and current tools, materials and processes.

Students know and are able to do the following:

READINESS (Kindergarten)

- Use basic technology vocabulary when referring to computer hardware, software, printer, monitor, disk drives, mouse and keyboards
- Perform basic computer operations including inserting and removing diskettes
- Select and use learning activities on the computer
- Identify technological skills (e.g., sketching, modeling/prototyping an object using materialskits) they would like the teacher to demonstrate
- Resolve difficulties with technology devices to accomplish required tasks
- Be familiar with the keyboard, mouse, and control keys (e.g., return key, shift key, space bar, escape key)
- Start and exit computer programs
- Design playground play equipment
- Design classroom learning activity centers with climbing, crawling and sitting places
- Identify a variety of machines at home and at school

FOUNDATIONS (Grades 1 - 3)

- Use basic technology vocabulary (e.g., cursor, software, memory, disk drive, hard drive, CD-ROM) when referring to computers
- Produce prototypes (e.g., structures, home floor plans, city streets plan, creative inventions, transporting objects) that represent solutions to real-life local or personal technology-based problems
- Develop basic keyboard skills
- Operate peripheral devices
- Compare various computer processing, storage, retrieval and transmission techniques
- Define technology as associated with solving problems and extend the students' potential in terms relative to their education experiences
- Select and use technology appropriate to tasks in the classroom
- Use electronic encyclopedias, almanacs, indexes, catalogs, local and wide-area networks, and modem-delivered services to access information from electronic databases
- Employ search strategies to retrieve electronic information using databases, CD-ROMs, videodisks and telecommunications
- Describe advantages and disadvantages of various computer processing, storage, retrieval and transmission techniques
• Measure differences in time, speed or distance required to perform various tasks on time, weight and distance problems, using motion sensors (e.g., stopwatch, linear measuring tools, pendulum apparatus, wheel-mounted vehicle, incline plane)
• Read and follow directions in a technology instruction manual to construct a model or product
• Write, test and revise directions for the use of some technology devices (e.g., programming a VCR; using a hair dryer, tape player, CD-ROM player, clock radio, microwave oven, electronic games)
• Demonstrate a basic understanding of computer theory, including bits, bytes and binary logic
• Use organizational features of electronic mail (e.g., passwords, entry menu features, pull-down menus, icons, key word search)
• Participate in a student think tank simulation to solve a technology-based problem

ESSENTIALS (Grades 4 - 8)

• Design a scale model of a system or facility
• Identify simple and complex machines (e.g., bicycle chain and gears, a home appliance/ machine)
• Design a living structure/space to scale using inches/millimeters
• Outline a procedure for troubleshooting a machine
• Present a definition of technology and explain its meaning
• Keyboard with efficiency and accuracy without looking at the keyboard
• Evaluate the quality and performance of a product, e.g., performance test a technology device
• Evaluate the operation of a technology device and correct any malfunctions (e.g., adjust paper feed on printer, check electric power source/connection)
• Examine information from electronic media and determine its correctness and worth
• Identify copyright laws that pertain to technology and apply them appropriately
• Understand the “Fair Use Guidelines for Educational Multimedia” regarding using audio, video and electronic media
• Identify technology skills (e.g., cutting materials, gluing/pasting, measuring shaping process) which enhance personal productivity in building prototypes and modeling
• Follow directions to use computer software to construct a model or complete a project
• Use organizational features of electronic information (e.g., microfiche headings and numbering, headings for accessing nested information in hypertext media, electronic media, library, interlibrary catalog databases)
• Read equipment descriptions and technical specifications to select equipment for specific needs
• Use technology devices to determine linear heights and dimensions (e.g., of flagpoles, structures, land areas, topographical features)
• Write a program to accomplish a task (e.g., calculator routine, LOGO procedure, defining fields in spreadsheets)

PROFICIENCY (Grades 9 - 12)
• Demonstrate the uses and purposes of a range of technical equipment (e.g., plotter, programmable devices, cutting and shaping devices, electronic information transfer/mail methods)
• Discuss new and emerging technologies and their applications (e.g., laser medical applications, portable satellite uplinking/downlinking devices, enabling technologies, imaging devices, teleradiology, videoconferencing, wireless devices)
• Interpret and present their definition of technology
• Produce a technology plan to manage products, facilities and systems
• Use a technology system (e.g., mass transit, highway planning, material/package distribution, airport luggage handling and distribution) to solve a problem
• Find and correct non-functional technology system/subsystem areas needed to accomplish required tasks (e.g., check component connections, software settings)
• Locate information on a global network by setting search parameters
• Analyze the set-up of workstations (e.g., ergonomics, lighting, ventilation, cabling)
• Read and follow directions to complete a technology-based task
• Compare and contrast technological product information contained in advertisements, instruction manuals, contracts and warranties
• Apply information contained in labels, warnings, manuals, directions, applications and forms to complete simulated or real-world tasks on computer
• Identify the various methods and uses of technology by which companies interact internally and externally
• Use organizational features of electronic text such as bulletin boards, database keyword searches, and e-mail addresses to locate information and conduct research
• Research and select a career choice, develop a career plan, and select the courses/program for entry-level skills

DISTINCTION (Honors)

• Prepare a personal portfolio of research and experimentation involving technology and share the discoveries with others
• Manage a complex system such as a computer network or the lighting for a production
• Debug a program using appropriate techniques (e.g., controlled breaks, printing of intermediate results) and identify the difference between syntax errors and logic errors
• Design, write, test, debug and document a complete structure program including the preconditions and post-conditions of program segments, input/output specifications, a step-by-step plan, the test data, a sample run and the program listing with appropriately placed comments
• Read and follow maintenance instructions for keeping relevant equipment in good working order and instructions for troubleshooting and repairing relevant equipment
• Design technological solutions for a variety of complex tasks such as theater production, joint projects with business, school yearbook, newspaper and entrepreneurship activities
• Develop a plan for implementing new and emerging technology
Arizona Standards

Technology Standards
(Adopted 3/24/97)

Standard 2

Students know how to solve problems by using current technologies to conduct research, analyze solutions and present results.

Students know and are able to do the following:

READINESS (Kindergarten)

- Observe operational technology examples, noting physical changes that result from their uses and predicting results
- Collect simple classroom data and graph the results using a variety of competing technologies
- Create a picture story using a computer drawing program
- Express thoughts through pictures produced using modern technology
- Describe their own experiences with technology
- Relate technology experiences in stories
- Produce a picture collage about technology examples found in the community
- Demonstrate the use of keyboard functions, including the use of a mouse and control keys (e.g., return, space bar, backspace)

FOUNDATIONS (Grades 1 - 3)

- Select and use appropriate technology for tasks (e.g., tools for cutting, shaping, assembling, handling information, preparing visuals)
- Create simple databases and spreadsheets to manage information and create reports
- Reproduce, extend, create, and describe patterns and sequences using calculators and other technologies
- Select and use appropriate calculators and computer methods for computing with whole numbers in problem-solving situations
- Create documents using word-processing skills and writing process steps
- Use publishing programs and simple computer graphics to produce documents (e.g., flyers, banners, calendars)
- Present an oral report with visual aids which include electronic media
- Use local networks and communication systems to access information and send messages
- Use electronic information sources such as encyclopedias, indexes, databases and CD-ROMs

ESSENTIALS (Grades 4 - 8)

- Describe features and characteristics common to database programs
- Create a database using student-collected data and generate a document to display the information
- Use appropriate tools for gathering, interpreting and presenting data
Identify features and characteristics common to spreadsheet programs
Communicate information using spreadsheets by entering data; formatting spreadsheet cells; setting up formulas; analyzing data; and creating graphs, tables or charts to visually represent data
Examine or produce models based on scientific principles (e.g., self-propelled vehicles, lighter-than-air craft)
Given examples, understand that science is based on current understanding, and technology is a means to solve a problem using current understandings as well as trial and experimentation, i.e., science does not always explain technological phenomenon
Communicate information using databases by defining fields, entering data, sorting and producing reports in various forms; integrate those databases into word-processed documents, using graphics and spreadsheets
Produce working examples of self-propelled vehicles to understand the principles of flight
Through career exploration, describe the technological knowledge used by employees
Select and use appropriate calculators and computer methods for computing commonly used fractions, decimals, percents and integers in problem-solving situations; determine whether the results are reasonable
Compose and edit a multi-page document with appropriate formatting (e.g., margins, tabs, spacing, columns, page orientation) at the keyboard, using word-processing skills, writing process steps, and principles of design
Plan, produce, and present a multi-media presentation (using a wide range of visual media) that is tailored to an audience and clearly communicates its purpose
Cite resources (e.g., bibliography, reference list) in written documents and presentations
Use software features (e.g., spelling checker, grammar checker)

PROFICIENCY (Grades 9 - 12)

Identify a current communication problem and recommend technological solutions
Use appropriate search strategies from a variety of technological sources to retrieve data
Select and use appropriate tools for gathering, analyzing, interpreting and presenting data
Examine data and verify its accuracy using technology (e.g., select and compare multiple sources of information)
Interpret and apply copyright laws as they pertain to technology
Select and use appropriate technologies to gather, process, and analyze data and to report information related to an investigation
Design and conduct a statistical experiment to study a problem; interpret and communicate the results using the appropriate technology (e.g., graphing calculators, computer software)
Use appropriate technology to determine the strength of the relationship between two data sets and to make predictions
Select and use appropriate calculators and computer methods for computing with real numbers in problem-solving situations; determine whether the results are reasonable
• Solve practical consumer problems that involve analyzing and interpreting graphs, charts and/or tables
• Design and prepare a personal portfolio, using available technologies
• Compose a record of all student work done during the development of a product or invention
• Design and publish a multi-page document using advanced publishing software, graphics programs, scanners, and local and global networks as information resources
• Plan, produce and present an effective multi-media presentation using visual media, including cartoons, computer images, charts, photographs, maps and tables, to communicate the intended purpose to the audience

DISTINCTION (Honors)

• Integrate various technologies to produce documents/communications
• Use technology applications to conduct a market survey to determine interest in a specific product
• Implement conditional statements that include if/then, if/then/else, case statements and Boolean logic
• Design a step-by-step plan to solve a given problem, including a flowchart, pseudo code, hierarchy chart, and data flow diagram, and implement sort, search and animation routines
• Use appropriate variable data types, including integer, real (e.g., fixed and scientific notation), character, string and Boolean
• Investigate problem situations that arise in connection with computer validation and the application of algorithms
• Synthesize information from a wide range of materials, including television, videos, films, newspapers, magazines, CD-ROMs, Internet and computer media-generated images, to plan, organize, develop, produce and critique a meaningful multimedia presentation
• Identify theories and techniques in videography such as parallel action, point of view, graphic montage, back fades, dissolves, wipes, cuts and editing
• Research the community to determine types of signage for transportation routes and community safety
Arizona Standards

Technology Standards
(Adopted 3/24/97)

Standard 3

Students evaluate the impact of technology (e.g., benefits, costs, risks) on individuals, society and the environment.

Students know and are able to do the following:

READINESS (Kindergarten)

- Describe how technology is used in daily activities to meet personal needs
- Describe changes in their local community because of technology (e.g., new bridges, new roads, traffic lights, new buses, new buildings, removal of trees and other growth in the natural setting)
- Relate positive experiences with technology to new situations

FOUNDATIONS (Grades 1 - 3)

- Identify technologies to reduce air pollution, clean water, reduce noise pollution and purify food
- Describe the impact of various classroom technology applications on learning and the classroom environment
- Understand the technological factors that have led to the rapid increase and dominance of the human population, its density and distribution
- Explain how physical environments are changed by human activity (e.g., irrigation, building of dams and levees, offshore drilling)

ESSENTIALS (Grades 4 - 8)

- Identify physical, psychological and economic impacts of technology on people, plants and animals
- Identify technology (e.g., cars, trucks, tractors, microwave ovens, digital clocks, computers, video games) present in their environment and the impacts it has
- Explain the role of technology in the human modification of the physical environment (e.g., building new roads, digging canals, installing underground pipes and cables)
- Explain how technology (e.g., modern communication devices - TV, teleconferencing, desktop publishing, commercial products, satellite communication) affects perceptions of places and regions
- Explain how changes in transportation, communication and other technologies (e.g., railroad cars, airfreight, telephones, facsimile transmissions, satellite-based communication systems) affect the location of economic activities
- Understand proper etiquette for electronic mail and communication
- Compare the transportation and communication systems of the present to those of the past in terms of factors such as quality, efficiency and speed
- Understand the impact of information processing and
communications, with emphasis on the impact of computers and
electronic communications on contemporary society

- Analyze how the introduction of a new technology (e.g., invention of
  the telescope, applications of modern telecommunications) has
  affected or could affect human activity
- Explain the need for laws and policies to govern scientific and
  technological applications, such as in the safety and well-being of
  workers and consumers
- Describe the worldwide distribution and use of resources and how
  technology affects the definition of, access to and use of resources
- Measure differences in time, speed or distance required to perform
  various tasks using various devices (e.g., sensors, linear measuring
  devices, timing devices)

PROFICIENCY (Grades 9 - 12)

- Research an existing career plan (e.g., researching choices and the
  education, skills and knowledge needed)
- Analyze significant events, inventions, discoveries, etc., in the history
  of technology (e.g., the Gutenberg press, agrarian movements/age,
  industrial age, world wars, information/light age, space
  travel/exploration, Sputnik, transistor radio, wheel, gunpowder, steel)
  and their effects on beliefs, attitudes and behavior in business,
  society or culture
- Identify current problems facing our society (e.g., mass transit,
  distributing natural resources, conservation, uses of natural
  resources) and how technology might address them
- Analyze a recent technological innovation and develop an impact
  statement
- Serve as a member of a student panel which presents concerns and
  proposed technology-based solutions to a community/social issue
- Identify and analyze the stress of technology on the environment,
  people and society
- Analyze benefits, limitations, costs and consequences involved in
  using technology or resources (e.g., x-rays, agricultural chemicals,
  natural gas reserves)
- Understand the nature of technologies, including agriculture, with
  emphasis on both the agricultural revolution in ancient times and the
  effects of the use of biological and chemical technologies on 20th
  century agricultural productivity
- Evaluate ways in which technology has expanded the human
  capacity to modify the physical environment
- Describe the effects of technology on the development and change
  of culture
- Identify and describe the everyday impact of recent space technology
  (e.g., more sophisticated computers, remote sensing, medical
  imaging)

DISTINCTION (Honors)

- Automate a simple task and evaluate its impact on employment,
  worker skills and employee satisfaction
- Evaluate and design the ergonomics of workstations
- Evaluate the impact of emerging technologies on employment,
  worker skills and employee satisfaction
- Research how government agencies evaluate safety through the use
of technology (e.g., satellites, surveyor transit, x-ray equipment, sonic testing equipment, stress analyzers, food processing)

- Evaluate the social, environmental and economic impact of a planned engineering project
- Define a problem that can be solved by an engineered project; include statements about social, environmental and economic impacts
- Share innovative technological discoveries with others using various resources
- Compare and contrast the personal benefits and liabilities associated with a technological innovation (self-driven vehicles, human-implanted identification devices, cures for all cancer diseases, open access to instant communication devices)
- Assemble a community-based needs assessment, utilizing existing technology, and create an action plan for improvement
- Identify the legal aspects of managing a technological enterprise (organizing personnel, setting up day-to-day business operating functions, applying for permits and licenses, establishing a marketing plan)
Arizona Standards

Technology Standards
(Adopted 3/24/97)

Standard 4

Students understand the interrelationships of knowledge and how they are used to solve technology problems in school, the workplace and society.

Students know and are able to do the following:

READINESS (Kindergarten)

- Identify and categorize businesses in the local community
- Plan the physical organization of a classroom
- Identify careers that use science and technology

FOUNDATIONS (Grades 1 - 3)

- Produce a simple product to solve a problem
- Organize the class seating, responsibilities and/or learning environment for a specific purpose
- Explore how social and economic forces (e.g., air pollution, auto emissions) influence the uses of technology (e.g., communication satellites, instant access to world news events) and the determination of which technologies will be undertaken, paid attention to, invested in and used
- Describe careers that use science and technology

ESSENTIALS (Grades 4 - 8)

- Describe the common forms of business ownerships
- Identify careers in current technologies
- Understand the acquisition, processing, and use of materials and energy, and their relationship to both 1) the Industrial Revolution and 2) the current revolution in manufacturing based on the use of computers
- Identify technology (e.g., telescopes, spectrometers, spacecraft, life support systems) needed to explore space
- Invent a new product by changing or altering an existing product
- Determine a need for a product
- Gather product information (e.g., food value, operating instructions, safety rules, uses, limitations) through research and brainstorming
- Make detailed sketches or models of a product
- Assemble and present a product (e.g., manipulatives/model kits, structures, creative structures using basic materials)
- Describe the marketing process (e.g., public interest/demand, promotion, appeal/attention)

PROFICIENCY (Grades 9 - 12)

- Create a business or simulation (e.g., develop a marketing plan; identify the role of entrepreneurs, owners, managers and workers;
maintain personnel, financial and sales records) and specify how and what technology will be used to improve productivity.

- Explain the use of technology in occupations and identify careers in current and emerging technologies.
- Demonstrate the various functions and purposes of technological equipment used for making products or providing services (e.g., vehicle designs, tools, structures, creative inventions, time-saving devices).
- Demonstrate the interrelationship between science and technology (e.g., building a bridge, designing a better running shoe).

DISTINCTION (Honors)

- Demonstrate the interrelationship between technology and medicine (e.g., mechanical, chemical, electronic, biological, and genetic materials and techniques; their use in enhancing the functions of the body; their role in the detection, diagnosis, monitoring and treatment of disease; and the ethical and economic issues raised by their use).
- Design a technology solution for a complex problem (e.g., in the arts [theater productions], in communications [school newspaper, yearbook], and/or in business [production, sales]).
- Create a web showing relationships among a given type of technology and other elements of society (e.g., water supply, food processing and distribution).
- Apply knowledge and understanding of chemical and physical interactions to explain present and anticipated technologies (e.g., lasers, ultrasound, superconductive materials, photocopy machines).
- Explore the scientific and technological aspects of contemporary problems (e.g., issues related to nutrition, air quality, natural resources).
- Develop a new product for production (i.e., conduct a market feasibility study, select the appropriate form of ownership for the enterprise, develop a financial and managerial structure, design and engineer the product, design and engineer the production system, develop a marketing plan for the product, develop the roll-out schedule).

Back

Table of Contents

If you have any questions or suggestions about our web site, please let us know by sending us an e-mail at webmaster@state.az.us or just click on the image.

Copyright © 1998 Arizona Department of Education. All Rights Reserved.
APPENDIX B

PEORIA UNIFIED SCHOOL DISTRICT #11
ELEMENTARY SCHOOL LIBRARY/MEDIA OUTCOMES
Peoria Unified School District #11

Elementary School Library
Media Outcomes
<table>
<thead>
<tr>
<th>Library - Procedure &amp; Behavior</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARE &amp; HANDLING OF BOOKS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CIRCULATION</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>LIBRARY RULES</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>LIBRARY ARRANGEMENT</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**LITERATURE**

| TYPES OF LITERATURE          | X  | X  | X  | X  | X  | X  | X  |
| LITERATURE APPRECIATION       | X  | X  | X  | X  | X  | X  | X  |
| VIEWING & LISTENING SKILLS   | X  | X  | X  | X  | X  | X  |
| MATERIALS SELECTION          | X  | X  | X  | X  | X  | X  | X  |

**INFORMATION ACCESS SKILLS**

| CATALOG                       | X  | X  | X  | X  | X  |
| SYSTEMS OF ORGANIZATION      | X  | X  | X  | X  | X  | X  |
| REFERENCE SKILLS             | X  | X  | X  | X  | X  |
| PARTS OF A BOOK              | X  | X  | X  | X  | X  |
| TERMINOLOGY                  | X  | X  | X  | X  | X  | X  |

The advanced level (7th - 12th grades) consists of independent use of the library and information skills developed in previous years with an occasional class session for learning to use a specific tool or concept.
FIRST GRADE

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books

The student will:

1. Demonstrate and/or discuss the proper care and handling of books

B. Circulation

The student will:

1. Be able to check out and return materials according to the library's procedure
2. Be able to identify a barcode label

C. Library Rules

The student will:

1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement

The student will:

1. Be able to locate the Easy Section of the library
2. Be able to locate the circulation desk and book return

II. LITERATURE

A. Literature Appreciation

The student will:

1. View and listen to a variety of types of children's literature
2. Develop an awareness of nursery rhymes
3. Develop an awareness of fairy tales

B. Viewing and Listening Skills

The student will:

1. Develop the ability to attend and respond to the sights and sounds of storytime
SECOND GRADE

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books

The student will:

1. Demonstrate and/or discuss the proper care and handling of books

B. Circulation

The student will:

1. Be able to check out and return materials according to the library's procedure
2. Be able to identify a bar code label

C. Library Rules

The student will:

1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement

The student will:

1. Be able to locate the Easy Fiction and Non-Fiction areas of the library
2. Be able to locate the circulation desk and book return

II. LITERATURE

A. Types of Literature

The student will:

1. Be able to differentiate between fiction and non-fiction areas of the library

B. Literature Appreciation

The student will:

1. View and listen to a variety of children's literature
2. Know that a variety of books are available
3. Develop an awareness of folktales
4. Develop an awareness of Caldecott Award books
THIRD GRADE

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books

The student will:

1. Demonstrate and/or discuss the proper care and handling of books

B. Circulation

The student will:

1. Be able to check out and return materials according to the library's procedures
2. Be able to renew a book according to the library's procedure

C. Library Rules

The student will:

1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement

The student will:

1. Be able to locate the two main sections of the library:
   a. Fiction
   b. Non-Fiction

II. LITERATURE

A. Types of Children's Literature

The student will:

1. Be able to differentiate between fiction and non-fiction
2. Develop an awareness of primary periodicals as a source of pleasure reading

B. Literature Appreciation

The student will:

1. View and listen to a variety of children's literature
2. Know some favorite authors and their works
3. Develop an awareness of tall tales
4. Develop an awareness of poetry
FOURTH GRADE

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books

The student will:
1. Be able to take proper care of books

B. Circulation

The student will:
1. Be able to check out and return materials according to the library’s procedure
2. Be able to renew a book according to the library’s procedure

C. Library Rules

The student will:
1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement

The student will:
1. Be able to locate the Reference Collection
2. Be able to locate the Biography Collection
3. Be able to locate the Special Collections

II. LITERATURE

A. Types of Literature

The student will:
1. Be able to identify a biography, an autobiography, and a collective biography
2. Develop an awareness of fantastic fiction and realistic fiction

B. Literature Appreciation

The student will:
1. Develop an awareness of poetry
2. Develop an awareness of fantasy
3. Develop an awareness of contemporary realism

C. Materials Selection

The student will:
1. Be able to select materials with a specific purpose in mind
2. Begin to evaluate a book for quality
FIFTH GRADE

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books

   The student will:
   1. Be able to take proper care of books

B. Circulation

   The student will:
   1. Be able to check out and return materials according to the library's procedure
   2. Be able to renew a book according to the library's procedure

C. Library Rules

   The student will:
   1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement

   The student will:
   1. Be able to locate all sections of the library

II. LITERATURE

A. Types of Literature

   The student will:
   1. Develop an awareness of the different kinds of realistic fiction and fantastic fiction

B. Literature Appreciation

   The student will:
   1. Develop an awareness of humor
   2. Develop an awareness of mystery
   3. Develop an awareness of adventure

C. Materials Selection

   The student will:
   1. Be selective when choosing materials for leisure reading
SIXTH GRADE

I. LIBRARY - PROCEDURE AND BEHAVIOR

A. Care and Handling of Books

The student will:
1. Be able to take proper care of books

B. Circulation

The student will:
1. Be able to check out and return materials according to the library’s procedure
2. Be able to renew a book according to the library’s procedure

C. Library Rules

The student will:
1. Demonstrate an awareness of library rules of behavior

D. Library Arrangement

The student will:
1. Be able to locate all sections of the library

II. LITERATURE

A. Types of Literature

The student will:
1. Develop an awareness of the different kinds of realistic fiction and fantastic fiction

B. Literature Appreciation

The student will:
1. Develop an awareness of Newbery Award books
2. Develop an awareness of historical fiction
3. Develop an awareness of science fiction
4. Develop an awareness of fantasy fiction