# INFORMATION LITERACY [literacy]
A Position Paper on
Information Problem Solving

To be prepared for a future characterized by change, students must learn to think rationally and creatively, solve problems, manage and retrieve information, and communicate effectively.  By mastering **information problem-solving skills** students will be ready for an information-based society and a technological workplace.

**Information literacy** is the term being applied to the skills of information problem-solving.  The purpose of this position paper is to identify the key elements of information literacy and present a rationale for integrating information literacy into all aspects of the K- 12 and post-secondary curriculum.  Many aspects of both the school restructuring movement and library media programs relate directly to information literacy and its impact on student learning.

Today, many different groups are helping to define information literacy.  For example, information literacy is one of five essential competencies for solid job performance according to the U.S. Department of Labor Secretary's Commission on Achieving Necessary Skills (SCANS).  The SCANS report makes the case for developing **high-performance skills** to support an economy characterized by high skills, high wages, and full employment.   A high-skill workforce is also called for in President Clinton's National Technology Policy for America.

Educators are recognizing the importance of information literacy.   In 1991, the Association of supervision and Curriculum Development (ASCD) adopted the following statements:

*Information literacy ... equips individuals to take advantage of the opportunities inherent in the global information society.  Information literacy should be a part of every student's educational experience.  ASCD urges schools, colleges, and universities to integrate information literacy programs into learning programs for all students.*

ASCD is one of 60 educational associations which have formed the National Forum on Information Literacy (NFIL).

## RESTRUCTURING AND INFORMATION LITERACY

Research on the restructuring of schools calls for the teacher's role to change from a

textbook lecturer to that of a coach. Students become active learners who create their own knowledge after interacting with information from a variety of resources. Learning which results from use of multiple resources is often referred to as **resource-based learning.**

Resource-based learning requires that students are effective users of information regardless of format. Print resources such as books and magazines as well as electronic resources such as computer databases and laser videodiscs will be used by students. Students will master information literacy skills when teachers and library media specialists guide them as they use information with a discipline or through an interdisciplinary project.

Another component of restructuring, **performance assessment,** flows from active resource-based learning. Learning is assessed by observing student demonstrations of ability, knowledge or competencies. In a fully functioning performance assessment setting, student portfolios and other assessment techniques are used to measure **outcomes** or **competencies.**

## CURRICULUM AND INFORMATION LITERACY

To become effective information users, students must have frequent opportunities to handle all kinds of information. Locating, interpreting, analyzing, synthesizing, evaluating, and communicating information should become a part of every subject across the curriculum. Resource-based learning calls for all members of the educational community to become partners in a shared goal, providing successful learning experiences for all students. Learning environments should be structured to allow students unlimited access to multiple resources in the classroom, the library media center, and beyond the school walls.

The principal, as instructional leader, fosters resource-based learning by providing adequate planning time and budget support. As instructional partners, the classroom teacher and library media specialist are actively involved in identifying the learning needs of the students, developing teaching units, and guiding their progress. The library media specialist facilitates activities which offer meaningful practice in using a variety of information resources.

In an effective information literacy curriculum, the student's experience with information moves away from learning traditional library location skills taught in isolation. Rather, the student learns information literacy skills, as defined in this paper, embedded into the core curriculum. Once acquired, a solid foundation of information literacy skills will prepare students for a lifetime of learning.

## LIBRARY MEDIA PROGRAMS

The role of the library media program is to ensure that students and staff are effective users of ideas and information. The library media program supports the curriculum by providing adequate resources, personnel and training so that both students and teachers become independent users of information.

The library media specialist plays a critical role in a school's instructional program. To foster information literacy, the library media specialist:

- Works with the classroom teacher as a partner to plan, design, deliver, and evaluate instruction using a variety of resources and information problem solving skills.

- Serves as a teacher and consultant in the transition from a textbook centered classroom to a resource-based classroom.

- Provides leadership, expertise and advocacy in the use of technology and resources.

- Partners with teachers to empower students to accept responsibility for their own learning, thereby becoming capable of learning over a lifetime.

- Manages a program (personnel, resources, facility, and services) in which students receive instruction and practice in the use of information. Guidance is given for reading, viewing, and listening so that students can locate resources for both personal enrichment as well as for information problem-solving.

A school library media program that is truly integrated into the school's curriculum is central to helping students master information literacy skills.

"Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them. They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand." -*ALA Presidential Committee* on Information *Literacy*

# Information Problem-Solving Skills

INTRODUCTION

The ability to access and use information is necessary for success in school, work and personal life. The following steps represent the basic element in an information literacy curriculum.

1. DEFINING THE NEED FOR INFORMATION

The first step in the information problem solving process is to recognize that an information need exists and to define that need. The student will be able to:

A. Recognize different uses of information (i.e. occupational, intellectual, recreational)

B. Place the information needed within a frame of reference (who, what, when, where, how, why)

C. Relate the information needed to prior knowledge

D. Formulate the information problem using a variety of questioning skills (I.e. Yes/no, open ended)

## II. INITIATING THE SEARCH STRATEGY

Once the information problem has been formulated, the student must understand that a plan for searching has to be developed.   The student will be able to:

A. Determine what information is needed, often through a series of subquestions

B. Brainstorm ideas and recognize a variety of visual ways of organize ideas to visualize relationships among them (i.e. webbing, outlining, listing)

C. Select and use a visual organizer appropriate to subject

D. List key words, concepts, subject headings, descriptors

E. Explain the importance of using more than one source of information Identify potential sources of information

F. Identify the criteria for evaluating possible sources (i.e. timeliness, format, appropriateness)

## III. LOCATING THE RESOURCES

At the onset of a search a student will recognize the importance of locating information from a variety of sources and accessing specific information found within an individual resource.   The student will be able to:

A. Locate print, audiovisual, and computerized resources in the school library media center using catalogs and other bibliographic tools

B. Locate information outside of the school library media center through online databases, interlibrary loan, telephone and facsimile technology

C. Identify and use community information agencies (i.e. public and academic libraries, government offices) to locate additional resources

D. Use people as sources of information through interviews, surveys and letters of inquiry

E. Consult with library media specialists and teachers to assist in identifying sources of information

F. Access specific information within resources by using internal organizers (i.e. indexes, tables of contents, cross references) and electronic search strategies (i.e. keywords,

Boolean logic)


## IV. ASSESSING AND COMPREHENDING THE INFORMATION

Once potentially useful information has been located, the student uses a screening process to determine the usefulness of the information.   The student will be able to:

A. Skim and scan for major ideas and keywords to identify relevant information

B. Differentiate between primary and secondary sources

C. Determine the authoritativeness, currentness and reliability of the information

D. Differentiate among fact, opinion, propaganda, point of view, and bias

E. Recognize errors in logic

F. Recognize omissions, if any, in information

G. Classify, group or label the information

H. Recognize interrelationships among concepts

I. Differentiate between cause and effect

J. Identify points of agreement and disagreement among sources

K. Select information in formats most appropriate to the student's individual Teaming style

L. Revise and redefine the information problem if necessary


## V. INTERPRETING THE INFORMATION

Following an assessment of the information, the student must use the information to solve the particular information problem.   The student will be able to:

A. Summarize the information in the student's own words; paraphrase or quote important facts and details when necessary for accuracy and clarity

B . Synthesize newly gathered information with previous information

C. Organize and analyze information in a new way

D. Compare information gathered with the original problem and adjust strategies, locate additional information or re-examine information when necessary

E. Draw conclusions based on the information gathered and the student's interpretation of it


## VI. COMMUNICATING THE INFORMATION

The student must be able to organize and communicate the results of the information problem-solving effort.   The student will be able to:

A. Use the search information to identify the important conclusions or resolutions to the problem to be shared with others

B. Decide on a purpose (i.e. to inform, persuade, entertain) for communicating the information and identify the intended audience

C. Choose a format (i.e. written, oral, visual) appropriate for the audience and purpose

D. Create an original product (i.e. speech, research paper, videotape, drama)

E. Provide appropriate documentation (i.e. bibliography) and comply with copyright law

## VII.   EVALUATING THE PRODUCT AND PROCESS

Evaluation is the ability to determine how well the final product resolved the information problem and if the steps taken to reach the desired outcome were appropriate and efficient. Students may evaluate their own work and/or be evaluated by others (i.e. classmates, teachers, library media staff, parents).   The student will be able to:

A. Determine the extent to which the conclusions and project met the defined information need and/or satisfied the assignment. (i.e. how well did I do?)

B. Consider if the research question/problem, search strategy, resources, or interpretation should have been expanded, revised or otherwise modified. (i.e. what could/should I have done differently?)

C. Re-assess his/her understanding of the process and identify steps which need further understanding, skill development, or practice (i.e. how can I do better in the future?)

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**Information Literacy in Action**

Students practice information literacy in many different ways.   In the following scenarios that exemplify cooperative instructional efforts between teachers and library media specialists, students demonstrate their information problem-solving skills through significant learning experiences.

**Scenario #1 -** Three students in the elementary school library media center are working at a multimedia workstation completing a report of interviews with elderly community residents. They are incorporating stories about their community during World War II, photos of some of the community residents, photos of the community from that period of time and a table with community population figures.   This report will go into each child's portfolio.

**Scenario #2 -** In the middle school media center students are using electronic mail to work with scientists and other students on the International Arctic Project.   Using the Internet, an international electronic communication network, students are sharing data from their own lake study project with students as far away as Russia. They are also following an Arctic training expedition, questioning and receiving information from the explorers.

**Scenario #3 -** In the high school library media center students are preparing to produce a video news report set in the Civil War.   They are searching the school district online catalog, a database of statewide library resources and online historical magazine indexes and a laserdisc of resources from the Library of Congress.   Among the resources selected by one student are primary source newspapers, audio taped documentary, an audio recording of folk songs, along with books and magazine articles.   Electronic mail is used to request some items through interlibrary loan.

**Scenario #4 -** Elementary students who are setting up a fresh-water aquarium in their classroom during a study of aquatic life, plan their class time with the teacher before they consult and work with the library media specialist to locate and use print and nonprint sources.   They collect the materials, plants, and animals based on their completed research.   The teacher and library media specialist locate biological data through the Internet and students confer with the local experts via telephone interview and internet e-mail.

**Scenario #5 -** A team of middle school teachers and the library media specialist plan a study of life in the middle ages that will involve a special mock celebration.   They group students, identify projects that will be completed, and suggest roles each will play in the study.   The teachers and library media specialist review the requirements and identify resources necessary, the best information access points for each group, and the most efficient scheduling of time and resource use.

**Scenario #6 -** Advanced high school students involved in an independent study in chemistry are matched with mentors with whom they communicate through telephone and Internet. The mentors guide students in projects and suggest sources with which to work. The students negotiate with teachers on the project expectations and completion time. Information needs are formulated with the library media specialist, and materials are collected for completion of projects.

**Scenario #7 -**A district staff development workshop is planned by a team of curriculum personnel, principal, library media specialist and teachers. The workshop emphasis is on critical thinking skills. Information searches are completed in ERIC and other national databases to identify research in the field, people as speakers, and resources for student use. Plans are completed, packets of information collated for distribution, and the workshop sponsored.

**Scenario #8 -** Elementary students involved in a whole language reading program listen to storytellers of folk tales before selecting related books to read. After reading, students advise the teacher and library media specialist on the themes and characters that they think they should pursue. The students, teacher, and library media specialists locate nonprint and other print sources in local and statewide catalogs for further student reading and study. Students use gathered materials for their own storytelling festival.