North Dakota
Standards and Benchmarks

Content Standards

Library/Technology Literacy

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Components of the Document

Content Standards – general statements that describe what students should know and the skills they should have in a specific content area.

Benchmarks – statements of knowledge and skills that define a standard at a given developmental level (e.g., 4th grade, 8th grade, 12th grade).

Examples of Specific Knowledge – facts, vocabulary, principles, generalizations, relationships, concepts, step-by-step procedures, strategies, or processes that are the specific information or skills that students should acquire to meet a standard.

Examples of Activities – instructional activities that students could do to acquire the knowledge and skills described in the standard and benchmarks.

Indicates that the word or phrase marked is defined in the glossary.

Introduction

Development of the Document

The Library/Technology Literacy Standards for the State of North Dakota were developed during 2000-2002 by a team of library and technology specialists, assisted by representatives from the Department of Public Instruction. The initial task was to decide whether technology and library curricula overlapped enough to create a shared set of standards. The team agreed that this blend could be accomplished because of the common goals of the two groups, while acknowledging that differences would be addressed as well.

In this process the specialists reviewed standards documents from the essential professional organizations:
- The American Association of School Librarians (AASL)
- The Association for Educational Communications and Technology (AECT)
- The International Society of Technology Education (ISTE)

The team also reviewed relevant content standards from all the states as well as various research process models such as "The Big6" by Eisenberg and Berkowitz. (See the chart in Appendix A for a comparison of various types of models.) It was agreed that this document could not encompass the standards of vocational and technical education.

Rationale for the Library/Technology Combination

The library/technology literacy standards combination is the result of technological developments that have come to play an increasing role in library operations. Students cannot access, evaluate, and use a full range of information sources without adequate technology knowledge and skills. At the same time, technology specialists find themselves addressing such matters as copyright awareness and critical analysis of information sources and tools, once the province of library specialists.

Library and technology specialists also share an underlying, pre-eminent mission: to provide a foundation for lifelong learning. According to *Information Power*, "Information literacy*--the ability to find and use information--is the keystone of lifelong learning." Information literacy forms the core of the library/technology document.

Information literacy is defined more fully as the ability to access, analyze, evaluate, and communicate information in a variety of forms. These components must be addressed in order for students to become critical thinkers and lifelong users of information.

Purpose of the Document

This document identifies and defines the knowledge and skills necessary for students to be "information literate." Employing technology, students need to access, evaluate, and use information to solve problems and think critically. The ultimate goal is that students will be learning *with* information and technology, not learning about information and technology. The emphasis will be on "learning how to learn."

It is the purpose of this document to provide school boards, administrators, educators, and parents with a guide to teaching information literacy. It is not intended to serve as a handbook or text.

Integration

These standards are meant to be integrated into the curricula of academic content areas through the efforts of library and technology specialists collaborating with other educators. Students need to work with information in developmentally appropriate, content-centered projects designed by the teacher and the library media specialist and/or technology specialist. The teacher brings to the collaboration a knowledge of the subject content, and the library/technology specialist brings to the process a knowledge of resources and technology.

Organization of the Document

This document provides five library/technology standards that outline what students should know and be able to do in the library/technology area. Each standard is developed through benchmarks, examples of specific knowledge, and examples of activities. The benchmarks, specific knowledge, and examples of activities are written for three grade ranges: K-4, 5-8, 9-12.

The standards are repeated in each grade-range section. They provide themes that educators and students can reinforce and amplify as students move from one grade range to another. Standards do not describe the level of knowledge or understanding or the ways in which students demonstrate their knowledge or understanding.

Benchmarks are statements of knowledge and skills that define a standard at a given developmental level (e.g., 4th grade). The benchmarks are grade-range specific and limited in number to keep the document manageable. Examples of specific knowledge and activities are listed under each benchmark.

Examples of specific knowledge include facts, vocabulary, principles, generalizations, relationships, concepts, step-by-step procedures, strategies, and processes. The activities, which could be used in a wide variety of content areas, are instructional activities that enable students to acquire the knowledge and demonstrate the skills described in the standards and benchmarks. The examples provided in the document do not, by any means, exhaust the possibilities.

The document also supplies an Appendix, Glossary, and References. Terms in the Glossary are marked by an asterisk (*) the first time that a Glossary term appears in the Benchmarks, Examples of Specific Knowledge, or Examples of Student Activities within each grade range.

Indicates that the word or phrase marked is defined in the glossary.

North Dakota Library/Technology Literacy Content Standards

Standard 1: RESEARCH
Students conduct research that is linked to both content standards and a problem-solving process to access, evaluate, and organize information useful and beneficial to themselves and/or others.

Standard 2: DEVELOPING PRODUCTS USING MEDIA/TECHNOLOGY
Students develop quality products that communicate information and ideas to a variety of audiences by using media and technology.

Standard 3: TECHNOLOGICAL SYSTEMS
Students demonstrate an understanding of the scope, functions, and operations of current technology.

Standard 4: COLLABORATIVE SKILLS/INDEPENDENT LEARNING/ PERSONAL ENJOYMENT
Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE
Students demonstrate ethical, legal, and social uses of information resources and technology.

Indicates that the word or phrase marked is defined in the glossary.

Summary of Grades K-4 Benchmarks

Standard 1: RESEARCH

Students conduct research that is linked to both content standards and a problem-solving process* to access, evaluate, and organize information* useful and beneficial to themselves and/or others.

Benchmarks

4.1.1   Define a research problem or task.
4.1.2   Plan a research strategy.
4.1.3   Access information using a variety of sources.
4.1.4   Use criteria to evaluate and select information for research.
4.1.5   Use organizational strategies to gather, record, and synthesize* information.
4.1.6   Present research (See Standard 2 for details.).
4.1.7   Evaluate the research process.

Standard 2: DEVELOPING PRODUCTS* USING MEDIA*/TECHNOLOGY*

Students develop quality products that communicate information and ideas to a variety of audiences by using media and technology.

Benchmarks

4.2.1   Know the appropriate audience for a particular media product.
4.2.2   Develop a product using a variety of media.
4.2.3   Present a media product.
4.2.4   Evaluate media products.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of current technology.

Benchmarks

4.3.1   Identify and define terms associated with media and technology.
4.3.2   Demonstrate basic skills and procedures to operate various media and technology.
4.3.3   Demonstrate proper care and correct use of media and technology.
4.3.4   Select media and technology appropriate for a purpose.
4.3.5   Recognize the uses and effects of media and technology in daily life.

*Indicates that the word or phrase marked is defined in the glossary.

Standard 4: COLLABORATIVE SKILLS/INDEPENDENT LEARNING /PERSONAL ENJOYMENT

Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Benchmarks

4.4.1   Collaborate to share knowledge, information, and technology use.
4.4.2   Determine and select materials appropriate to personal abilities and interests.
4.4.3   Develop appreciation and self-motivation as a reader.
4.4.4   Recognize that creative expression can be represented in a variety of formats.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE

Students demonstrate ethical, legal, and social uses of information resources and technology.

Benchmarks

4.5.1   Practice responsible use of technology systems, software*, and information.
4.5.2   Develop and use citation skills.
4.5.3   Recognize the importance of intellectual freedom* and access to information in a democratic society.
4.5.4   Know that technology has costs as well as benefits that affect society.

Indicates that the word or phrase marked is defined in the glossary.

Standard 1: RESEARCH

Students conduct research that is linked to both content standards and a problem-solving process to access, evaluate, and organize information useful and beneficial to themselves and/or others.

Benchmarks

4.1.1   Define a research problem or task.
4.1.2   Plan a research strategy.
4.1.3   Access information using a variety of sources.
4.1.4   Use criteria to evaluate and select information for research.
4.1.5   Use organizational strategies to gather, record, and synthesize information.
4.1.6   Present research (See Standard 2 for details.).
4.1.7   Evaluate the research process.

Examples of Specific Knowledge that Support the Standard and Benchmarks

4.1.1   State a problem, question, or information need.
4.1.2   Follow a simplified research model (e.g., Big6*, Super3*, KWL*, Know-It-All*).
4.1.3   Use a range of sources (e.g., library catalog/OPAC*, primary sources*, subscription databases*, Internet*).
4.1.4   Evaluate sources for currency, authorship, and credibility.
4.1.5   Use note taking strategies and graphic organizers* to manage information (e.g., T-notes, *Kidspiration/Inspiration*, highlighting).
4.1.6   (See Standard 2 for details.)
4.1.7   Use an evaluation tool (e.g., rubric*, checklist, peer evaluation).

Examples of Activities that Support the Standard and Benchmarks

4.1.1   Students prepare questions that a family might ask when planning a vacation.
4.1.2   Students participate in a discussion of how the main character in a book uses the Super3 problem-solving process (e.g., *Nate the Great* series by Marjorie Sharmat).
4.1.3   Students use print and nonprint sources to obtain information and write a riddle about an animal.
4.1.4   Students use a checklist to evaluate the reliability* of a resource.
4.1.5   Students use the keyword* concept and organize notes using graphic organizer software (e.g., *Kidspiration/Inspiration*).
4.1.6   (See Standard 2 for details.)
4.1.7   Students use a teacher-provided checklist to see if enough information has been gathered.

Indicates that the word or phrase marked is defined in the glossary.

Standard 2: DEVELOPING PRODUCTS USING MEDIA/TECHNOLOGY

Students develop quality products that communicate information and ideas to a variety of audiences by using media and technology.

Benchmarks

4.2.1   Know the appropriate audience for a particular media product.
4.2.2   Develop a product using a variety of media.
4.2.3   Present a media product.
4.2.4   Evaluate media products.

Examples of Specific Knowledge that support the Standard and Benchmarks

4.2.1   Identify the characteristics of the audience (e.g., age, location, interests).
4.2.2   Recognize a wide variety of communication tools (e.g., presentation software, e-mail, virtual classroom*), in addition to print sources.
4.2.3   Use presentation software to incorporate pictures, text, and sound.
4.2.4   Select and use an appropriate presentation method (e.g., oral presentation, Internet posting, poster display).
4.2.5   Use an evaluation tool (e.g., rubric, checklist, peer evaluation).

Examples of Activities that support the Standard and Benchmarks

4.2.1   Students poll different grade levels to determine favorite cartoons and discuss the preferences as related to the age group.
4.2.2   Students use e-mail to exchange directions for the construction of a three-dimensional structure built of one-inch cubes. To document progress, students exchange digital photos of their structures.
4.2.3   Students, using presentation software, create a virtual zoo featuring North Dakota animals. The final product could then be posted to the Internet.
4.2.4   Students present an overview of textbook chapters in a content area using presentation software.
4.2.5   Students collaboratively design a classroom rubric or checklist to evaluate each other's work.

Indicates that the word or phrase marked is defined in the glossary.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of current technology.

Benchmarks

4.3.1   Identify and define terms associated with media and technology.
4.3.2   Demonstrate basic skills and procedures to operate various media and technology.
4.3.3   Demonstrate proper care and correct use of media and technology.
4.3.4   Select media and technology appropriate for a purpose.
4.3.5   Recognize the uses and effects of media and technology in daily life.

Examples of Specific Knowledge that Support the Standard and Benchmarks

4.3.1   Know basic media and technology terminology (e.g., hard drive, RAM, mouse, password, scroll bar, library catalog/OPAC, CD-ROM*).
4.3.2   Demonstrate basic computer procedures (e.g., proper keyboard techniques, saving/retrieving documents, screen navigation).
4.3.3   Use and properly care for media storage devices (e.g., disks, CD-ROMs, videotapes, books, other printed material).
4.3.4   Distinguish among information formats (e.g., presentation software, poster boards, paper charts, and videos).
4.3.5   Explain how technology influences the school day (e.g., classroom computers, intercom, television, Internet).

Examples of Activities that Support the Standard and Benchmarks

4.3.1   Students will explore and identify the internal components of a computer.
4.3.2   Students create a personal timeline and save it to a designated location.
4.3.3   Students collaboratively develop responsible care procedures for use of print and nonprint resources.
4.3.4   Students analyze various media formats promoting North Dakota. Using focus questions, they compare/contrast the characteristics, audiences, and influences of the media formats.
4.3.5   Students divide into groups and identify the technologies that influence their day. Using a scale of one-to-ten, they rate the significance of the technologies and share their findings.

Indicates that the word or phrase marked is defined in the glossary.

Standard 4: COLLABORATIVE SKILLS/INDEPENDENT LEARNING /PERSONAL ENJOYMENT

Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Benchmarks

4.4.1   Collaborate to share knowledge, information, and technology use.
4.4.2   Determine and select materials appropriate to personal abilities and interests.
4.4.3   Develop appreciation and self-motivation as a reader.
4.4.4   Recognize that creative expression can be represented in a variety of formats.

Examples of Specific Knowledge that Support the Standard and Benchmarks

4.4.1   Know basic collaboration techniques and tools (e.g., engaging in active listening, working in groups, following assigned roles).
4.4.2   Select materials in genres that are within interest and reading abilities (e.g., mystery, science fiction, historical fiction).
4.4.3   Explain and discuss various types of literature and information resources (e.g., fiction, nonfiction, reference, Web sites*).
4.4.4   Identify how a topic can be represented in a variety of art forms (e.g., poetry, music, visual arts).

Examples of Activities that Support the Standard and Benchmarks

4.4.1   Students work in cooperative groups to create a 7-day weather forecast. Using assigned roles, each group will develop a forecast, present it to the class and evaluate their predictions.
4.4.2   Students will develop a list of books of personal interest by locating a favorite book in the library catalog/OPAC and cross-referencing it by author, subject, or genre.
4.4.3   Students will share a favorite book by writing a book review or keeping a character journal.
4.4.4   Students find examples of different ways that trees have been represented in art forms to celebrate Arbor Day (e.g., poetry, music, sculpture).

Indicates that the word or phrase marked is defined in the glossary.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE

Students demonstrate ethical, legal, and social uses of information resources and technology.

Benchmarks

4.5.1   Practice responsible use of technology systems, software, and information.
4.5.2   Develop and use citation skills.
4.5.3   Recognize the importance of intellectual freedom and access to information in a democratic society.
4.5.4   Know that technology has costs as well as benefits that affect society.

Examples of Specific Knowledge that Support the Standard and Benchmarks

4.5.1   Practice Internet safety and follow the school's Acceptable Use Policies (AUP*).
4.5.2   Understand the need and develop ways to cite sources (e.g., quoting or paraphrasing information sources, citing resources by title, plagiarism).
4.5.3   Recognize the right of citizens to obtain information and the students' right to read.
4.5.4   Discuss the extent and consequences of society's reliance on technology.

Examples of Activities that Support the Standard and Benchmarks

4.5.1   Students, as a class, help establish age-appropriate ethical rules for personal and classroom technology use.
4.5.2   Students cite sources for class and personal research projects*.
4.5.3   Students participate in a discussion about a book or movie concerning freedom of speech (e.g., *Frindle*, by Andrew Clements).
4.5.4   Students will predict how their lives would be different without the use of a specific technology (e.g., television, Internet, phone, automobile).

Indicates that the word or phrase marked is defined in the glossary.

Summary of Grades 5-8 Benchmarks

Standard 1: RESEARCH

Students conduct research that is linked to both content standards and a problem-solving process* to access, evaluate, and organize information* useful and beneficial to themselves and/or others.

Benchmarks

8.1.1   Define a research problem or task.
8.1.2   Plan a research strategy.
8.1.3   Access information using a variety of sources.
8.1.4   Use a variety of criteria to evaluate and select information for research.
8.1.5   Use organizational strategies to gather, record, and synthesize* information.
8.1.6   Present research (See Standard 2 for details.).
8.1.7   Evaluate the research process.

Standard 2: DEVELOPING PRODUCTS* USING MEDIA*/TECHNOLOGY*

Students develop quality products that communicate information and ideas to a variety of audiences by using media and technology.

Benchmarks

8.2.1   Create media products focused for a variety of audiences.
8.2.2   Select appropriate communication formats.
8.2.3   Use a variety of strategies to present media products.
8.2.4   Use a variety of techniques to evaluate the effectiveness of media products.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of current technology.

Benchmarks

8.3.1   Use appropriate terminology and concepts associated with media and technology.
8.3.2   Use and refine skills and procedures needed to operate various media and technology.
8.3.3   Develop troubleshooting strategies to solve technical problems.
8.3.4   Use the most effective media and technology for specific needs.
8.3.5   Understand the potential and limitations of existing media and technology.

*Indicates that the word or phrase marked is defined in the glossary.

Standard 4: COLLLABORATIVE SKILLS/INDEPENDENT LEARNING/ PERSONAL ENJOYMENT

Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Benchmarks

8.4.1   Collaborate in group projects* and learning objectives.
8.4.2   Develop competence in selecting from a variety of reading, listening, and viewing formats.
8.4.3   Demonstrate self-motivation and increasing responsibility for learning by pursuing information related to personal interests.
8.4.4   Understand different perspectives and the values and beliefs supporting them.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE

Students demonstrate ethical, legal, and social use of information resources and technology.

Benchmarks

8.5.1   Follow school guidelines for responsible use of technology and information resources.
8.5.2   Use level-appropriate methods to cite and document reference sources.
8.5.3   Demonstrate knowledge of intellectual property rights laws.
8.5.4   Understand the past, present, and future impact of technology on society.

Standard 1: RESEARCH

Students conduct research that is linked to both content standards and a problem-solving process to access, evaluate, and organize information useful and beneficial to themselves and/or others.

Benchmarks

8.1.1   Define a research problem or task.
8.1.2   Plan a research strategy.
8.1.3   Access information using a variety of sources.
8.1.4   Use a variety of criteria to evaluate and select information for research.
8.1.5   Use organizational strategies to gather, record, and synthesize information.
8.1.6   Present research (See Standard 2 for details.).
8.1.7   Evaluate the research process.

Examples of Specific Knowledge that Support the Standard and Benchmarks

8.1.1   Identify a problem or question and narrow the topic.
8.1.2   Select a problem-solving process (e.g., Big6*, Pathways*).
8.1.3   Use search strategies to access electronic databases*, print materials, library catalog/OPAC*, search engines*, vertical files, human and community resources, discipline-related tools*, primary/secondary sources*, and any other appropriate resources available.
8.1.4   Evaluate information for accuracy, relevancy, currency, and credibility.
8.1.5   Use software* programs or note-taking strategies to organize, outline, and record information, including citations and bibliographic information.
8.1.6   (See Standard 2 for details.)
8.1.7   Select an evaluation tool (e.g., rubric*, checklist, or journal).

Examples of Activities that Support the Standard and Benchmarks

8.1.1   Students use a graphic organizer* or clustering* to brainstorm ideas for student-generated questions about fast food nutrition.
8.1.2   Students use the steps in the Big6 problem-solving process by building banana splits, planning a party, buying a present for mom, or buying a motorized scooter.
8.1.3   Students use search queries* (e.g., Boolean* and truncation*/wildcard operators) to narrow or broaden searches. Boolean search strategy: Vikings AND Football, Vikings NOT Explorers, Vikings OR Sports; Truncation examples: Viking*, Vik* and Sport* (on this line the asterisks indicate truncation).
8.1.4   Students generate a checklist to evaluate tabloids or bogus Web sites* for accuracy, integrity, relevancy, and credibility.
8.1.5   Students will research famous women in history in their content areas during Women's History Month in March. They will record and organize information using note cards, graphic organizers, t-notes, Web mapping, or outlines. Students will determine the impact these women had on society.
8.1.6   (See Standard 2 for details.)
8.1.7   Students will design a rubric to evaluate the effectiveness of the research process.

Standard 2: DEVELOPING PRODUCTS USING MEDIA/TECHNOLOGY

Students develop quality products that communicate information and ideas to a variety of audiences by using media and technology.

Benchmarks

8.2.1   Create media products focused for a variety of audiences.
8.2.2   Select appropriate communication formats.
8.2.3   Use a variety of strategies to present media products.
8.2.4   Use a variety of techniques to evaluate the effectiveness of media products.

Examples of Specific Knowledge that Support the Standard and Benchmarks

8.2.1   Recognize different types of audiences, including teachers, staff, other students, parents, and the general public.
8.2.2   Recognize the importance of presentation environment (e.g., size of room and audience, noise factors, seating arrangements) when choosing a presentation tool (e.g., telecommunication, video production, multimedia* presentation, productivity tools*).
8.2.3   Use effective delivery, language, and style to communicate the product.
8.2.4   Use rubric, journal, portfolio*, or checklist to assess the effectiveness of the product.

Examples of Activities that Support the Standard and Benchmarks

8.2.1   Students generate a list of possible audiences to whom they will present an information product* after a collaborative study on the flooding of Devils Lake, North Dakota.
8.2.2   Students will brainstorm communication tools (e.g., e-mail, flyers, letters to the editor) to be used in surveying area residents for Devils Lake flooding impact.
8.2.3   Students, using a jigsawing* process, will develop a method of presentation, (e.g., report, book report, biography, flyer, commercial, poster, newspaper article, graph, table, storyboard*, cartoon, logo, Web page, e-mail, expert testimony, book) about the impact of the flooding of Devils Lake on North Dakota.
8.2.4   Students will compare/contrast the effectiveness of the various methods used to present information about the Devils Lake flooding.

Indicates that the word or phrase marked is defined in the glossary.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of current technology.

Benchmarks

8.3.1   Use appropriate terminology and concepts associated with media and technology.
8.3.2   Use and refine skills and procedures needed to operate various media and technology.
8.3.3   Develop troubleshooting strategies to solve technical problems.
8.3.4   Use the most effective media and technology for specific needs.
8.3.5   Understand the potential and limitations of existing media and technology.

Examples of Specific Knowledge that Support the Standard and Benchmarks

8.3.1   Know terms associated with media and technology (e.g., modem*, file server*, WAN*, LAN*, Internet*, Intranet*, library catalog/OPAC, periodicals, URL's*, productivity tools, projection devices*, operating system*, Boolean and truncation operators).
8.3.2   Improve keyboarding skills; develop file management and editing skills; connect to online* services, bulletin boards, or Internet; use software such as word processing, desktop publishing, spreadsheets* or databases; operate digital cameras*, scanners*, camcorders, projection devices, and other input/output devices.
8.3.3   Recognize and identify technology problems and troubleshooting strategies, such as printing problems, frozen computers, common error messages, rebooting, and using help systems.
8.3.4   Choose appropriate media/technology formats (e.g., databases or spreadsheets for collecting data and mathematical calculations, word processor for publishing information, and multimedia production tools for presentations).
8.3.5   Recognize the potential and limiting factors of technology, (e.g., online books, e-commerce, Web cams*, consumer preferences, connection speeds, fraud).

Examples of Activities that support the Standard and Benchmarks

8.3.1   Students develop a technology handbook to help new students access and use technology.
8.3.2   Students develop an autobiographical tri-fold brochure. They may use a digital camera or scanner for individual photos, graphics software* or downloaded* graphics*, and a word processor or other emerging technologies to create a quality product for display.
8.3.3   Students develop a classroom-troubleshooting guide to identify and solve technology problems.
8.3.4   Students prepare a chart that compares how long it takes to find information in a print almanac versus the Internet (e.g., baseball statistics, Academy Award winners, list of U. S. Presidents).
8.3.5   Students interview grandparents, parents, and classmates to compare how their shopping habits have changed/evolved and how they project future shopping trends for their own grandchildren.
8.3.6   Students will simulate a Supreme Court hearing on Internet filtering in libraries. Students will serve as justices, plaintiffs, and defendants.

Indicates that the word or phrase marked is defined in the glossary.

Standard 4: COLLLABORATIVE SKILLS/INDEPENDENT LEARNING/ PERSONAL ENJOYMENT

Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Benchmarks

8.4.1   Collaborate in group projects and learning objectives.
8.4.2   Develop competence in selecting from a variety of reading, listening, and viewing formats.
8.4.3   Demonstrate self-motivation and increasing responsibility for learning by pursuing information related to personal interests.
8.4.4   Understand different perspectives and the values and beliefs supporting them.

Examples of Specific Knowledge that Support the Standard and Benchmark

8.4.1   Determine interest areas, duties, and group goals.
8.4.2   Use library catalogs/OPAC, online resources, human resources, and reviews to find information for personal enjoyment.
8.4.3   Access information independently in a variety of formats (e.g., Web sites, library catalogs/OPAC, periodicals, primary sources*, databases).
8.4.4   Use, evaluate, and respond to media from diverse cultures.

Examples of Activities that Support the Standard and Benchmark

8.4.1   Students use the theme "What was happening the year you were born?" Working in groups, students will research people and events. Suggested themes are sports, music/entertainment, world events, and forms of transportation. Each group chooses a method to present its product to the rest of the class.
8.4.2   Students locate books, Web sites, and other sources to gather information about a hobby or specific topic of interest (e.g., Challenger Disaster, powwows, baseball trading cards).
8.4.3   Students develop a "Favorites" or "Bookmarks" folder of Web sites, books, and movies to share with classmates.
8.4.4   Students select a controversial topic (e.g., adoption of children, women's rights, freedom of religion, freedom of speech, environmental issues, or land mines). Compare the points of view, as reflected in press coverage, of the United States and another country using a periodical database such as ProQuest, InfoTrac, or a foreign news agency-- much like our Associated Press.

Indicates that the word or phrase marked is defined in the glossary.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE

Students demonstrate ethical, legal, and social use of information resources and technology.

Benchmarks

8.5.1   Follow school guidelines for responsible use of technology and information resources.
8.5.2   Use level-appropriate methods to cite and document reference sources.
8.5.3   Demonstrate knowledge of intellectual property rights laws.
8.5.4   Understand the past, present, and future impact of technology on society.

Examples of Specific Knowledge that Support the Standard and Benchmarks

8.5.1   Understand and follow Acceptable Use Policy (AUP*), circulation policy*, netiquette*, privacy issues*, and intellectual property rights.
8.5.2   Use school/district approved bibliographic format, (e.g., MLA* or APA*).
8.5.3   Recognize the concepts of copyright*, trademark, logos, and brand names.
8.5.4   Recognize that technology (e.g., computers, Internet, software, TV, surveillance cameras, and GPS*) impact society (e.g., e-mail, distance learning, e-books, databases, chain letters, virus hoaxes, identity fraud, hacking).

Examples of Activities that Support the Standard and Benchmarks

8.5.1   Students research Acceptable Use Policies (AUP) from other schools, debate reasons for AUPs, and develop one for the classroom. They will then compare it to their district's AUP.
8.5.2   Students write a content area report correctly citing sources in a bibliographic format.
8.5.3   Students role-play a mock trial concerning downloading copyrighted music from the Internet.
8.5.3   Students plan a multimedia presentation that includes background music, photos from a Web site, text from a quote along with a credit slide or page to emphasize the need to cite all types of information.
8.5.4   Students create timelines of various inventions and subsequent improvements over time. Students will compare the costs and benefits of each invention.
8.5.4   Students will describe the impact of modern technology advances (e.g., GPS, microchip implants, tracking devices).
8.5.4   Students evaluate a photocopy of an e-mail chain letter and/or e-mail virus/hoax in order to understand how information can be controlled and distorted (e.g., someone will pay $1,000 for each forwarded e-mail).

Indicates that the word or phrase marked is defined in the glossary.

Summary of Grade 9-12 Benchmarks

Standard 1: RESEARCH

Students conduct research that is linked to both content standards and a problem-solving process* to access, evaluate, and organize information* useful and beneficial to themselves and/or others.

Benchmarks

12.1.1 Define a research problem or task.
12.1.2 Plan a research strategy.
12.1.3 Access information using a variety of sources.
12.1.4 Use a variety of criteria to evaluate and select information for research.
12.1.5 Use organizational strategies to record and synthesize* information.
12.1.6 Present research (See Standard 2 for details.).
12.1.7 Evaluate the research process.

Standard 2: DEVELOPING PRODUCTS* USING MEDIA*/TECHNOLOGY*

Students develop quality products that communicate information and ideas to a variety of audiences, using media and technology.

Benchmarks

12.2.1 Demonstrate awareness of audience when creating media products.
12.2.2 Synthesize information to create a product that meets a specific need.
12.2.3 Use a variety of criteria to evaluate media products.
12.2.4 Use a variety of media and technology to communicate with communities beyond the school.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of media and technology.

Benchmarks

12.3.1 Explain and use appropriate terminology and concepts associated with media and technology.
12.3.1 Demonstrate advanced knowledge and skills in various media and technology.
12.3.2 Apply strategies for identifying and solving routine hardware* and software* problems.
12.3.3 Explain features and uses of current and emerging media and technology.
12.3.4 Explain ways in which social and economic forces influence which technologies will be developed and used.

Standard 4: COLLABORATIVE SKILLS/INDEPENDENT LEARNING/ PERSONAL ENJOYMENT

Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Benchmarks

12.4.1 Work cooperatively and collaboratively when using media and technology.
12.4.2 Develop competence and selectivity in reading, listening, and viewing.
12.4.3 Demonstrate self-motivation in seeking information.
12.4.4 Use a variety of media and technology for personal needs and enjoyment.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE

Students demonstrate ethical, legal, and social use of information resources and technology.

Benchmarks

12.5.1 Follow school policies for responsible use of information resources.
12.5.2 Demonstrate proper form of citations and bibliographies.
12.5.3 Understand and obey intellectual property laws*, including copyright*, when using information in any format.
12.5.4 Understand the impact of equitable access to information in a democracy.

Indicates that the word or phrase marked is defined in the glossary.

Standard 1: RESEARCH

Students conduct research that is linked to both content standards and a problem-solving process to access, evaluate, and organize information useful and beneficial to themselves and/or others.

Benchmarks

12.1.1 Define a research problem or task.
12.1.2 Plan a research strategy.
12.1.3 Access information using a variety of sources.
12.1.4 Use a variety of criteria to evaluate and select information for research.
12.1.5 Use organizational strategies to record and synthesize information.
12.1.6 Present research (See Standard 2 for details.).
12.1.7 Evaluate the research process.

Examples of Specific Knowledge that Support the Standard and Benchmarks

12.1.1 Identify the problem or question, develop a research question or thesis statement, and form questions to focus the research.
12.1.2 Determine and prioritize a range of information sources and then develop search queries.
12.1.3 Obtain information from sources such as the library catalog/OPAC*, subscription databases*, search engines*, microfiche, music and video archives, and interviews.
12.1.4 Evaluate information to determine if sources are authoritative, reliable, accurate, relevant, and comprehensive.
12.1.5 Use data-recording strategies such as note cards or highlighting, credit sources using the approved bibliographic citation style, and synthesize information to create an original product.
12.1.6 (See Standard 2 for details.)
12.1.7 Participate in the evaluation of the research process using authentic assessment tools such as rubrics*, journals, observations, portfolios*, and checklists.

Examples of Activities that Support the Standard and Benchmarks

12.1.1 Students identify a topic that affects their lives in school and determine the problem to be solved or the question to be answered.
12.1.1 Students use a search engine directory to narrow the topic.
12.1.1 Students list questions they would like answered in regard to a significant national event (e.g., September 11, 2001).
12.1.2 "Allusions to Moby Dick" (NDTB*): Students will select appropriate resources and create search queries* to research biblical and mythological allusions in Moby Dick.
12.1.2 Students choose the most appropriate research tools to answer a current event question.
12.1.3 Students use a library catalog/OPAC, a subscription database, and/or a search engine to search for information on their topic.
12.1.4 "To Buy or Not to Buy" (NDTB): In a group discussion, students will evaluate eight advertisements (two television, two radio, two newspaper, and two magazine) to discuss relevance, reliability*, and validity. Each student will defend his/her choice for the most valid, relevant, and reliable advertisement.

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12.1.5 Students create a storyboard* to be used in a video production promoting a local historical site.

12.1.5 "Cardio Graph Worksheet" (NDTB): Students wear a digital heart monitor or pedometer while engaging in a variety of movements. They will use an electronic spreadsheet* or graphing calculator to graph their progress.

12.1.5 Students analyze relevant information about a country from the perspective of an investor.

12.1.6 (See Standard 2 for details.)

12.1.7 Students use a journal to describe the successes and problems experienced during the research process.

Standard 2: DEVELOPING PRODUCTS USING MEDIA/TECHNOLOGY

Students develop quality products that communicate information and ideas to a variety of audiences, using media and technology.

Benchmarks

12.2.1 Demonstrate awareness of audience when creating media products.
12.2.2 Synthesize information to create a product that meets a specific need.
12.2.3 Use a variety of criteria to evaluate media products.
12.2.4 Use a variety of media and technology to communicate with communities beyond the school.

Examples of Specific Knowledge that Support the Standard and Benchmarks

12.2.1 Determine the format and style of the presentation according to the size and demographics* of the audience.
12.2.2 Synthesize information using organizing approaches such as compare and contrast, problem and solution, cause and effect, forecasting, and persuasion, to create a product.
12.2.3 Evaluate the product for content, craftsmanship, effectiveness of products (e.g., spelling and grammar, style, readability, layout, symmetry/balance, relevance, design, use of color, authority*, audio quality, and video quality).
12.2.4 Communicate with communities beyond the school using e-mail, videoconferencing, Web pages, telephone, U. S. Mail, forums, and panel discussions.

Examples of Activities that Support the Standard and Benchmarks

12.1.1 Students revise a presentation for three different audiences.
12.2.2 Students work in research groups to design a Cold War museum. Each group will determine how the museum will be designed—thematic, geographic, or chronological—and submit a proposal. Each group will determine what will be housed in the museum. Proposals should include three elements: (1) a written interview, (2) museum floor plan, (3) oral presentation to the hypothetical board of trustees.
12.2.2 Students use Census Bureau statistics to project school enrollment or population for their community.
12.2.2 Students collect and organize facts on Italian Renaissance artists to compare information for patterns: style, training, colors, and subjects of paintings.
12.2.2 "We're Off To See" (NDTB): Students will deliver a six to eight minute informative speech on a place that they have visited or would like to visit. Students will prepare a brochure or an electronic slide show as a visual aid.
12.2.2 "Show Me the Evidence" (NDTB): Students will prepare and present a persuasive speech using at least two graphs or diagrams created in an electronic spreadsheet as visual aids.
12.2.3 Students create a rubric to review the effectiveness of graphics*, videos, and audio in the presentation.
12.2.4 Students use videoconferencing in a collaborative project* to communicate with a neighboring school.

Indicates that the word or phrase marked is defined in the glossary.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of media and technology.

Benchmarks

12.3.1 Explain and use appropriate terminology and concepts associated with media and technology.
12.3.2 Demonstrate advanced knowledge and skills in various media and technology.
12.3.3 Apply strategies for identifying and solving routine hardware and software problems.
12.3.4 Explain features and uses of current and emerging media and technology.
12.3.5 Explain ways in which social and economic forces influence which technologies will be developed and used.

Examples of Specific Knowledge that Support the Standard and Benchmarks

12.3.1 Define and identify terms associated with online* and telecommunication concepts including: peripherals*, bulletin board systems, templates*, macros*, listservs, mail merge*.
12.3.2 Understand limitations and trade-offs of various types of hardware; know how to import, export, and merge data in different formats and programs; use desktop publishing software to create a variety of publications; demonstrate skills such as audio and video editing, using video cameras, digital cameras*, VCRs, multimedia* computers, and other editing equipment.
12.3.3 Demonstrate a logical method to pinpoint and solve technical problems; use help or online menus to solve application problems.
12.3.4 Identify features and uses of optical character recognition (OCR)*, sound processing, cable TV, cellular phones, ABS* brakes, PDA*, XM Satellite Radio*, optical recognition, security related technologies.
12.3.5 Identify influences that impact technology such as current world events, cultural and personal values, consumer acceptance, patent laws, availability of risk capital, the federal budget, local and national regulations, media attention, economic competition, and tax incentives.

Examples of Activities that Support the Standard and Benchmarks

12.3.1 Students use Internet* resources to develop a glossary of advanced telecommunications terms.
12.3.2 Students use a digital camera, multimedia computer, and video camera to produce a program on the migration of snow geese through North Dakota.
12.3.2 Students create a Web site* promoting a local business.
12.3.3 Students develop an online troubleshooting guide for various content area peripherals (e.g. music synthesizer, electronic microscope, motion detectors, heart monitors, graphing calculators, electronic science probes).
12.3.4 Students compare the effectiveness of a printed survey versus an online survey.
12.3.4 Students research and compare various security recognition devices such as retinal scanning, DNA, finger and handprint scanning, and national identification database.
12.3.5 Students will identify the social and economic forces that influenced the development of the Segway Human Transporter*.

Indicates that the word or phrase marked is defined in the glossary.

Standard 4: COLLABORATIVE SKILLS/INDEPENDENT LEARNING/ PERSONAL ENJOYMENT

Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Benchmarks

12.4.1 Work cooperatively and collaboratively when using media and technology.
12.4.2 Develop competence and selectivity in reading, listening, and viewing.
12.4.3 Demonstrate self-motivation in seeking information.
12.4.4 Use a variety of media and technology for personal needs and enjoyment.

Examples of Specific Knowledge that Support the Standard and Benchmarks

12.4.1 Use a variety of cooperative and collaborative strategies such as challenging practices in a group that are not working, identifying and using the strengths of others, evaluating the overall progress of the group towards a goal.
12.4.2 Be aware of selection criteria for personal enjoyment such genre, cost, writing style, authority, date, aesthetic appeal, format.
12.4.3 Monitor levels of success in search strategies; revise search strategies as needed.
12.4.4 Use various tools for personal/ business needs including books, Web sites, newspapers, magazines, periodical and newspaper databases, CD-ROMs*, e-books, video and audio resources.

Examples of Activities that Support the Standard and Benchmarks

12.4.1 Students participate in a WebQuest* capitalizing on the strengths of the individual team members.
12.4.2 Students develop their own criteria for selecting music CDs for personal enjoyment.
12.4.3 Students independently initiate use of interlibrary loan when faced with inadequate local resources.
12.4.4 Students use the Internet (e.g., follow stock reports, conduct banking activities, look for job openings, check the weather, read news reports).
12.4.4 Students will prepare an electronic employment portfolio archived on a CD-ROM.

Indicates that the word or phrase marked is defined in the glossary.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE

Students demonstrate ethical, legal, and social use of information resources and technology.

Benchmarks

12.5.1 Follow school policies for responsible use of information resources.
12.5.2 Demonstrate proper form of citations and bibliographies.
12.5.3 Understand and obey intellectual property laws, including copyright, when using information in any format.
12.5.4 Understand the impact of equitable access to information in a democracy.

Examples of Specific Knowledge that Support the Standard and Benchmarks

12.5.1 Understand and follow school policies regarding the use of information resources such as circulation policies and Acceptable Use Policies (AUP*s).
12.5.2 Recognize that there are various bibliographic styles (e.g., MLA*, APA*, and Turabian*) and use the accepted bibliographic style for the assignment.
12.5.3 Recognize when a citation/permission is needed such as obtaining permission to use copyrighted materials, using proper referencing for Internet information on a personal Web page, using direct quotations in documents, and citing the use of copyrighted photographs.
12.5.4 Identify the implications of equitable and robust access to information in a democracy such as making information accessible to those with disabilities.

Examples of Activities that Support the Standard and Benchmarks

12.5.1 Students research the rationale for Acceptable Use Policies (AUP) regarding viruses, hacking, e-mail privileges, plagiarism, inappropriate language, and free speech.
12.5.2 Students collect bibliographic information from various sources to create a works-cited page using an acceptable citation style.
12.5.3 Students write letters/e-mail to obtain permission to use copyrighted music.
12.5.4 Students in a Web Design Class create a Web page that complies with ADA * Section 508*.

Indicates that the word or phrase marked is defined in the glossary.

Summary of Benchmarks by Standard

Standard 1: RESEARCH

Students conduct research that is linked to both content standards and a problem-solving process to access, evaluate, and organize information useful and beneficial to themselves and/or others.

Benchmarks

4.1.1   Define a research problem or task.
4.1.2   Plan a research strategy.
4.1.3   Access information using a variety of sources.
4.1.4   Use criteria to evaluate and select information for research.
4.1.5   Use organizational strategies to gather, record, and synthesize information.
4.1.6   Present research (See Standard 2 for details.).
4.1.7   Evaluate the research process.

Benchmarks

8.1.1   Define a research problem or task.
8.1.2   Plan a research strategy.
8.1.3   Access information using a variety of sources.
8.1.4   Use a variety of criteria to evaluate and select information for research.
8.1.5   Use organizational strategies to gather, record, and synthesize information.
8.1.6   Present research (See Standard 2 for details.).
8.1.7   Evaluate the research process.

Benchmarks

12.1.1 Define a research problem or task.
12.1.2 Plan a research strategy.
12.1.3 Access information using a variety of sources.
12.1.4 Use a variety of criteria to evaluate and select information for research.
12.1.5 Use organizational strategies to record and synthesize information.
12.1.6 Present research (See Standard 2 for details.).
12.1.7 Evaluate the research process.

Indicates that the word or phrase marked is defined in the glossary.

Standard 2: DEVELOPING PRODUCTS USING MEDIA/TECHNOLOGY

Students develop quality products that communicate information and ideas to a variety of audiences by using media and technology.

Benchmarks

4.2.1   Know the appropriate audience for a particular media product.
4.2.2   Develop a product using a variety of media.
4.2.3   Present a media product.
4.2.4   Evaluate media products.

Benchmarks

8.2.1   Create media products focused for a variety of audiences.
8.2.2   Select appropriate communication formats.
8.2.3   Use a variety of strategies to present media products.
8.2.4   Use a variety of techniques to evaluate the effectiveness of media products.

Benchmarks

12.2.1 Demonstrate awareness of audience when creating media products.
12.2.2 Synthesize information to create a product that meets a specific need.
12.2.3 Use a variety of criteria to evaluate media products.
12.2.4 Use a variety of media and technology to communicate with communities beyond the school.

Indicates that the word or phrase marked is defined in the glossary.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of current technology.

Benchmarks

4.3.1   Identify and define terms associated with media and technology.
4.3.2   Demonstrate basic skills and procedures to operate various media and technology.
4.3.3   Demonstrate proper care and correct use of media and technology.
4.3.4   Select media and technology appropriate for a purpose.
4.3.5   Recognize the uses and effects of media and technology in daily life.

Benchmarks

8.3.1   Use appropriate terminology and concepts associated with media and technology.
8.3.2   Use and refine skills and procedures needed to operate various media and technology.
8.3.3   Develop troubleshooting strategies to solve technical problems.
8.3.4   Use the most effective media and technology for specific needs.
8.3.5   Understand the potential and limitations of existing media and technology.

Benchmarks

12.3.1 Explain and use appropriate terminology and concepts associated with media and technology.
12.3.2 Demonstrate advanced knowledge and skills in various media and technology.
12.3.3 Apply strategies for identifying and solving routine hardware and software problems.
12.3.4 Explain features and uses of current and emerging media and technology.
12.3.5 Explain ways in which social and economic forces influence which technologies will be developed and used.

Standard 4: COLLABORATIVE SKILLS/INDEPENDENT LEARNING /PERSONAL ENJOYMENT

Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Benchmarks

4.4.1   Collaborate to share knowledge, information, and technology use.
4.4.2   Determine and select materials appropriate to personal abilities and interests.
4.4.3   Develop appreciation and self-motivation as a reader.
4.4.4   Recognize that creative expression can be represented in a variety of formats.

Benchmarks

8.4.1   Collaborate in group projects and learning objectives.
8.4.2   Develop competence in selecting from a variety of reading, listening, and viewing formats.
8.4.3   Demonstrate self-motivation and increasing responsibility for learning by pursuing information related to personal interests.
8.4.4   Understand different perspectives and the values and beliefs supporting them.

Benchmarks

12.4.1 Work cooperatively and collaboratively when using media and technology.
12.4.2 Develop competence and selectivity in reading, listening, and viewing.
12.4.3 Demonstrate self-motivation in seeking information.
12.4.4 Use a variety of media and technology for personal needs and enjoyment.

Indicates that the word or phrase marked is defined in the glossary.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE

Students demonstrate ethical, legal, and social uses of information resources and technology.

Benchmarks

4.5.1   Practice responsible use of technology systems, software, and information.
4.5.2   Develop and use citation skills.
4.5.3   Recognize the importance of intellectual freedom and access to information in a democratic society.
4.5.4   Know that technology has costs as well as benefits that affect society.

Benchmarks

8.5.1   Follow school guidelines for responsible use of technology and information resources.
8.5.2   Use level-appropriate methods to cite and document reference sources.
8.5.3   Demonstrate knowledge of intellectual property rights laws.
8.5.4   Understand the past, present, and future impact of technology on society.

Benchmarks

12.5.1 Follow school policies for responsible use of information resources.
12.5.2 Demonstrate proper form of citations and bibliographies.
12.5.3 Understand and obey intellectual property laws, including copyright, when using information in any format.
12.5.4 Understand the impact of equitable access to information in a democracy.

Indicates that the word or phrase marked is defined in the glossary.

Summary of Examples of Specific Knowledge by Standard

Standard 1: RESEARCH

Students conduct research that is linked to both content standards and a problem-solving process to access, evaluate, and organize information useful and beneficial to themselves and/or others.

Examples of Specific Knowledge that Support the Standard and Benchmarks
4.1.1   State a problem, question, or information need.
4.1.2   Follow a simplified research model (e.g., Big6, Super3, KWL, Know-It-All).
4.1.3   Use a range of sources (e.g., library catalog/OPAC, primary sources, subscription databases, Internet).
4.1.4   Evaluate sources for currency, authorship, and credibility.
4.1.5   Use note taking strategies and graphic organizers to manage information (e.g., T-notes, *Kidspiration/Inspiration*, highlighting).
4.1.6   (See Standard 2 for details.)
4.1.7   Use an evaluation tool (e.g., rubric, checklist, peer evaluation).

Examples of Specific Knowledge that Support the Standard and Benchmarks
8.1.1   Identify a problem or question and narrow the topic.
8.1.2   Select a problem-solving process (e.g., Big6, Pathways).
8.1.3   Use search strategies to access electronic databases, print materials, library catalog/OPAC, search engines, vertical files, human and community resources, discipline-related tools, primary/secondary sources, and any other appropriate resources available.
8.1.4   Evaluate information for accuracy, relevancy, currency, and credibility.
8.1.5   Use software programs or note-taking strategies to organize, outline, and record information, including citations and bibliographic information.
8.1.6   (See Standard 2 for details.)
8.1.7   Select an evaluation tool (e.g., rubric, checklist, or journal).

Examples of Specific Knowledge that Support the Standard and Benchmarks
12.1.1 Identify the problem or question, develop a research question or thesis statement, and form questions to focus the research.
12.1.2 Determine and prioritize a range of information sources and then develop search queries.
12.1.3 Obtain information from sources such as the library catalog/OPAC, subscription databases, search engines, microfiche, music and video archives, and interviews.
12.1.4 Evaluate information to determine if sources are authoritative, reliable, accurate, relevant, and comprehensive.
12.1.5 Use data-recording strategies such as note cards or highlighting, credit sources using the approved bibliographic citation style, and synthesize information to create an original product.
12.1.6 (See Standard 2 for details.)
12.1.7 Participate in the evaluation of the research process using authentic assessment tools such as rubrics, journals, observations, portfolios, and checklists.

Indicates that the word or phrase marked is defined in the glossary.

Standard 2: DEVELOPING PRODUCTS USING MEDIA/TECHNOLOGY

Students develop quality products that communicate information and ideas to a variety of audiences by using media and technology.

Examples of Specific Knowledge that support the Standard and Benchmarks

4.2.1   Identify the characteristics of the audience (e.g., age, location, interests).
4.2.2   Recognize a wide variety of communication tools (e.g., presentation software, e-mail, virtual classroom), in addition to print sources.
4.2.3   Use presentation software to incorporate pictures, text, and sound.
4.2.4   Select and use an appropriate presentation method (e.g., oral presentation, Internet posting, poster display).
4.2.5   Use an evaluation tool (e.g., rubric, checklist, peer evaluation).

Examples of Specific Knowledge that Support the Standard and Benchmarks

8.2.1   Recognize different types of audiences, including teachers, staff, other students, parents, and the general public.
8.2.2   Recognize the importance of presentation environment (e.g., size of room and audience, noise factors, seating arrangements) when choosing a presentation tool (e.g., telecommunication, video production, multimedia presentation, productivity tools).
8.2.3   Use effective delivery, language, and style to communicate the product.
8.2.4   Use rubric, journal, portfolio, or checklist to assess the effectiveness of the product.

Examples of Specific Knowledge that Support the Standard and Benchmarks

12.2.1   Determine the format and style of the presentation according to the size and demographics of the audience.
12.2.2   Synthesize information using organizing approaches such as compare and contrast, problem and solution, cause and effect, forecasting, and persuasion, to create a product.
12.2.3   Evaluate the product for content, craftsmanship, effectiveness of products (e.g., spelling and grammar, style, readability, layout, symmetry/balance, relevance, design, use of color, authority, audio quality, and video quality).
12.2.4   Communicate with communities beyond the school using e-mail, videoconferencing, Web pages, telephone, U. S. Mail, forums, and panel discussions.

Indicates that the word or phrase marked is defined in the glossary.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of current technology.

Examples of Specific Knowledge that Support the Standard and Benchmarks

4.3.1   Know basic media and technology terminology (e.g., hard drive, RAM, mouse, password, scroll bar, library catalog/OPAC, CD-ROM).
4.3.2   Demonstrate basic computer procedures (e.g., proper keyboard techniques, saving/retrieving documents, screen navigation).
4.3.3   Use and properly care for media storage devices (e.g., disks, CD-ROMs, videotapes, books, other printed material).
4.3.4   Distinguish among information formats (e.g., presentation software, poster boards, paper charts, and videos).
4.3.5   Explain how technology influences the school day (e.g., classroom computers, intercom, television, Internet).

Examples of Specific Knowledge that Support the Standard and Benchmarks

8.3.1   Know terms associated with media and technology (e.g., modem, file server, WAN, LAN, Internet, Intranet, library catalog/OPAC, periodicals, URL's, productivity tools, projection devices, operating system, Boolean and truncation operators).
8.3.2   Improve keyboarding skills; develop file management and editing skills; connect to online services, bulletin boards, or Internet; use software such as word processing, desktop publishing, spreadsheets or databases; operate digital cameras, scanners, camcorders, projection devices, and other input/output devices.
8.3.3   Recognize and identify technology problems and troubleshooting strategies, such as printing problems, frozen computers, common error messages, rebooting, and using help systems.
8.3.4   Choose appropriate media/technology formats (e.g., databases or spreadsheets for collecting data and mathematical calculations, word processor for publishing information, and multimedia production tools for presentations).
8.3.5   Recognize the potential and limiting factors of technology, (e.g., online books, e-commerce, Web cams, consumer preferences, connection speeds, fraud).

Indicates that the word or phrase marked is defined in the glossary.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of current technology.

Examples of Specific Knowledge that Support the Standard and Benchmarks

12.3.1   Define and identify terms associated with online and telecommunication concepts including: peripherals, bulletin board systems, templates, macros, listservs, mail merge.

12.3.2   Understand limitations and trade-offs of various types of hardware; know how to import, export, and merge data in different formats and programs; use desktop publishing software to create a variety of publications; demonstrate skills such as audio and video editing, using video cameras, digital cameras, VCRs, multimedia computers, and other editing equipment.

12.3.3   Demonstrate a logical method to pinpoint and solve technical problems; use help or online menus to solve application problems.

12.3.4   Identify features and uses of optical character recognition (OCR), sound processing, cable TV, cellular phones, ABS brakes, PDA, XM Satellite Radio, optical recognition, security related technologies.

12.3.5   Identify influences that impact technology such as current world events, cultural and personal values, consumer acceptance, patent laws, availability of risk capital, the federal budget, local and national regulations, media attention, economic competition, and tax incentives.

Indicates that the word or phrase marked is defined in the glossary.

Standard 4: COLLABORATIVE SKILLS/INDEPENDENT LEARNING /PERSONAL ENJOYMENT

Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Examples of Specific Knowledge that Support the Standard and Benchmarks

4.4.1   Know basic collaboration techniques and tools (e.g., engaging in active listening, working in groups, following assigned roles).
4.4.2   Select materials in genres that are within interest and reading abilities (e.g., mystery, science fiction, historical fiction).
4.4.3   Explain and discuss various types of literature and information resources (e.g., fiction, nonfiction, reference, Web sites).
4.4.4   Identify how a topic can be represented in a variety of art forms (e.g., poetry, music, visual arts).

Examples of Specific Knowledge that Support the Standard and Benchmark

8.4.1   Determine interest areas, duties, and group goals.
8.4.2   Use library catalogs/OPAC, online resources, human resources, and reviews to find information for personal enjoyment.
8.4.3   Access information independently in a variety of formats (e.g., Web sites, library catalogs/OPAC, periodicals, primary sources, databases).
8.4.4   Use, evaluate, and respond to media from diverse cultures.

Examples of Specific Knowledge that Support the Standard and Benchmarks

12.4.1 Use a variety of cooperative and collaborative strategies such as challenging practices in a group that are not working, identifying and using the strengths of others, evaluating the overall progress of the group towards a goal.
12.4.2 Be aware of selection criteria for personal enjoyment such genre, cost, writing style, authority, date, aesthetic appeal, format.
12.4.3 Monitor levels of success in search strategies; revise search strategies as needed.
12.4.4 Use various tools for personal/ business needs including books, Web sites, newspapers, magazines, periodical and newspaper databases, CD-ROMs, e-books, video and audio resources.

Indicates that the word or phrase marked is defined in the glossary.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE

Students demonstrate ethical, legal, and social uses of information resources and technology.

Examples of Specific Knowledge that Support the Standard and Benchmarks

4.5.1   Practice Internet safety and follow the school's Acceptable Use Policies (AUP).
4.5.2   Understand the need and develop ways to cite sources (e.g., quoting or paraphrasing information sources, citing resources by title, plagiarism).
4.5.3   Recognize the right of citizens to obtain information and the students' right to read.
4.5.4   Discuss the extent and consequences of society's reliance on technology.

Examples of Specific Knowledge that Support the Standard and Benchmarks

8.5.1   Understand and follow Acceptable Use Policy (AUP), circulation policy, netiquette, privacy issues, and intellectual property rights.
8.5.2   Use school/district approved bibliographic format, (e.g., MLA or APA).
8.5.3   Recognize the concepts of copyright, trademark, logos, and brand names.
8.5.4   Recognize that technology (e.g., computers, Internet, software, TV, surveillance cameras, and GPS) impact society (e.g., e-mail, distance learning, e-books, databases, chain letters, virus hoaxes, identity fraud, hacking).

Examples of Specific Knowledge that Support the Standard and Benchmarks

12.5.1 Understand and follow school policies regarding the use of information resources such as circulation policies and Acceptable Use Policies (AUPs).
12.5.2 Recognize that there are various bibliographic styles (e.g., MLA, APA, and Turabian) and use the accepted bibliographic style for the assignment.
12.5.3 Recognize when a citation/permission is needed such as obtaining permission to use copyrighted materials, using proper referencing for Internet information on a personal Web page, using direct quotations in documents, and citing the use of copyrighted photographs.
12.5.4 Identify the implications of equitable and robust access to information in a democracy such as making information accessible to those with disabilities.

Indicates that the word or phrase marked is defined in the glossary.

Summary of Examples of Activities by Standard

Standard 1: RESEARCH

Students conduct research that is linked to both content standards and a problem-solving process to access, evaluate, and organize information useful and beneficial to themselves and/or others.

Examples of Activities that Support the Standard and Benchmarks

4.1.1   Students prepare questions that a family might ask when planning a vacation.
4.1.2   Students participate in a discussion of how the main character in a book uses the Super3 problem-solving process (e.g., *Nate the Great* series by Marjorie Sharmat).
4.1.3   Students use print and nonprint sources to obtain information and write a riddle about an animal.
4.1.4   Students use a checklist to evaluate the reliability of a resource.
4.1.5   Students use the keyword concept and organize notes using graphic organizer software (e.g., *Kidspiration/Inspiration*).
4.1.6   (See Standard 2 for details.)
4.1.7   Students use a teacher-provided checklist to see if enough information has been gathered.

Examples of Activities that Support the Standard and Benchmarks

8.1.1   Students use a graphic organizer or clustering to brainstorm ideas for student-generated questions about fast food nutrition.
8.1.2   Students use the steps in the Big6 problem-solving process by building banana splits, planning a party, buying a present for mom, or buying a motorized scooter.
8.1.3   Students use search queries (e.g., Boolean and truncation/wildcard operators) to narrow or broaden searches. Boolean search strategy: Vikings AND Football, Vikings NOT Explorers, Vikings OR Sports; Truncation examples: Viking*, Vik* and Sport* (on this line the asterisks indicate truncation).
8.1.4   Students generate a checklist to evaluate tabloids or bogus Web sites for accuracy, integrity, relevancy, and credibility.
8.1.5   Students will research famous women in history in their content areas during Women's History Month in March. They will record and organize information using note cards, graphic organizers, t-notes, Web mapping, or outlines. Students will determine the impact these women had on society.
8.1.6   (See Standard 2 for details.)
8.1.7   Students will design a rubric to evaluate the effectiveness of the research process.

Indicates that the word or phrase marked is defined in the glossary.

Examples of Activities that Support the Standard and Benchmarks

12.1.1 Students identify a topic that affects their lives in school and determine the problem to be solved or the question to be answered.

12.1.1 Students use a search engine directory to narrow the topic.

12.1.1 Students list questions they would like answered in regard to a significant national event (e.g., September 11, 2001).

12.1.2 "Allusions to Moby Dick" (NDTB): Students will select appropriate resources and create search queries to research biblical and mythological allusions in Moby Dick.

12.1.2 Students choose the most appropriate research tools to answer a current event question.

12.1.3 Students use a library catalog/OPAC, a subscription database, and/or a search engine to search for information on their topic.

12.1.4 "To Buy or Not to Buy" (NDTB): In a group discussion, students will evaluate eight advertisements (two television, two radio, two newspaper, and two magazine) to discuss relevance, reliability, and validity. Each student will defend his/her choice for the most valid, relevant, and reliable advertisement.

12.1.5 Students create a storyboard to be used in a video production promoting a local historical site.

12.1.5 "Cardio Graph Worksheet" (NDTB): Students wear a digital heart monitor or pedometer while engaging in a variety of movements. They will use an electronic spreadsheet or graphing calculator to graph their progress.

12.1.5 Students analyze relevant information about a country from the perspective of an investor.

12.1.6 (See Standard 2 for details.)

12.1.7 Students use a journal to describe the successes and problems experienced during the research process.

Indicates that the word or phrase marked is defined in the glossary.

Standard 2: DEVELOPING PRODUCTS USING MEDIA/TECHNOLOGY

Students develop quality products that communicate information and ideas to a variety of audiences by using media and technology.

Examples of Activities that support the Standard and Benchmarks

4.2.1   Students poll different grade levels to determine favorite cartoons and discuss the preferences as related to the age group.
4.2.2   Students use e-mail to exchange directions for the construction of a three-dimensional structure built of one-inch cubes. To document progress, students exchange digital photos of their structures.
4.2.3   Students, using presentation software, create a virtual zoo featuring North Dakota animals. The final product could then be posted to the Internet.
4.2.4   Students present an overview of textbook chapters in a content area using presentation software.
4.2.5   Students collaboratively design a classroom rubric or checklist to evaluate each other's work.

Examples of Activities that Support the Standard and Benchmarks

8.2.1   Students generate a list of possible audiences to whom they will present an information product after a collaborative study on the flooding of Devils Lake, North Dakota.
8.2.2   Students will brainstorm communication tools (e.g., e-mail, flyers, letters to the editor) to be used in surveying area residents for Devils Lake flooding impact.
8.2.3   Students, using a jigsawing process, will develop a method of presentation, (e.g., report, book report, biography, flyer, commercial, poster, newspaper article, graph, table, storyboard, cartoon, logo, Web page, e-mail, expert testimony, book) about the impact of the flooding of Devils Lake on North Dakota.
8.2.4   Students will compare/contrast the effectiveness of the various methods used to present information about the Devils Lake flooding.

Indicates that the word or phrase marked is defined in the glossary.

Examples of Activities that Support the Standard and Benchmarks

12.1.1 Students revise a presentation for three different audiences.
12.2.2 Students work in research groups to design a Cold War museum. Each group will determine how the museum will be designed—thematic, geographic, or chronological—and submit a proposal. Each group will determine what will be housed in the museum. Proposals should include three elements: (1) a written interview, (2) museum floor plan, (3) oral presentation to the hypothetical board of trustees.
12.2.2 Students use Census Bureau statistics to project school enrollment or population for their community.
12.2.2 Students collect and organize facts on Italian Renaissance artists to compare information for patterns: style, training, colors, and subjects of paintings.
12.2.2 "We're Off To See" (NDTB): Students will deliver a six to eight minute informative speech on a place that they have visited or would like to visit. Students will prepare a brochure or an electronic slide show as a visual aid.
12.2.2 "Show Me the Evidence" (NDTB): Students will prepare and present a persuasive speech using at least two graphs or diagrams created in an electronic spreadsheet as visual aids.
12.2.3 Students create a rubric to review the effectiveness of graphics, videos, and audio in the presentation.
12.2.4 Students use videoconferencing in a collaborative project to communicate with a neighboring school.

Indicates that the word or phrase marked is defined in the glossary.

Standard 3: TECHNOLOGICAL SYSTEMS

Students demonstrate an understanding of the scope, functions, and operations of current technology.

Examples of Activities that Support the Standard and Benchmarks

4.3.1   Students will explore and identify the internal components of a computer.
4.3.2   Students create a personal timeline and save it to a designated location.
4.3.3   Students collaboratively develop responsible care procedures for use of print and nonprint resources.
4.3.4   Students analyze various media formats promoting North Dakota. Using focus questions, they compare/contrast the characteristics, audiences, and influences of the media formats.
4.3.5   Students divide into groups and identify the technologies that influence their day. Using a scale of one-to-ten, they rate the significance of the technologies and share their findings.

Examples of Activities that support the Standard and Benchmarks

8.3.1   Students develop a technology handbook to help new students access and use technology.
8.3.2   Students develop an autobiographical tri-fold brochure. They may use a digital camera or scanner for individual photos, graphics software or downloaded graphics, and a word processor or other emerging technologies to create a quality product for display.
8.3.3   Students develop a classroom-troubleshooting guide to identify and solve technology problems.
8.3.4   Students prepare a chart that compares how long it takes to find information in a print almanac versus the Internet (e.g., baseball statistics, Academy Award winners, list of U. S. Presidents).
8.3.5   Students interview grandparents, parents, and classmates to compare how their shopping habits have changed/evolved and how they project future shopping trends for their own grandchildren.
8.3.5   Students will simulate a Supreme Court hearing on Internet filtering in libraries. Students will serve as justices, plaintiffs, and defendants.

Indicates that the word or phrase marked is defined in the glossary.

Examples of Activities that Support the Standard and Benchmarks

12.3.3 Students use Internet resources to develop a glossary of advanced telecommunications terms.

12.3.4 Students use a digital camera, multimedia computer, and video camera to produce a program on the migration of snow geese through North Dakota.

12.3.2 Students create a Web site promoting a local business.

12.3.3 Students develop an online troubleshooting guide for various content area peripherals (e.g. music synthesizer, electronic microscope, motion detectors, heart monitors, graphing calculators, electronic science probes).

12.3.4 Students compare the effectiveness of a printed survey versus an online survey.

12.3.4 Students research and compare various security recognition devices such as retinal scanning, DNA, finger and handprint scanning, and national identification database.

12.3.5 Students will identify the social and economic forces that influenced the development of the Segway Human Transporter.

Standard 4: COLLABORATIVE SKILLS/INDEPENDENT LEARNING /PERSONAL ENJOYMENT

Students develop collaborative skills, demonstrate independent learning skills, and use resources for personal enjoyment, including the appreciation of literature and other creative expressions.

Examples of Activities that Support the Standard and Benchmarks

4.4.1   Students work in cooperative groups to create a 7-day weather forecast. Using assigned roles, each group will develop a forecast, present it to the class and evaluate their predictions.
4.4.2   Students will develop a list of books of personal interest by locating a favorite book in the library catalog/OPAC and cross-referencing it by author, subject, or genre.
4.4.3   Students will share a favorite book by writing a book review or keeping a character journal.
4.4.4   Students find examples of different ways that trees have been represented in art forms to celebrate Arbor Day (e.g., poetry, music, sculpture).

Examples of Activities that Support the Standard and Benchmark

8.4.1   Students use the theme "What was happening the year you were born?" Working in groups, students will research people and events. Suggested themes are sports, music/entertainment, world events, and forms of transportation. Each group chooses a method to present its product to the rest of the class.
8.4.2   Students locate books, Web sites, and other sources to gather information about a hobby or specific topic of interest (e.g., Challenger Disaster, powwows, baseball trading cards).
8.4.3   Students develop a "Favorites" or "Bookmarks" folder of Web sites, books, and movies to share with classmates.
8.4.4   Students select a controversial topic (e.g., adoption of children, women's rights, freedom of religion, freedom of speech, environmental issues, or land mines). Compare the points of view, as reflected in press coverage, of the United States and another country using a periodical database such as ProQuest, InfoTrac, or a foreign news agency-- much like our Associated Press.

Examples of Activities that Support the Standard and Benchmarks

12.4.1 Students participate in a WebQuest capitalizing on the strengths of the individual team members.
12.4.2 Students develop their own criteria for selecting music CDs for personal enjoyment.
12.4.3 Students independently initiate use of interlibrary loan when faced with inadequate local resources.
12.4.4 Students use the Internet (e.g., follow stock reports, conduct banking activities, look for job openings, check the weather, read news reports).
12.4.4 Students will prepare an electronic employment portfolio archived on a CD-ROM.

Indicates that the word or phrase marked is defined in the glossary.

Standard 5: ETHICAL, LEGAL, AND SOCIAL USAGE

Students demonstrate ethical, legal, and social uses of information resources and technology.

Examples of Activities that Support the Standard and Benchmarks

4.5.1 Students, as a class, help establish age-appropriate ethical rules for personal and classroom technology use.
4.5.2 Students cite sources for class and personal research projects.
4.5.3 Students participate in a discussion about a book or movie concerning freedom of speech (e.g., *Frindle*, by Andrew Clements).
4.5.4 Students will predict how their lives would be different without the use of a specific technology (e.g., television, Internet, phone, automobile).

Examples of Activities that Support the Standard and Benchmarks

8.5.1 Students research Acceptable Use Policies (AUP) from other schools, debate reasons for AUPs, and develop one for the classroom. They will then compare it to their district's AUP.
8.5.2 Students write a content area report correctly citing sources in a bibliographic format.
8.5.3 Students role-play a mock trial concerning downloading copyrighted music from the Internet.
8.5.3 Students plan a multimedia presentation that includes background music, photos from a Web site, text from a quote along with a credit slide or page to emphasize the need to cite all types of information.
8.5.4 Students create timelines of various inventions and subsequent improvements over time. Students will compare the costs and benefits of each invention.
8.5.4 Students will describe the impact of modern technology advances (e.g., GPS, microchip implants, tracking devices).
8.5.4 Students evaluate a photocopy of an e-mail chain letter and/or e-mail virus/hoax in order to understand how information can be controlled and distorted (e.g., someone will pay $1,000 for each forwarded e-mail).

Examples of Activities that Support the Standard and Benchmarks

12.5.1 Students research the rationale for Acceptable Use Policies (AUP) regarding viruses, hacking, e-mail privileges, plagiarism, inappropriate language, and free speech.
12.5.2 Students collect bibliographic information from various sources to create a works-cited page using an acceptable citation style.
12.5.3 Students write letters/e-mail to obtain permission to use copyrighted music.
12.5.4 Students in a Web Design Class create a Web page that complies with ADA Section 508.

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Appendix A

COMPARISON CHART

Eisenberg/Berkowitz Information Seeking (The Big6 Skills)	Kuhlthau Information Problem-Solving	Irving Information Skills	Stripling/Pitts Research Process	New South Wales Information Process
1. Task Definition 1.1 Define the problem 1.2 Identify info requirements	1. Initiation 2. Selection 3. Formulation (of focus)	1. Formulation/analysis of information need	1. Choose a broad topic 2. Get an overview of the topic 3. Narrow the topic 4. Develop thesis/purpose statement	Defining
2. Information Seeking Strategies 2.1 Determine range sources 2.2 Prioritize sources	4. Exploration (investig. info on the general topic) 5. Collection (gather info on the focused topic)	2. Identification/appraisal of likely sources 3. Tracing/locating individual resources 4. Examining, selecting, & rejecting indiv. resources	5. Formulate questions to guide research 6. Plan for research & production	Locating
3. Location & Access 3.1 Locate sources 3.2 Find info			7. Find, analyze, evaluate resources	Selecting
4. Information Use 4.1 Engage (read, view, etc.) 4.2 Extract info		5. Interrogating/using individual resources 6. Recording/storing info	8. Evaluate evidence take notes/compile bib.	Organizing
5. Synthesis 5.1 Organize 5.2 Present	6. Presentation	7. Interpretation, analysis, synthesis and eval. of info. 8. Shape, presentation, and communication of info	9. Formulate questions to guide research 10. Create and present final product	Presenting
6. Evaluation 6.1 Judge the product 6.2 Judge the process	7. Assessment (of outcome/process)	9. Evaluation of the assignment	(Reflection point—is the paper/project satisfactory)	Assessing

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GLOSSARY

ABS/Antilock Brake System—A braking system installed on some cars that prevents brakes from locking on ice or loose gravel by forcing a pumping action while the driver is pressing consistently down on the brakes.

ADA/Americans with Disabilities Act-Section 508—The section of the 1986 ADA Law that contains provisions ensuring that information technology is accessible to people with disabilities.

APA—A style format developed by the American Psychological Association for research papers in the social sciences.

AUP/Acceptable Use Policy—A written document approved by a school district and/or school board, outlining terms and conditions for student/staff use of school district technology, including the Internet and e-mail.

Authority—In judging a work, this refers to the qualifications of the producer, author or editor. (e.g., expertise, reputation, education, etc.). See also **Reliability**.

Big6—An information, problem-solving process used in K-12 schools, higher education institutions, and corporate and adult training programs. <http://www.big6.com/>

Boolean/Boolean search/Boolean operator—A system of logic that, when applied to searches, links search terms with the "operators" AND, OR, and NOT. Boolean operators broaden or narrow the range of a search.

CD-ROM—Compact disc read-only memory.

Circulation policy—Rules that govern the borrowing of library materials by the patrons.

Clustering—Small groups of workstations or learners in a classroom setting.

Copyright—The exclusive legal rights granted by a government to the owner of intellectual property that protects the copyrighted material from unauthorized duplication, sale, or performance.

Database—A collection of information organized for search and retrieval.

Demographics—Data on a population group relating to age, gender, education, occupation, income, etc.

Digital camera—A camera that produces images in digitized form instead of using photographic film.

Discipline-related tools—Software or hardware developed for a particular area of study such as computer-aided drafting programs (CADD).

Download—To receive a file from one computer directly into another computer.

File server—See **Server**.

Indicates that the word or phrase marked is defined in the glossary.

GPS/Global Positioning System—A satellite navigation system that was designed for and is operated by the U. S. military, but with a growing number of civilian users. GPS provides specially coded satellite signals that can be processed in a GPS receiver, enabling the receiver to compute position, velocity and time.

Graphic organizer—Software used to organize information graphically such as charts, time-lines, chain of events, spider maps, Venn diagrams, or storyboards. <http://www.sdcoe.k12.ca.us/score/actbank/torganiz.htm>

Graphics—The creation and manipulation of picture images which may be obtained by a variety of means, including web pages, scanning, and digital cameras.

Graphics software—Any computer program that enables the user to draw, display and/or manipulate pictures, charts, or graphs that have been scanned, drawn or imported. Many software applications include graphics components.

Hardware—The physical component of technology such as the computer, keyboard, mouse, projector, or camera.

Information—A collection of data, facts, intelligence, or knowledge.

Information literacy—The ability to recognize the need for information in intelligent decision-making, formulate questions based on those needs, identify potential sources of information, develop successful search strategies, access a variety of sources of information, evaluate, organize, and integrate that new information into existing knowledge, and use it in critical thinking and problem-solving.

Information product—See **Product**.

Intellectual freedom—The right of any person to read or express non-libelous views that may be unpopular or offensive to others as established by the First Amendment to the U.S. Constitution.

Intellectual property laws—Laws governing the tangible products of the human mind and intellect that have the legal status of personal property, including works protected by copyright and patented inventions. A person's ideas are covered as soon as they are recorded or made manifest in some form.

Internet—A widely-used worldwide public computer network, initially developed by the U.S. military, that links smaller computer networks and allows users on different computer systems to communicate with one another on a global scale.

Intranet—The communication network of computers within an organization, or company, available only to the users within the organization.

Jigsawing—A learning strategy in which different class groups work on a part of the whole, not all working on the same part at the same time. The parts are added to each other to form the whole.

Keyword—A searchable word in a title, subject, or body of text.

Indicates that the word or phrase marked is defined in the glossary.

Know-It-All—An information searching process to help students solve real-life information needs. The lessons based on Information Literacy Standards for Student Learning are presented through a video series produced by GPN, P.O. Box 80669, Lincoln, NE 68510-0669. <http://gpn.unl.edu>

KWL—A teaching technique, developed by Donna Ogle, to help students activate prior knowledge. Students recall what they **K**NOW about a subject; determine what they **W**ANT to learn, identify what they **L**EARN as they research. <http://www.ncrel.org/sdrs/areas/issues/students/learning/lr1kwlh.htm>

LAN/**Local Area Network**—A network of computers located at one site.

Library Catalog/OPAC—See **OPAC/Online Public Access Catalog**.

Macros—A series of instruction (or mini computer programs) that enable the user to carry out specific tasks when certain key combinations are pressed.

Mail Merge—A feature within a word-processing program that enables the user to merge a document with a data file of names and addresses, for the purpose of personalized mass mailings.

Media—Types of information sources or any type of product used as a means of communication or to transmit information or both (e.g., books, compact discs, motion pictures, newspapers, television, videotapes).

MLA—A style format for research papers published by the Modern Language Association of America.

Modem/MODulator-DEModulator—A device that allows a computer to connect to the Internet over conventional phone lines.

Multimedia—Combined use of media (text, graphics, sound animation, or video) resulting in an artistic presentation of information.

NDTB/North Dakota Task Bank—A collection of lesson plans developed by North Dakota teachers and available on the North Dakota Curriculum Initiative Web site. <http://www.ndsu.nodak.edu/ndci/index.shtml>

Netiquette—Standards of polite behavior while using the Internet.

Online—Connected to a network of computers, usually the Internet.OCR/Optical Character Recognition—Software designed to convert text on paper into digital format by scanning a document, which can then be manipulated by using a keyboard.

OPAC/On-line Public Access Catalog—A computerized library catalog that replaces the card catalog and provides for additional search strategies such as keyword.

Operating System—The software that controls and manages all of the functions of a computer that allows it to operate. e.g., Windows XP, DOS and OS2.

Pathways—Follett Software Company's program of information skills called "Pathways to Knowledge." The components include 1) appreciation, 2) presearch, 3) search, 4) interpretation, 5) communication, and 6) evaluation. <http://www.pathwaysmodel.com/>

PDA/Personal digital assistant—A hand-held device that can be used to store digital information, calculate, telephone, fax, and network. Information can be typed in via a portable keyboard, entered by touching letters on a screen with a stylus, tracing the letters on the screen with a stylus, or downloading information from a computer or another PDA.

Peripherals—Hardware devices such as printers, scanners, external modems or keyboards that are connected to the computer through ports, and through which information can be transferred.

Portfolio—A systematic and organized collection of a student's work, records of observations, and test results, used to assess student progress and often including some form of self-reflection by the student.

Primary sources—Documents containing firsthand knowledge that has not been interpreted by others, such as a diary, a journal, an interview, or an eyewitness account. See also **Secondary sources**.

Privacy Issues—Library checkout records are private and should not be shared with a third party without due process of law. However, most AUP's state that all files and activities conducted on school machines are not considered private and are subject to viewing by the system administrators.

Process—The series of problem-solving actions involved in creating a product

Product—The end result of an information inquiry process, such as a written report, speech, or electronic presentation. Also widely known as **Information product**.

Productivity tools—Any type of software associated with computers and related technologies that can be used as tools for personal, professional, or classroom productivity (e.g., Microsoft Office).

Project—The complete process involved in solving a problem.

Projection devices—Hardware designed to project an image from a source such as a computer or VCR to a screen for viewing.

Query—See Search queries.

Reliability—In judging a work, this has to do with a publisher consistently producing quality products over a long period of time and using support information that has been proven very accurate in the past. (e.g., Gale Research Company, The H.W. Wilson Company, etc.) See also **Authority**.

Rubric—A form designed for assessment or evaluation purposes using established criteria. <http://teachers.teach-nology.com/web_tools/rubrics/>

Scanner—A device that converts images, text, or a barcode on a paper page into a digitized format by scanning the printed document with light.

Search engines—Applications on the Web that search other Web sites using keyword(s) and then listing those documents where the keywords were found.

Search queries—Strings of terms such as keyword, subject, title, or author, linked together with the Boolean operators, AND, OR, NOT, to enable the researcher to conduct online searches for information.

Secondary sources—Documents containing information that has been reported, analyzed, or interpreted by individuals who have used primary sources, or other secondary sources for data. See also **Primary sources**.

Section 508—See **ADA/Americans with Disabilities Act**.

Segway Human Transporter—Invented by Dean Kamen to provide economical short distance travel, the Segway is a two-wheeled, electric-powered vehicle that is operated by a person standing on a platform and controlling the movement with leaning motions.
 < http://www.segway.com>

Server—A computer that makes services available on a network. A file server enables others to access files, while a Web server is the computer system that makes its Web pages available to others.

Software—Computer program or electronic data.

Spreadsheet—Software that organizes data as a matrix of rows and columns through which information can be manipulated through using formulas.

Storyboard—A visual representation of the sequential presentation of information to be included in a media product.

Super3—The primary grades version of the Big6. The three steps consist of the beginning, when the child PLANS the activity; the middle, when the child actually DOES the activity; and the end, when the child EVALUATES the product.

Synthesize—A level of learning in Bloom's Taxonomy that entails the pulling together of parts and combining them in a different way to form a new whole, resulting in the creation of new information.

Indicates that the word or phrase marked is defined in the glossary.

Technology—A man-made tool used to accomplish a task or solve a problem or the use of a body of information and the systematic application of resources to produce outcomes in response to human needs or wants.

Templates—Pre-designed layouts for documents that may include font selection, text and graphics boxes, formatting for labels or letterheads. The templates may come standard with a software program, or may be created by the user.

Truncation—Use of an asterisk, or other symbol, to take the place of one or more letters in a term in order to search all words that include a root word. (e.g., wom*n for woman or women, farm* for farmer, farming, farms).

Turabian/A Manual for Writers of Term Papers, Theses and Dissertations— A style format for research papers by Kate L. Turabian, published by the University of Chicago Press.

URL/ Uniform Resource Locator—An address on the World Wide Web that, when typed in the locator bar on a search engine, will bring the user to the desired page on the Internet.

Virtual Classroom—A classroom that only exists on the Internet.

WAN/Wide Area Network—A network that extends over multiple buildings or sites.

Web Cams—Small video cameras, usually mounted on the computer, that allow video conferencing through the Internet.

Web site—A page, or group of pages, specified by a network address or URL (Uniform Resource Locator) on the World Wide Web.

WebQuest—An inquiry-oriented activity in which most or all of the information used by learners comes from resources on the Internet. The model was developed in early 1995 at San Diego State University by Bernie Dodge and Tom March.

XM/Satellite Radio—Radio transmitted from satellites orbiting Earth, using phase shift modulation, sudden shifts in wave direction, to convey information. XM radio differs from AM, which varies the amplitude, or strength of the waves, and FM, which varies the frequency of the waves. Also, XM radio is in digital format, which pulses on and off, rather than the AM/FM analog format, which is in a continuous flow.

Indicates that the word or phrase marked is defined in the glossary.