



# **Information and Technology Literacy Framework**

PreK-12

**Approved January 2006**

# Introduction to the Information and Technology Literacy Framework

## Background Information

In 1998, the State Department of Education published two documents intended to set academic standards and serve as guiding structures for comprehensive and high-quality educational experiences for every student. The first of these documents, *Connecticut's Common Core of Learning (CCL)*, delineates Connecticut's standard for an educated citizen and identifies the skills, knowledge and character expected of all Connecticut's public secondary school graduates. As such, the *CCL* establishes a vision of what all students should know and be able to do as the result of their entire K-12 educational experience.

In recognition of the growing need for all students to be able to use information and technology resources, CCL expectations for students included a section entitled "Learning Resources and Information Technology." These specific skills and competencies are found in "Foundational Skills and Competencies," the section of the CCL that reflects the cross-disciplinary skills and competencies that provide a foundation for all learning.

The second document, *The Connecticut Framework: K-12 Curricular Goals and Standards*, provides an expanded picture of what all students should know and be able to do in a range of content areas, including Learning Resources and Information Technology. The frameworks were designed to provide basic content and performance standards around which individual districts would develop their own K-12 programs of instruction.

Since 1998, national guidelines have further defined the scope and sequence of these skills and competencies.

*Information Power: Building Partnerships for Learning*, published by the American Association for School Librarians (AASL) and the Association for Educational Communications and Technology (AECT), 1998. Using the overarching goal that "All students will become effective users of information and ideas" the guidelines present nine Information Literacy Standards for Student Learning. The nine standards are clustered into three areas: information literacy; independent learning; and social responsibility.

- The International Society for Technology in Education (ISTE) published, in 1999, *National Educational Technology Standards for Students: Connecting Curriculum and Technology*. Fourteen foundational standards for students are grouped into: basic operations and concepts; social, ethical and human issues; technology productivity tools; technology communications tools; technology research tools; and technology problem-solving and decision-making tools.
- Most recently (2005), the U.S. Department of Education released its new national educational technology plan, *A National Education Technology Plan: The Future Is Now*. Goals Four, Five and Six of the plan relate directly to student learning, demonstrating the interrelated nature of information and technology literacy.

In light of these guidelines, the Learning Resources and Information Technology Framework has been revised. The new Connecticut Information and Technology Literacy Framework flows from, and is aligned with, these national goals, standards and principles for student learning. The student performance standards for grades 4, 8 and 12 provide additional guidance and specificity to assist local districts in developing a K-12 program in information and technology literacy. The framework also is intended to demonstrate the interrelated nature of information and technology skills and competencies. Local districts must build upon the content and performance standards in the framework to design a more detailed, K-12 local curriculum that includes more discrete skills and competencies and integrates them into and across the content area curricula. There should be a logical progression of student learning from grades K-12, encompassing not only what students should know --the mechanics of using technology and information access, but also what students should be able to do--the intellectual processes and strategies that must be applied to information and technology resources for learning, understanding, application and communication.

### **The Context of the Information and Technology Literacy Curriculum**

A planned, systematic, ongoing and integrated curriculum for information and technology literacy represents a major paradigm shift from the way information and technology literacy programs are currently being delivered. The following chart illustrates the change in perspective that will lead to the type of program that must be in place to ensure that all students have the opportunity to learn and practice information and technology skills and competencies.

## A New Perspective on Information and Technology Literacy (I&TL)

Moving From	To
<p><b>I&amp;TL Curriculum as Local Initiative</b></p> <ul style="list-style-type: none"> <li>• Based on existing resources</li> <li>• Separate computer and library instruction</li> <li>• Often not districtwide</li> </ul>	<p><b>I&amp;TL Curriculum Based on State and National Standards</b></p> <ul style="list-style-type: none"> <li>• Learning Resources and Information Technology Framework (now Information and Technology Literacy Framework)</li> <li>• <i>Information Power: Building Partnerships for Learning</i></li> <li>• <i>National Educational Technology Standards for Students (NETS)</i></li> <li>• <i>e-Learning: Putting a World-class Education at the Fingertips of All Students</i></li> </ul>
<p><b>A Stand-alone Curriculum</b></p> <ul style="list-style-type: none"> <li>• Discrete skills taught</li> <li>• Stand-alone lessons</li> <li>• Developed by library media specialist(s) and/or technology teacher(s) in isolation</li> <li>• Implemented by I&amp;TL professionals</li> <li>• Instruction is random, available to students on an uneven basis – not articulated K-12</li> <li>• Tends to focus on the integration of information and technology resources</li> <li>• Rigid scheduling for I&amp;TL facilities</li> </ul>	<p><b>A Well-defined, but Integrated Curriculum</b></p> <ul style="list-style-type: none"> <li>• Instruction integrated into and across content areas, K-12</li> <li>• Developed by I&amp;TL professionals in cooperation with other educators</li> <li>• Instruction implemented by I&amp;TL professionals working with classroom teachers</li> <li>• Instruction is planned, systematic and ongoing for all students</li> <li>• Formal alignment with content areas</li> <li>• Focus is on student acquisition of I&amp;TL skills and competencies</li> <li>• Flexible access to I&amp;TL facilities and resources</li> </ul>
<p><b>Cooperation</b></p> <ul style="list-style-type: none"> <li>• Working cooperatively with teachers who are interested</li> <li>• Delivering I&amp;TL instruction as requested</li> </ul>	<p><b>Collaboration</b></p> <ul style="list-style-type: none"> <li>• Working with all teachers</li> <li>• Working with all phases of the instructional process: planning, delivery and assessment</li> </ul>
<p><b>Personality Driven</b></p> <ul style="list-style-type: none"> <li>• I&amp;TL instructional program works because of the person(s) running it</li> <li>• I&amp;TL professionals in some schools, but not others – sometimes an entire level is not served</li> <li>• Lacks administrative support</li> </ul>	<p><b>Program/Curriculum Driven</b></p> <ul style="list-style-type: none"> <li>• I&amp;TL instructional program works because it has been embedded in the educational process</li> <li>• I&amp;TL professionals in all schools</li> <li>• Strong administrative support</li> </ul>
<p><b>Student Competency/Performance Not Systematically Assessed</b></p> <ul style="list-style-type: none"> <li>• Grade-level benchmarks have not been defined</li> <li>• Assessment may occur within some lessons</li> </ul>	<p><b>Student Competency/Performance Assessed</b></p> <ul style="list-style-type: none"> <li>• Grade-level benchmarks or performance standards have been defined</li> <li>• Mechanisms for regularly assessing all students' competencies have been developed and implemented (e.g., assured experiences)</li> </ul>

Information and Technology Literacy subsumes what traditionally has been associated with library media, audiovisual, computer and other educational technology programs. In the past, these programs often have existed as distinct and separate entities located in different parts of a school building. New technologies and the “information overload” that now permeate our schools and society have blurred the lines that once separated these areas. Though there may indeed be several individuals within a school who are responsible for different facets of the skills and competencies presented, planning is best done by considering the interrelatedness and broad scope of Information and Technology Literacy.

All students must be able to use information and technology effectively to live, learn and work successfully in an increasingly complex and technology-based society. The overarching goal of an information and technology literacy instructional program is to ensure that all students are independent, competent, responsible and confident users of information and technology and can apply related strategies for acquiring basic skills and content knowledge, communicating ideas, problem-solving and pursuing personal interests. The following content and performance standards provide the foundation for initiating local discussions to design an instructional program that will ensure that all students have the opportunity to learn and practice these new essential skills.

## **INFORMATION AND TECHNOLOGY LITERACY**

By the end of Grade 12, all students will be independent, competent, responsible and confident users of information and technology and able to apply related strategies for acquiring basic skills and content knowledge, collaborating with others, communicating ideas, solving problems and pursuing personal interests.

### **PROGRAM GOALS**

As a result of education in Grades K-12, each student will attain a level of information and technology literacy skills that will enable them to:

- Communicate information and ideas, conduct research, organize data and solve problems, and create original works;
- Demonstrate responsible, legal and ethical use of information and technology.
- Use effective and efficient strategies to explore and use a wide range of information and technology resources to gain knowledge, deepen understanding, make informed decisions and solve problems for educational, career and personal pursuits;
- Apply information and technology competencies to learning in the content areas;
- Locate, evaluate, interpret and synthesize information from print and non-print sources; and
- Use technology tools to enhance learning, increase productivity and promote creativity.

## K – 12 CONTENT STANDARDS

1. Definition and Identification of Information Needs	Students will define their information needs and identify effective courses of action to conduct research and solve problems.
2. Information Strategies	Students will understand and demonstrate a command of information skills and strategies to locate and effectively use print, non-print resources to solve problems and conduct research.
3. Information Processing	apply information from a variety of sources and formats using evaluative criteria to interpret, analyze, organize and synthesize both print and non-print material
4. Application	use appropriate information and technology to create written, visual, oral and multimedia products to communicate ideas, information or conclusions to others.
5. Technology Use	Students will operate and use computers and other technologies as tools for productivity, problem-solving and learning across the content areas.
6. Responsible Use	Students will demonstrate the responsible, legal and ethical use of information resources, computers and other technologies.
7. Assessment	Students will assess the effectiveness of their information and technology choices for problem-solving and communication.

**CONTENT STANDARD 1: DEFINITION AND IDENTIFICATION OF INFORMATION NEEDS**

**What do students need to know prior to using information and technology resources?**

Students will	By Grade 4	By Grade 8	By Grade 12
<i>define their information needs and identify effective courses of action to conduct research and solve problems.</i>	<input type="checkbox"/> Clearly restate the scope and criteria of a task (such as time line, length, audience and presentation mode) with minimal prompting	<input type="checkbox"/> Clearly restate the scope and criteria for a given task, independently	<input type="checkbox"/> Clearly state the scope and criteria for a given task and demonstrate the ability to communicate them to others, independently
	<input type="checkbox"/> Identify existing knowledge and, with assistance, list areas where more information is needed	<input type="checkbox"/> Identify and discuss existing knowledge concerning a given task, without prompting	<input type="checkbox"/> Independently identify and assess existing knowledge related to a given task and articulate information needs to information providers or peers
	<input type="checkbox"/> Understand an essential question related to a topic of interest or assignment, with assistance	<input type="checkbox"/> Frame an essential question using given information, and pose additional questions related to completion of the task	<input type="checkbox"/> Develop essential questions related to a topic and formulate a research hypothesis related to the topic
	<input type="checkbox"/> Identify, locate and use appropriate print, non-print and/or digital resources available through the school library media center, with assistance	<input type="checkbox"/> Identify, locate and use an array of print and non-print resources available through the library media center independently, and with assistance, access resources outside the school	<input type="checkbox"/> Search print, non-print and digital resources within and outside the school, independently

	<input type="checkbox"/> Describe a course of action for addressing an essential question and completing the task, with prompting	<input type="checkbox"/> Determine an appropriate course of action for addressing the essential question, with minimal assistance	<input type="checkbox"/> Determine a course of action that demonstrates the selection of appropriate strategies and resources for accomplishing a task, independently
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**CONTENT STANDARD 2: INFORMATION STRATEGIES**

**What are the learning skills and strategies that students need to successfully find information?**

Students will	By Grade 4	By Grade 8	By Grade 12
<p><i>understand and demonstrate information skills and strategies to locate and effectively use print and non-print resources to solve problems and conduct research.</i></p>	<p><input type="checkbox"/> Use the online catalog (or card catalog) to identify materials by author, title or subject, including cross references and locate resources in appropriate areas of the library media center (e.g., easy section or reference)</p>	<p><input type="checkbox"/> Use additional features of online catalog records and demonstrate the ability to locate information from all areas of the library media center, such as fiction, nonfiction and reference</p>	<p><input type="checkbox"/> Apply principles of information systems organization to a variety of print and non-print resources</p>
	<p><input type="checkbox"/> Use menus, icons and links to access and use digital media to conduct basic research</p>	<p><input type="checkbox"/> Demonstrate the ability to navigate through a variety of software menus to access information for research, publication and communication</p>	<p><input type="checkbox"/> Routinely and efficiently, use online information resources to meet the needs for research, publications, and communications</p>
	<p><input type="checkbox"/> Locate and use table of contents and index in nonfiction materials</p>	<p><input type="checkbox"/> Describe the variety of ways indexes and tables are used as organizers for information systems</p>	<p><input type="checkbox"/> Access specific information from print and non-print resources by using internal organizers (e.g., indexes, cross-references)</p>
	<p><input type="checkbox"/> Identify print and non-print characteristics, organizing features (e.g., table of contents, index), and purposes</p>	<p><input type="checkbox"/> Use additional organizing features of print and non-print (e.g., menus, bibliographies and hyperlinks) to locate and use information</p>	<p><input type="checkbox"/> Plan and design methods to collect reliable data for particular purposes and audiences, using advanced reference materials, indexes, dictionaries and abstracts</p>

	<input type="checkbox"/> Select appropriate resources from a variety of media formats, understanding that information is stored and accessed in different ways	<input type="checkbox"/> Search, find, sort and evaluate database information from computers, CD-ROM and on-line resources and know how to apply specific features of different search engines	<input type="checkbox"/> Determine the best tool for locating information and use key word descriptors and Boolean logic to perform advanced on-line and CD-ROM searches (e.g., field searches)
	<input type="checkbox"/> Identify and use print and non-print reference sources (atlases, almanacs, encyclopedias, dictionaries, etc.)	<input type="checkbox"/> Select and use appropriate resources and/or equipment to accomplish a given task	<input type="checkbox"/> Use, independently, the full range of print and non-print resources within the school or district
	<input type="checkbox"/> Use information presented graphically (e.g., pictures, captions, diagrams or labels)	<input type="checkbox"/> Demonstrate ability to take notes, print out or record selected information from a wide range of sources of information	<input type="checkbox"/> Demonstrate the ability to solve problems by collecting, analyzing and interpreting data through the use of data management software (database, spreadsheets, etc.)
	<input type="checkbox"/> With assistance, identify and begin using age-appropriate search engines and directories	<input type="checkbox"/> Demonstrate the ability to identify and use a variety of features to locate information using an Internet search engine or directory	<input type="checkbox"/> Select and use, independently, an appropriate search engine or directory related to a specific task
	<input type="checkbox"/> Identify key words for searching for information, with assistance.	<input type="checkbox"/> Identify key words for searching information sources, with minimal assistance	<input type="checkbox"/> Identify key words for searching information sources, independently

**CONTENT STANDARD 3: INFORMATION PROCESSING**

**How do students evaluate and use information resources?**

Students will	By Grade 4	By Grade 8	By Grade 12
<p><i>apply information from a variety of sources and formats using evaluative criteria to interpret ,analyze, organize and synthesize both print and non-print material</i></p>	<p><input type="checkbox"/> Identify appropriate sources of information for a specific purpose</p>	<p><input type="checkbox"/> Develop and apply more complex criteria for aligning resources with a specific need and presentation</p>	<p>Develop and use personal and established criteria for selecting materials of appropriate breadth and depth of detail, format, illustrations, special features, level, content, purpose and intended audience</p>
	<p><input type="checkbox"/> Use criteria to judge the relevance, credibility and completeness of both print and non-print information</p>	<p><input type="checkbox"/> Apply evaluative criteria to discern stereotypes, biases and propaganda techniques in print and non-print resources</p>	<p><input type="checkbox"/> Demonstrate ability to identify and compare sources of information and apply multiple evaluative criteria, including purpose, point of view, biases and stereotypes, accuracy, continuity and currency</p>
	<p><input type="checkbox"/> Organize, analyze and synthesize information into related categories, with assistance</p>	<p><input type="checkbox"/> Organize, analyze and synthesize information to draw meaningful conclusions and determine an appropriate format for presentation, with minimal assistance</p>	<p><input type="checkbox"/> Organize, analyze and synthesize information to draw meaningful conclusions through written, oral, numeric and visual communications, independently</p>

**CONTENT STANDARD 4: APPLICATION**

**How do students use information and technology to express and communicate ideas?**

Students will	By Grade 4	By Grade 8	By Grade 12
<i>use appropriate information and technology to create written, visual, oral and multimedia products to communicate ideas, information or conclusions to others.</i>	<input type="checkbox"/> Select and use appropriate software and hardware to organize, analyze, interpret information, and present conclusions	<input type="checkbox"/> Create databases, spreadsheets and a variety of multimedia products to organize, analyze and interpret information	<input type="checkbox"/> Use in depth applications of appropriate software and hardware to organize, analyze and interpret information
	Use appropriate technology(s) and format(s) to clearly present information gathered from a variety of print and non-print resources	<input type="checkbox"/> Use appropriate technology(s) and format(s) to clearly present information gathered from a variety of print and non-print resources	<input type="checkbox"/> Determine appropriate technology(s) and format(s) to clearly present information gathered from a variety of print and non-print resources, for a variety of audiences

**CONTENT STANDARD 5: TECHNOLOGY USE**

**What type of technological tools will students use?**

Students will	By Grade 4	By Grade 8	By Grade 12
<p><i>operate and use computers and other technologies as tools for productivity, problem solving and learning across the content areas.</i></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Use basic operational features of school hardware (accessing programs, input devices, printing, output devices, keyboard, etc.)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Operate school hardware and demonstrate the ability to use the school network to access and utilize school software, independently</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Operate school hardware and demonstrate ability to understand and use capabilities of the school network and software, independently</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Use content-specific technology tools and software</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Use content-specific technology tools and software</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Use content-specific tools and software</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Demonstrate the use of the keyboard and mouse</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Demonstrate proficiency in keyboarding</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Maintain proficiency in keyboarding</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Demonstrate the ability to use basic features (entering information/data, editing, calculating, manipulating text, sound and graphics, saving files) of personal productivity software</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Demonstrate the ability to independently use personal productivity software and multimedia to create products in a wide range of formats (newsletters, budgets, brochures, imported graphics, web pages, digital movies, etc.)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Produce a variety of products using the advanced features of personal productivity software</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Work cooperatively with peers and others when using computers and other technologies</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Demonstrate the use of technological resources to help plan, coordinate and complete group projects</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Using telecommunications collaborate with peers, experts and others to research, compile, synthesize, produce and disseminate information or creative works</li> </ul>

	<input type="checkbox"/> Identify common hardware and software problems and seek assistance	<input type="checkbox"/> Identify hardware and software problems that accompany everyday use and seek assistance	<input type="checkbox"/> Identify and apply strategies for solving hardware and software problems outside the school environment
	<input type="checkbox"/> Understand that technology tools are constantly changing	<input type="checkbox"/> Understand that technology tools are constantly changing and describe their potential for use	<input type="checkbox"/> Demonstrate the ability to identify, assess and adapt to new technology tools and resources
	<input type="checkbox"/> Describe ways the computer is used to help people work, learn and play	<input type="checkbox"/> Identify ways computers and other technologies are affecting the way we live, work and learn	<input type="checkbox"/> Analyze the educational, social and ethical issues related to the increased reliance on computers and other technologies
	<input type="checkbox"/> Distinguish among different technologies and their uses	<input type="checkbox"/> Describe basic criteria used to evaluate and compare different types of computers, peripherals (e.g. printer, scanner) and other technology tools	<input type="checkbox"/> Identify evaluative criteria for making informed decisions about computers, peripherals and other technology tools

**CONTENT STANDARD 6: RESPONSIBLE USE**

**What are student responsibilities regarding the use of information and technology?**

Students will	By Grade 4	By Grade 8	By Grade 12
<p><i>demonstrate the responsible, legal and ethical use of information resources, computers and other technologies.</i></p>	<p><input type="checkbox"/> Practice proper and ethical use and care of print and non-print information resources, computers and other technologies</p>	<p><input type="checkbox"/> Demonstrate responsible and ethical use and care of print and non-print information resources, computers, other technologies and networks</p>	<p><input type="checkbox"/> Observe local, state and national laws and policies and procedures regarding the use of print and non-print information resources, computers, other technologies and networks</p>
	<p><input type="checkbox"/> Give citation credit to original sources when using or transmitting information to others</p>	<p><input type="checkbox"/> Apply established citation standards for giving credit for information or ideas used</p>	<p><input type="checkbox"/> Apply established citation standards for a wide range of information sources and formats</p>
	<p><input type="checkbox"/> Demonstrate an understanding of the concept of ownership of ideas and information by respecting and observing laws and/or guidelines for using print and non-print information, software, hardware and networks</p>	<p><input type="checkbox"/> Differentiate among various types of ownership and protection of intellectual property (e.g., copyright, patents) and observe “fair use” guidelines as they apply to each</p>	<p><input type="checkbox"/> Demonstrate an understanding of the process for copyrighting/protecting their own original work</p>
	<p><input type="checkbox"/> Adhere to the district’s acceptable use and copyright policies</p>	<p><input type="checkbox"/> Adhere to the district’s acceptable use and copyright policies and understand the relationship to local, state and national legislation</p>	<p><input type="checkbox"/> Adhere to the district’s acceptable use and copyright policies as well as local, state and national laws and policies</p>

**CONTENT STANDARD 7: ASSESSMENT**

How do students evaluate the process and the final product?

Students will	By Grade 4	By Grade 8	By Grade 12
<i>assess the effectiveness of their information and technology choices for problem-solving and communication.</i>	<input type="checkbox"/> Assess whether the process and information gathered was both relevant and complete in response to the assigned task	<input type="checkbox"/> Assess whether the process and information gathered was relevant, complete and accurate in response to the assigned need	<input type="checkbox"/> Assess, independently and continuously, the relevance, completeness and accuracy of gathered information and the efficiency of the research process
	<input type="checkbox"/> Assess whether their products meet established standards for process, product and presentation	<input type="checkbox"/> Assess whether their products meet established standards for process, product and presentation	<input type="checkbox"/> Assess, independently, whether their products meet established standards for process, product and presentation.