Educational Technology Standards

south dakota
DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

South Dakota
K-12 Educational

Technology Content Standards

South Dakota Board of Educaiton
Adoption July
2007

Table of Contents

ACKNOWLEDGMENTS

The creation of these Educational Technology Standards is a result of the contributions of many educators from across the state. Many hours were devoted to research and thoughtful consideration of issues to ensure the standards would reflect rigorous technology teaching and opportunities for students to learn important technology concepts and procedures with understanding. The Educational Technology Standards Creation Committee members represent the many concerned individuals across the state dedicated to their profession and to high quality technology education for all South Dakota students. Without their contributions the creation of the Educational Technology Standards would not have been possible. The South Dakota Department of Education wishes to express appreciation and gratitude to the individuals and the organizations they represent who contributed expertise and time to the creation of South Dakota's Educational Technology Standards.

South Dakota Educational Technology Committee Members

Doug Barnes, Distance Spanish Instructor, Mid-Central Educational Cooperative

Kari Bender, Technology program specialist, South Dakota Department of Education

Jason Burma, Technology Instructor, Sunshine Bible Academy

Tami Dewes, Network Administrator, Rapid City Catholic School System

Brian Dzwonek, Director, 29-90 Distance Learning Consortium

Deb Fredrickson, Network Administrator**,** Canistota School District 43-1

Carol Greco, 2nd Grade Teacher, Deadwood Elementary School, Lead-Deadwood School District 40-1

Sara Fridley, Education Specialist/Technology Integration, Region 3 ESA

Linda Hampton, Grade 3-5 Technology Teacher, Williams Middle School, Meade School District 46-1

Joe Hauge, Education/Technology Specialist, TIE

Mark Heilmann, Curriculum Technology Specialist**,** South Dakota Department of Education

Denise Heisinger, 5th Grade Teacher**,** Holy Trinity Catholic School

Peg Henson, Curriculum Technology Specialist**,** South Dakota Department of Education

Mary Frances Honner, Junior High Technology Teacher, O'Gorman Junior High School, Sioux Falls Catholic Schools

JoAnn Jackley, Business/Computer Teacher**,** Sturgis Brown High School**,** Meade School District 46-1

Rita Thomas -Jones, 3rd grade Teacher**,** Holy Trinity Catholic School

Jessie Kampshoff, K-5 Computer Teacher, 7th Grade Math, Language Arts Teacher, Hanson Elementary and Middle Schools, Hanson School District 30-1

Peggy Klein, Middle School Technology Mentor, Todd County Middle School, Todd County School District 66-1

Janice Koski, 3-5 Computer Teacher, East Elementary School, Spearfish School District 40-2

Wayne Lang, Technology Coordinator/Trainer, Rapid City Area School District 51-4

Tracey Larsen, Middle School Computer Teacher, Patrick Henry Middle School, Sioux Falls School District 49-5

Penny Lensegrav, Computer Science Teacher, West Elementary School, Spearfish

School District 40-2

Susan Menking, Middle School/High School Computer Applications, Geometry, Spanish & High School Science Teacher, Webster Middle School, Webster School District 18-4

Rosalie Moore, Computer Teacher/Technology Integration Specialist, Douglas Middle School, Douglas School District 51-1

Crystal Night Pipe, Distance Education Principal/Technology Mentor, Todd County Middle School, Todd County School District 66-1

Jackie Omland, Master Teacher of Physics, Northern State University

Dean Parker, Technology Coordinator, East Dakota Educational Cooperative

Angie Preszler, Elementary Physical Education, Middle School/High School Teacher, Edmunds Central School, Edmunds Central School District 22-5

Gail Reyne, K-6 Computer Teacher/Computer Technician, John Paul II Elementary School

Chris Rhodes, Technology Mentor, North Elementary School, Todd County School District 66-1

Rebecca Rost, 4th Grade Teacher, Whitewood Elementary School, Meade School District 46-1

Martin Sieverding, Technology Coordinator/Computer Instructor, Menno High/Middle/Elementary Schools, Hutterite Colony Schools, Menno School District 33-2

Shane Steckelberg, Technology Director, Dakota Valley School District 61-8

Tania Stulc, 4th grade teacher Aberdeen, Roncalli Catholic Schools

Carmen Toole, K-5 Computer Teacher, Christian Center Elementary School

Susan Whisler-Wendt, Computer Teacher, Hot Springs Middle and High School, Hot Springs School District 23-2

The South Dakota Department of Education extends sincere appreciation to the Office of Curriculum, Technology and Assessment staff that carried the primary responsibility for overseeing the revision and editing the SD Educational Technology Standards. Peg Henson provided primary leadership, direction, facilitation, and guidance to this committee.

The South Dakota Department of Education expresses special thanks to the Technology Leaders of the Rapid City School District, all of the individual teachers, administrators, educational technology faculty, community members and business leaders, grandparents, parents and students who took the time to provide thoughtful comments and assistance during the public comment period. And a special thanks to intern Kelsey Hanson for all her hard work in preparing the layout of the final document and supporting materials.

INTRODUCTION

Guiding Concepts

The Educational Technology Standards Committee developed these standards based on several concepts that teachers and students of Educational Technology should keep in mind during the learning process:

- Information and communication technology (ICT) is an important context of technology and it supports every subject area. Access to and application of ICT, through Educational Technology offerings,are opportunities that should be available to every South Dakota student.
- Technology is a human process; it is more about with what people “do” than with what devices are used. ICT education should focus more on how students learn to communicate to different audiences and less on the specific operations of computers and networks.
- ICT is one of several important contributors to the technological literacy of students. Technological literacy is a broad concept that includes the abilities to understand, to know, to think, to do, to assess, to transfer knowledge, skills, and attitudes to the world around us.
- ICT is one of several important components of the educational technological literacy of students. Technological literacy is a broad concept that includes the ability to use, manage, assess, and understand technology. See glossary for more detail.
- Technologists are essentially problem solvers. Students of every technology should learn, develop, and apply problem-solving skills through problem-based learning

opportunities.

- All technologies operate within an environment called a system. Students of technology should explore the concept of “systems thinking” so they can develop a context for their learning and their work. If the students can conceptualize their work in terms of an uniform, but adaptable, system, they may be better equipped to adapt to changes in technology and the world around them
- Technology follows a common methodology known as the design process. This is a problem-solving method includes stages of problem definition, the exploration of alternative solutions, the optimization of a chosen solution, and the development of a final outcome. Technology students should develop their ability to apply the technological method much the same as Science students learn to apply the scientific method.
- Technology is closely linked to creativity and innovation. Educational Technology presents boundless opportunities to students to produce creative works in text, images, graphics, and media.
- Technology should be made relevant to students. The application of technology to everyday life and to other technologies should be emphasized (or made clear) to students during the teaching and learning process. The relevance of technology to career opportunities and to the workplace should be communicated as a part of instruction.
- Technology tools and processes are constantly changing and emerging. For this reason, teachers should strive to be current with the constantly emerging advances in technology and flexible in adapting their teaching to these new advances. In this context, teachers need to take advantage of the teachable moments that evolving technologies and current events provide.
- Technology is an active process. Laboratory opportunities

for learning about, for using, and for applying Educational Technology should be universally available to every South Dakota student.

- Teaching and learning in a standards-based system is not a textbook-driven process. Textbooks are tools that, when used appropriately, enhance teaching and learning by providing instructional materials relevant to the specified standards.
- While standards are the core that all students should learn and master, teachers will expand upon these standards and introduce related topics to students in the course of instruction. **Teachers who teach classes in the specific areas of technology (i.e. Technology Education or Computer Applications) will build on the foundational concept of these standards.**

FORMAT OF THE STANDARDS DOCUMENT

Standards

The standards are the targets all students need to meet at the proficient level by the end of each grade level. The standards will be presented in two formats. The first format organizes the standards by grade level so a student, parent, classroom teacher, administrator, or local school board member can quickly review what learning is expected at each specific grade. The Bloom's Taxonomy level of cognitive challenge is listed in the standard document to make clear the level at which each standard should be assessed.

All standards in each grade level need to be met at the proficient level by the time students are tested for these skills on the state assessments. For early grades not

assessed on the state assessments, students need to master the standards at each grade level in order to be adequately prepared to meet the next grade-level standards and subsequently, to achieve the proficient level at the grade levels tested.

The standards are also provided in a side-by-side format so the alignment of standards from grade-to-grade is immediately apparent. This section of the document contains content strands, indicators, grade-level standards and supporting skills, and examples. Each has a role in shaping the expected outcomes for South Dakota students.

- **Strands** are the broad conceptual content areas that define Educational Technology. They are: Nature, Concepts and Systems (systems thinking, interactions, and design), Social Interactions, Information and Communication Tools, Information and Communication Processes, and Information Literacy.
- **Indicators** are the common threads of a strand that represent expected outcomes for all students preparing to graduate from South Dakota schools.
- **Grade-level Standards and supporting skills** represent expected outcomes for students completing each grade level.
- **Examples** represent some possible materials and/or activities classroom instructors could use in teaching the standards or supporting skills. Examples are not provided where the meaning of the standard should be evident to the reader. While the intention of providing examples is to clarify what is intended in terms of the complexity and level of challenge of the standard, these examples do not represent actual test items that will appear on the assessment.

Performance Descriptors

The performance descriptors are organized into proficiency levels. These proficiency levels describe the content and processes that a student at a given proficiency level would be expected to know, demonstrate, or perform. To identify increasing proficiency educational technology, the levels are labeled as follows:

- **Advanced:** A student performing at the advanced level exceeds expectations for that grade level. The student is able to perform the content standards for the grade at a high level of difficulty, complexity, or fluency beyond that specified by the grade-level standards.
- **Proficient:** A student performing at the proficient level meets expectations for that grade level. The student is able to perform the content standards for the grade at the level of difficulty, complexity, or fluency specified by the grade level standards.
- **Basic:** A student performing at the basic level performs below expectations for that grade level. The student is able to perform some of the content standards for the grade below the level of difficulty, complexity, or fluency specified by the grade-level standards.

A student performing below the basic level is unable to perform the content standards for the grade. Therefore, no description is provided below the basic level.

ADDITIONAL RESOURCES

Since this document uses appropriate educational technology terminology, a reader may occasionally encounter an unfamiliar term. In order to assist the reader with

terminology used in the document, a glossary has been included with specific definitions to clarify intended meaning.

A MESSAGE TO TEACHERS, PRINCIPALS, SUPERINTENDENTS, AND OTHERS WHO WILL USE THE DOCUMENT

The Educational Technology Standards Committee was made up of a group of K-12 teachers and technology coordinators who collaborated to establish a starting point for reaching South Dakota's goal: every student performing to at least the proficient level for each grade level standard.

A set of standards is simply a place to begin—it lays the foundation for measurable, consistent, high-level student learning; however, teachers must consider the needs of their individual students and select the methods that will work best for their classrooms. Examples and lists of supporting skills have been provided to clarify but not limit the meaning of the standards. ***The curriculum of each district must provide students with rigor and topics beyond those of the standards in order to ensure mastery.***

Clearly, there is more to teaching and learning than these standards. Adjustments will need to be made for those students who exceed the standards and for those who cannot easily meet them. The standards are a starting point in creating an environment where students can learn to live and thrive in a constantly changing, increasingly complex world.

Technology is an extremely large field that has many, many sub-disciplines. As a result, when educators talk about technology, there must be a clear understanding of what, exactly, is being discussed. These Educational Technology

Content Standards relate to the topics of technology that are related to electronic and graphical communications, to general computer operations, to network telecommunications operation, and the use and assessment of information.

Other, more specialized, technology topics can be found in the content standards for Technology Education, Science, Mathematics, Social Studies, and Career & Technical Education courses. Those standards contribute significantly and should be thought of as strong allies as work proceeds toward the goal of Technological Literacy among South Dakota's students. Some examples of specific topics from other fields that support technological literacy are:

- Data communications in automated manufacturing
- Global positioning systems (GPS) in agricultural and social studies mapping
- 3D design in building construction
- Real-time data collection in biological sciences
- Data analysis using graphing calculators and statistical software in Mathematics
- Terrain sensing in transportation systems
- Power demand monitoring in alternative energy systems
- Robotics; an interdisciplinary blend of controller programming, sensor communications, systems engineering, materials selection, and fabrication.

IMPORTANT NOTE TO TEACHERS: Not every supporting skill presented in this document needs to be taught in order for students to master the associated standard. This is also true for the examples that appear in this document. Supporting skills and examples are provided only to illustrate the standard and are not designed as requirements to be taught.

CONCLUSION

Technological literacy is a goal that is an essential component for all of the citizens of South Dakota. It will ensure that students become successful learners able to contribute to the economic and social development of our state. These Educational Technology Content Standards, combined with content standards in other areas of technology and other academic subjects, will prepare students to be knowledgeable and adaptable as they pursue their lifelong goals.

Introductory Paragraphs for the Strands

Educational Technology Content Standards

Strand #1 - Nature, Concepts and Systems (systems thinking, interactions, and design)

Rationale:

It is common to think of technology as a device or a thing. However, it may be beneficial to describe it as the process of using tools and knowledge to interact with the world around us. In that larger sense, technology can also be thought of as a tool that extends human capability: “know how.” From this viewpoint we see that technology is a very broad discipline. Information and Communication Technology (ICT) is merely one of several contexts within that broad field of technology.

This Nature, Concepts and Systems (systems thinking, interactions, and design) strand emphasizes the general processes that describe how people “DO” technology. The subsequent strands focus specifically on ICT.

Because it uses creative ideas and is closely related to scientific principles, technology often changes. It is, therefore, important for citizens to understand the history and contributions of technology over time. They should also

be aware of how technology utilizes knowledge from other fields as well as how it contributes to those fields.

Technology operates within a system and a system can be defined as a combination of parts that work together for a purpose. These Educational Technology Content Standards utilize a systems approach because it is an effective way to organize knowledge and skills for easier understanding. When citizens learn to think in terms of systems they enhance their ability to function in a rapidly-changing world.

Technology is a process that often incorporates systematic problem-solving and design methods. It is a sequence that begins with the definition of the problem at hand. Next, information is gathered and alternative solutions for the problem are proposed. The best solution is selected from the alternatives, then developed and produced into a result. The result is tested and evaluated to determine if it, in fact, solved the problem. The final stage of the process involves sharing the results with others.

This last step is important for the development of human experience and for contribution to a shared knowledge base for society.

Indicators:

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology.

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Strand #2 - Social Interactions in Information & Communication Technology

Rationale:

When people communicate and work with information, the activities are often interpersonal and intercultural. This strand addresses the needs for students to develop awareness and skills that relate to privacy and ethical issues.

Citizens must also deal with consumer issues relating to ICT. For that reason citizens need to develop skills on how to select technologies.

Indicators:

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Indicator 2: Students investigate the advantages and disadvantages of technology.

Strand #3 - Information & Communication Technology Tools

Rationale:

There is a dizzying array of ICT tools available to people today. In this strand, students learn about selecting ICT tools that are appropriate for the need at hand. In addition, they will learn the necessary skills to be effective users of the tools.

Initially, the reader of these standards may note the lack of a list of equipment, software, hardware, and devices the students will learn to operate. This lack of a list is intentional because new products become available faster that any document can reflect.

Instead, students will be learning to select and operate tools that are available and appropriate for the situation at hand.

Indicators:

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks

Strand #4 - Information & Communication Technology Processes

Rationale:

The processes of communicating and dealing with information are as diverse as the population and as broad as the variety of ICT tools. As in the previous strand, the reader will notice that there is no exhaustive list of processes that the students will complete. Instead, students will develop process skills that are appropriate for the learning situation at hand. Those situations are to be based on resources available to the students at the time.

Indicators:

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Strand #5 - Information Literacy

Rationale:

The International ICT Literacy Panel suggests that ICT literacy be represented by a continuum of knowledge and skills with increasing complexity. This Panel, composed of educators, technology experts, scholars, and industry representatives from around the world, has agreed on the following sequence:

Access - knowing about and knowing how to retrieve information

Manage - applying an existing organizational scheme

Integrate - interpreting and representing information; (summarize, compare, contrast)

Evaluate - make judgments about quality, relevance, usefulness, and efficiency

Create - generate information by adapting, applying, designing, or authoring

---

Indicators:

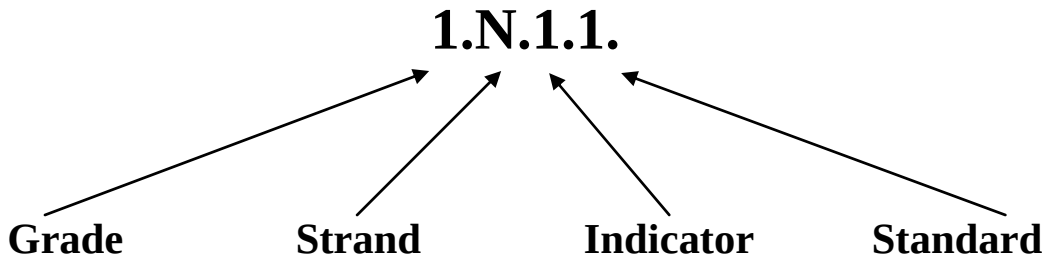
Indicator 1: Students use technology to locate and acquire information.

Indicator 2: Students determine the reliability and relevancy of Information

Guide to the Numbering and Symbol System

Used in the Document

Standards are coded to cross-reference grades, goals/strands, indicators, and standards.



Grade refers to the grade level at which the standards are to be mastered by students.

Strand refers to the major area of Technology (e.g., Nature and Concepts, Social Interactions, Information Literacy) this group of standards address. These strands are coded:

NC for Nature and Concepts of Technology

SI for Social Interactions

CT for Information and Communication Tools

CP for Information and Communication Processes

IF for Information Literacy and Decision Making

Indicator refers to the number of the indicator for this strand. Each strand has one or more related indicators that describe key aspects of the strand.

Standard refers to the number of the grade-level standard for the indicator. Each indicator has one or more grade-level standard(s) that describes what students will know and be able to do related to the indicator at the specific grade level.

Examples in bold type are directly related and aligned to the level of the standard. These examples represent the level of difficulty intended in the grade-level standard and possible materials, activities, or sub-skills classroom instructors could use in teaching the standards.

Grade-level supporting skills represent enabling skills students may need to be taught in order to achieve the standards.

(•) Bullets represent enabling skills to the current grade-level standard students may need to be taught in order to achieve the standards.

(√) Checkmarks are enabling skills to the next higher grade-level standards that are related to current grade-level standards and thus may be introduced at an earlier time.

Examples that are NOT in bold type are related and aligned to the level of the bullets/supporting skills and checkmarks. These examples represent the level of difficulty intended in the grade-level standard. They represent some possible materials, activities, or sub-skills classroom instructors could use in teaching the supporting skills.

Kindergarten Nature, Concepts and Systems
(systems thinking, interactions, and design)
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**K.NC.1.1 Identify three human-made objects.** **Examples**: computer, telephone
	✓ Identify tools in technology. • Definition of a tool.

Indicator 2: Analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**K.NC.2.1 Identify that parts make a whole.** **Example:** An engine is part of a car. **Example:** A mouse is part of a computer. **Example:** Math KN.1.2.

Indicator 3: Analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**K.NC.3.1 Identify technologies used in the home.** **Examples**: telephone, television

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Identify a problem.
	✓ Gather information to solve a problem.
	✓ Identify a solution.

Kindergarten Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**Kindergarten students performing at the advanced level:** • Distinguish between natural and human-made objects. • Identify the specific missing part. • Choose appropriate technologies at home.
Proficient	**Kindergarten students performing at the proficient level:** • Identify three human-made objects. • Identify that parts make a whole. • Illustrate technologies used in the home.
Basic	**Kindergarten students performing at the basic level:** • Identify one human-made object. • Identify that something is missing. • Identify one technology used at home.

Note: At the K-2 level, the teachers need to focus on observing and collecting information about the progress students are making related to the checkmark statements.

Kindergarten Social Interaction
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**K.SI.1.1 Demonstrate respect for the work of others.**
(Comprehension)	**K.SI.1.2 Identify five ways to respect equipment.**
	✓ Describe how using a password helps protect the privacy of information.
	✓ Identify safe technology behaviors. **Example**: Telephone (9-1-1)

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**K.SI.2.1 Recognize that an advantage is desirable and that a disadvantage is undesirable.** **Example:** Being nice to your partner is an advantage. **Example**: Being a bully is a disadvantage.

Kindergarten Social Interaction
Performance Descriptors

Advanced	**Kindergarten students performing at the advanced level:** • Describe respect for the work of others. • Model respect for equipment. • Predict whether or not a given situation produces an advantage.
Proficient	**Kindergarten students performing at the proficient level:** • Demonstrate respect for the work of others. • Identify five ways to respect equipment. • Recognize that an advantage is desirable and that a disadvantage is undesirable.
Basic	**Kindergarten students performing at the basic level:** • Know the meaning of respect. • Name one way to respect equipment. • Recognize that an advantage is desirable.

Note: At the K-2 level, the teachers need to focus on observing and collecting information about the progress students are making related to the checkmark statements.

Kindergarten Information and Communication Tools
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**K.CT.1.1 Describe technology using accurate terminology.** **Example**: Monitor, keyboard
(Application)	**K.CT.1.2 Use input/output devices to operate various technologies.** **Examples**: mouse, phones, VCR's, TV's, printers
	✓ Identify basic file management commands (New, Open, Save, Print).
	✓ Locate letters, numbers, and special keys on the keyboard.

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**K.CT.3.1 Recognize technology as a tool to help complete a task.** **Examples**: Telephone-talk, drill-make holes

Kindergarten Information and Communication Tools

Performance Descriptors

Advanced	**Kindergarten students performing at the advanced level:** • Communicate about technology using accurate terminology. • Utilize basic file management commands (New, Open, Save, Print). • Describe a technology tool and its use.
Proficient	**Kindergarten students performing at the proficient level:** • Describe technology using accurate terminology. • Use input/output devices to operate various technologies. • Recognize technology as a tool to help complete a task.
Basic	**Kindergarten students performing at the basic level:** • Communicate about technology. • Operate a mouse or keyboard. • Recognize technology as a tool.

Note: At the K-2 level, the teachers need to focus on observing and collecting information about the progress students are making related to the checkmark statements.

Kindergarten Information and Communication Processes
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	(Mastery of this indicator does not emerge until 2nd grade.)

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**K.CP.2.1 Identify information technologies used for communicating ideas.** **Example:** List cell phone or telephone.

Kindergarten Information and Communication Processes
Performance Descriptors

Advanced	**Kindergarten students performing at the advanced level:** • Identify alternative devices or method for communicating an idea
Proficient	**Kindergarten students performing at the proficient level:** • Identify two information technologies used for communicating ideas.
Basic	**Kindergarten students performing at the basic level:** • Identify one information technology used for communicating ideas.

Kindergarten Information Literacy and Decision Making
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**K.IL.1.1 Identify what information is.** **Example:** Child's name, school name, age, birthday, gender
(Knowledge)	**K.IL.1.2 Recognize that information can be represented in a variety of ways.** **Examples**: Numbers, words, pictures, sounds

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Distinguish between fact and fiction. • Real and make-believe

Kindergarten Information Literacy and Decision Making
Performance Descriptors

Advanced	**Kindergarten students performing at the advanced level:** • Choose the most appropriate format(s) for information for a given situation.
Proficient	**Kindergarten students performing at the proficient level:** • Identify what information is. • Recognize that information can be represented in a variety of ways.
Basic	**Kindergarten students performing at the basic level:** • Recognize one form of information.

First Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**1.NC.1.1 Distinguish between the natural and human-made world.** **Example**: forest vs. city skyline
(Comprehension)	**1.NC.1.2 Describe how people use tools.** **Examples**: Builders use hammers, farmers use tractors, store clerks use cash registers

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**1.NC.2.1 Identify common systems in school and home.** **Examples**: Electrical (Pole to building to wires to outlet)
	✓ Identify system components. **Example:** Chocolate chip cookies • Input (situation & resources) **Example:** chocolate chips & flour, hunger • Process **Example:** Heat • Output **Example:** Cookies • Feedback **Example:** Burnt? Gooey?

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**1.NC.3.1 Illustrate technologies used at school.** **Examples**: digital cameras, computers, DVD players **Example:** Math 1.S.1.1 **Example:** Math 2.S.1.2 **Example:** Social Studies 1.US.1.1

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**1.NC.4.1 Use a simplified version of the design process to solve problems.** • Identify the problem • Gather information to solve the problem • Identify a solution **Example**: Identify the problem: Can't log in. Gather information: Incorrect password. Identify a solution: Re-enter password correctly. **Example**: Identify the problem: Can't use pencil. Gather information: Pencil point is broken. Identify a solution: Use pencil sharpener.
	✓ Identify possible alternative solutions to problems.

First Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**First Grade students performing at the advanced level:** • Describe the advantages/disadvantages of tools. • Describe the advantages/disadvantages of natural and human-made for a specific purpose. • Describe the functions of common systems. • Choose appropriate technologies at home and school. • Compare and contrast alternative solutions to problems.
Proficient	**First Grade students performing at the proficient level:** • Distinguish between the natural and human-made world. • Describe how people use tools. • Identify common systems in school and home. • Illustrate technologies used at school. • Use a simplified version of the Design process to solve problems.
Basic	**First Grade students performing at the basic level:** • Identify a tool. • Identify common systems in school or home. • Identify one technology used at school. • Recognize a problem exists.

.

First Grade Social Interactions
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**1.SI.1.1 Identify ownership rights of student-created work (copyright).** **Example**: student project
(Knowledge)	**1.SI.1.2 Identify appropriate and safe technology behaviors.** • Describe how using a password helps protect the privacy of information. **Examples**: Don't divulge your name, address, phone number online **Example**: Passwords protect data, locks protect houses

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**1.SI.2.1 List advantages of tools/technology at home and at school.** **Examples**: microwave oven, projectors

First Grade Social Interactions
Performance Descriptors

Advanced	**First grade students performing at the advanced level:** • Describe ownership rights of any creative work. • Use a password to protect the privacy of information. • Explain how the home and school is improved through the use of tools/technology.
Proficient	**First grade students performing at the proficient level:** • Identify ownership rights of student-created work. • Describe how using a password helps protect the privacy of information. • Identify safe technology behaviors. • List advantages of tools/technology at home and at school.
Basic	**First grade students performing at the basic level:** • Describe ownership. • Recognize there are passwords. • List one advantage of tools/technology at home and at school.

First Grade Information and Communication Tools
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**1.CT.1.1 Use basic file management commands (New, Open, Save, Print).**
(Application)	**1.CT.1.2 Use letters, numbers, and special keys on the keyboard.** • Shift, Return/Enter, Space, Backspace/Delete, Caps Lock, Ctrl, Alt, Arrows
	✓ Recognize the differences between files and folders.

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ **Use a directed variety of media and technology resources to create a product.** **Example:** Software, inter-active white boards • Identify hardware/software problems.

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**1.CT.3.1 Describe five technology tools and their uses.** **Examples:** Internet, DVD player, projector, cell phone, pager

First Grade Information and Communication Tools
Performance Descriptors

Advanced	**First grade students performing at the advanced level:** • Independently save and retrieve a file to/from a specified folder. • Identify and use correct finger placement of home row keys. • Select an appropriate tool for a task given a list of technologies.
Proficient	**First grade students performing at the proficient level:** • Use basic file management commands (New, Open, Save, Print). • Use letters, numbers, and special keys on the keyboard. • Describe five technology tools and their uses.
Basic	**First grade students performing at the basic level:** • Operate a mouse, keyboard, and monitor. • Identify letter keys. • Describe two technology tools and their uses.

First Grade Information and Communication Processes
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Participate with others when using technology tools to convey ideas or illustrate simple concepts.

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**1.CP.2.1 Students are able to identify alternative devices or method for communicating and idea.** **Examples:** cell phone or email, VCR or DVD, call Mom and tell her I'm home from school

First Grade Information and Communication Processes
Performance Descriptors

Advanced	**First grade students performing at the advanced level:** • Use information technologies to communicate and share an idea, with assistance.
Proficient	**First grade students performing at the proficient level:** • Identify alternative devices or methods for communicating an idea.
Basic	**First grade students performing at the basic level:** • Identify two information technologies used for communicating ideas.

Note: At the K-2 level, the teachers need to focus on observing and collecting information about the progress students are making related to the checkmark statements.

First Grade Information Literacy and Decision Making
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**1.IL.1.1 Identify where information can be found.** **Examples**: Classroom, library, Internet

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Distinguish between fact and opinion. • Real and point of view

First Grade Information Literacy and Decision Making
Performance Descriptors

Advanced	**First grade students performing at the advanced level:** • Access information from identified sources.
Proficient	**First grade students performing at the proficient level:** • Identify where information can be found.
Basic	**First grade students performing at the basic level:** • Identify one source of information

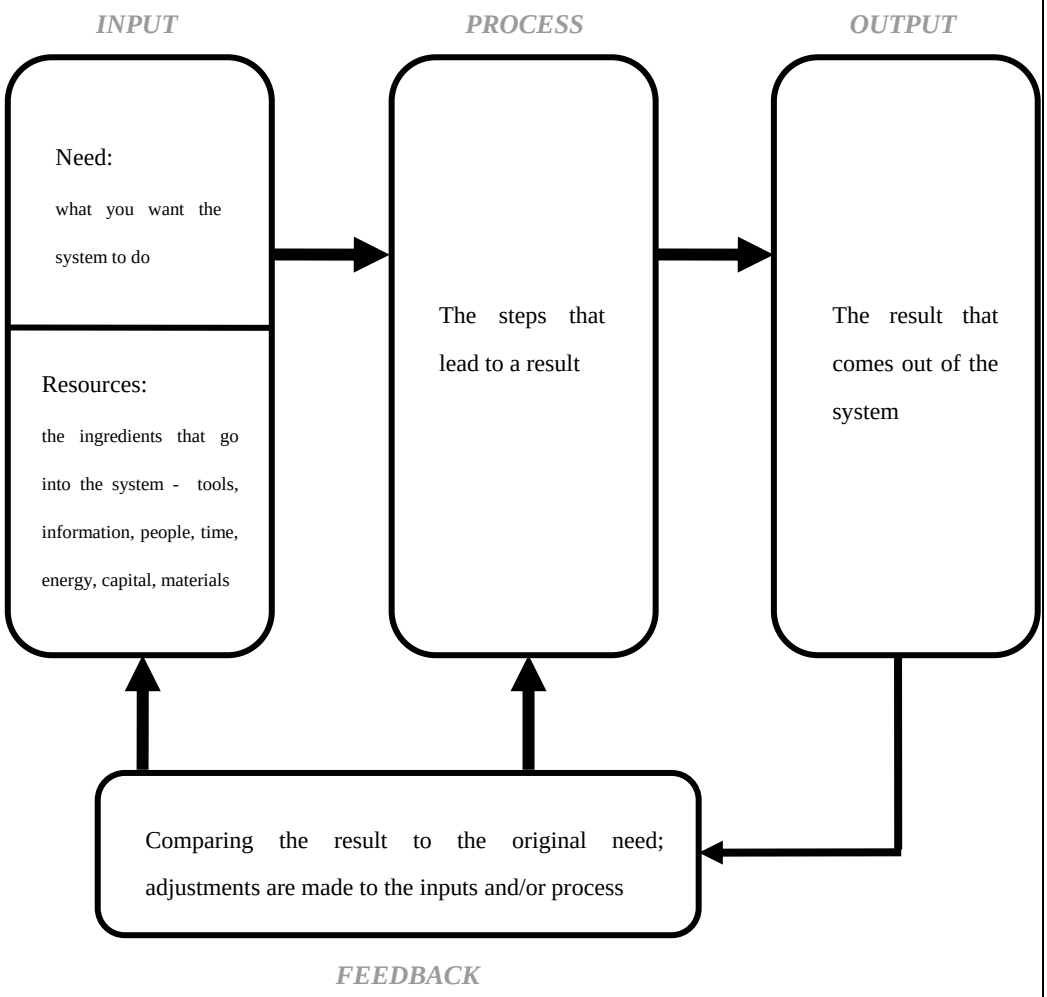
Second Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**2.NC.1.1 Describe the progression of technology.** **Example:** Social Studies 2.US.1.1 **Example:** Social Studies 2.US.1.2 • Communication technology **Example**: Quill to pencil to keyboard • Transportation technology **Example:** Wagon to car to airplane • Health technology **Example:** Leeches to surgery • Agricultural technology **Example:** Oxen to tractor • Energy technology **Example:** Fire to solar power

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**2.NC.2.1 Define each component in a systems-thinking model.** • Input, process, output, feedback **Example:**



Adapted from the work of Jay Forrester, Massachusetts Institute of Technology; James Snyder, West Virginia Dept. of Education; & James Hales, Fairmont State College

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**2.NC.3.1 Classify whether technologies are used in the home, school, or community.** **Example**: toaster-home; fax machine-school; cell phone-community
(Knowledge)	**2.NC.3.2 Recognize that technology has an interrelationship with the environment.** **Example:** M&M Color Graphing activity in Excel. **Example:** Science 2.NC.2.checkmark
(Knowledge)	**2.NC.3.3 Identify responsible digital citizenship relative to technology and its use.** Identify each of the following components as elements that comprise digital citizenship. • Etiquette: electronic standards of conduct or procedure **Example:** Using caps lock appears to be shouting. **Example:** Different audiences use different terms (LOL- laugh out loud) to communicate the same information. • Communication: electronic exchange of information • Education: the process of teaching and learning about technology and the use of technology • Access: full electronic participation in society • Commerce: electronic buying and selling of goods **Example:** Buying and selling on the internet • Responsibility: electronic responsibility for actions and deeds **Example:** Following copyright laws when copying and pasting from websites. • Rights: those freedoms extended to everyone in a digital world **Example:** Freedom of speech has created lots of information on the internet. **Example:** Students own their own work • Safety: physical well-being in a digital technology world **Example:** Practicing child protection measures when communicating

	online. • Security (self-protection): electronic precautions to guarantee safety **Example:** Password protection, secured websites, not giving out personal information to unknown persons.

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**2.NC.4.1 Choose among given alternatives to solve a problem.** **Example**: Can't log in. Is the caps lock on? Is the password typed correctly? • Test alternative solutions

Second Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**Second grade students performing at the advanced level:** • Compare and contrast technology in various eras. • Apply the systems-thinking model. • List advantages/disadvantages of technologies used in the home, school, or community. • Solve a problem independently. • Describe appropriate and inappropriate uses of any creative work. • Use passwords with keyboard modifiers (shift, etc.). • Practice safe online behaviors.
Proficient	**Second grade students performing at the proficient level:** • Describe the progression of technology. • Define each component in a systems-thinking model. • Classify whether technologies are used in the home, school, or community. • Choose among given alternatives to solve a problem. • Describe ownership rights of technology-created work. • Use an individual password to protect the privacy of information. • Utilize safe technology behaviors.
Basic	**Second grade students performing at the basic level:** • Distinguish whether a tool is from the past or present. • Identify one component of the systems-thinking model • List technologies used at school • Follow given directions to solve a problem. • Describe ownership rights. • Recognize that using a password helps protect the privacy of information. • Identify safe technology behaviors.

Second Grade Social Interactions
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**2.SI.1.1 Describe ownership rights of technology-created work (copyright).** **Examples**: book report, art project
(Application)	**2.SI.1.2 Utilize safe technology behaviors.** • Use an individual password to protect the privacy of information. **Examples:** email, internet (games, registration, sales, pop-ups)

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**2.SI.2.1 Identify advantages of tools/technology in the community.** **Examples**: cable TV, bar code scanners

Second Grade Social Interactions

Performance Descriptors

Advanced	**Second grade students performing at the advanced level:** • Describe appropriate and inappropriate uses of any creative work. • Use passwords with keyboard modifiers (shift, etc.). • Practice safe online behaviors. • Explain how a community is improved through the use of tools/technology.
Proficient	**Second grade students performing at the proficient level:** • Describe ownership rights of technology-created work. • Use an individual password to protect the privacy of information. • Utilize safe technology behaviors. • Identify advantages of tools/technology in the community.
Basic	**Second grade students performing at the basic level:** • Describe ownership rights. • Recognize that using a password helps protect the privacy of information. • Identify safe technology behaviors. • Identify one advantage of tools/technology in the community.

Second Grade Information and Communication Tools
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**2.CT.1.1 Demonstrate saving and retrieving a file to/from a specified, existing folder with assistance.**
	✓ Identify and use correct finger placement of home row keys.

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**2.CT.2.1 Use a directed variety of media for learning activities.** **Examples**: software, hardware, dictionary, encyclopedia, audio-video player, phones, web resources, inter-active books **Example:** Social Studies 2.US.1.1 • Identify hardware/software problems.

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**2.CT.3.1 Select an appropriate tool for a task given a list of technologies.** **Example:** To write letters using a word processing program not a spreadsheet program.

Second Grade Information and Communication Tools
Performance Descriptors

Advanced	**Second grade students performing at the advanced level:** • Independently create a folder to save and retrieve a file. • Independently select appropriate resources for independent and directed learning activities. • Apply an appropriate tool for a given task.
Proficient	**Second grade students performing at the proficient level:** • Demonstrate saving and retrieving a file to/from a specified, existing folder with assistance. • Use a directed variety of software, hardware, dictionary, encyclopedia, audio-video player, phones, web resources, and/or inter-active books for learning activities. • Select an appropriate tool for a task given a list of technologies.
Basic	**Second grade students performing at the basic level:** • Save or open a file with assistance. • Use a directed variety of software and hardware resources for learning activities. • Select an appropriate tool for a task given a choice of two technologies.

Second Grade Information and Communication Processes
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**2.CP.1.1 With assistance, demonstrate the ability to work with others when using technology tools to convey ideas or illustrate simple concepts.** **Examples:** Web quest, DDN sessions, email

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**2.CP.2.1 Use information technologies to communicate and share an idea, with assistance.** **Examples**: Email, Power Point

Information and Communication Processes

Performance Descriptors

Advanced	**Second grade students performing at the advanced level:** • Independently demonstrate the ability to work with others when using technology tools to convey ideas or illustrate simple concepts • Describe how a message communicated through information technology is affected by an audience.
Proficient	**Second grade students performing at the proficient level:** • With assistance, demonstrate the ability to work with others when using technology tools to convey ideas or illustrate simple concepts. • Use information technologies to communicate and share an idea with assistance.
Basic	**Second grade students performing at the basic level:** • With assistance share their ideas with a partner using technology. • State and share an idea.

Second Grade Information Literacy and Decision Making
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**2.IL.1.1 Select from several teacher-selected Internet sites to locate information.**
	✓ Use keywords with assistance as a search strategy. **Examples**: Yahooligans, encyclopedia

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**2.IL.2.1 Distinguish among fact, fiction, and opinion.** **Example:** Dogs are animals, dogs are rocks, dogs are better than cats

Second Grade Information Literacy and Decision Making
Performance Descriptors

Advanced	**Second grade students performing at the advanced level:** • Independently search to locate information from the Internet. • Generate a fact, fiction, and an opinion for a given topic.
Proficient	**Second grade students performing at the proficient level:** • Select from several teacher-selected Internet sites to locate information. • Distinguish among fact, fiction, and opinion.
Basic	**Second grade students performing at the basic level:** • Locate information from a teacher-selected Internet site. • Distinguish between fact and fiction.

NATURE, CONCEPTS AND SYSTEMS
(SYSTEMS THINKING, INTERACTIONS, AND DESIGN)
K-2

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology.

Kindergarten	First Grade	Second Grade
K.NC.1.1 Identify three human-made objects. (Knowledge)	1.NC.1.1 Distinguish between the natural and human-made world. (Analysis)	2.NC.1.1 Describe the progression of technology. (Comprehension)
	1.NC.1.2) Describe how people use tools. (Comprehension)	

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Kindergarten	First Grade	Second Grade
K.NC.2.1 Identify that parts make a whole. (Knowledge)	1.NC.2.1 Identify common systems in school and home. (Knowledge)	2.NC.2.1) Define each component in a systems-thinking model. (Comprehension)

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Kindergarten	First Grade	Second Grade
K.NC.3.1 Identify technologies used in the home. (Knowledge)	1.NC.3.1 Illustrate technologies used at school. (Comprehension)	2.NC.3.1 Classify whether technologies are used in the home, school, or community. (Analysis)

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Kindergarten	First Grade	Second Grade
✓ Identify a problem.	1.NC.4.1 Use a simplified version of the design process to solve problems. (Application)	2.NC.4.1 Choose among given alternatives to solve a problem. (Application)
✓ Gather information to solve a problem.	✓ Identify possible alternative solutions to problems.	
✓ Identify a solution.		

SOCIAL INTERACTIONS
K-2

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Kindergarten	First Grade	Second Grade
K.SI.1.1 Demonstrate respect for the work of others. (Comprehension)	1.SI.1.1 Identify ownership rights of student-created work. (Knowledge)	2.SI.1.1 Describe ownership rights of technology-created work (copyright). (Comprehension)
K.SI.1.2 Identify five ways to respect equipment. (Comprehension)	1.SI.1.2 Identify safe technology behaviors. (Knowledge)	2.SI.1.2 Utilize appropriate and safe technology behaviors. (Application)
✓ Recognize that using a password helps protect the privacy of information.		
✓ Identify safe technology behaviors.		

Indicator 2: Students investigate the advantages and disadvantages of technology.

Kindergarten	First Grade	Second Grade
K.SI.2.1 Recognize that an advantage is desirable and that a disadvantage is undesirable. (Knowledge)	1.SI.2.1 List advantages of tools/technology at home and at school. (Knowledge)	2.SI.2.1 Identify advantages of tools/technology in the community. (Knowledge)

INFORMATION AND COMMUNICATION TOOLS
K-2

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Kindergarten	First Grade	Second Grade
K.CT.1.1 Describe technology using accurate terminology. (Knowledge)	1.CT.1.1 Use basic file management commands (New, Open, Save, Print). (Application)	2.CT.1.1 Demonstrate saving and retrieving a file to/from a specified, existing folder with assistance. (Comprehension)
K.CT.1.2 Use input/output devices to operate various technologies. (Application)	1.CT.1.2 Use letters, numbers, and special keys on the keyboard. (Application)	✓ Identify and use correct finger placement of home row keys.
✓ Identify basic file management commands (New, Open, Save, Print.)	✓ Recognize the differences between files and folders.	
✓ Locate letters, numbers, and special keys on the keyboard.		

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Kindergarten	First Grade	Second Grade
	✓ Use a directed variety of media and technology resources to create a product.	2.CT.2.1 Use a directed variety of media for learning activities. (Application)

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Kindergarten	First Grade	Second Grade
K.CT.3.1 Recognize technology as a tool to help complete a task. (Knowledge)	1.CT.3.1 Describe five technology tools and their uses. (Knowledge)	2.CT.3.1 Select an appropriate tool for a task given a list of technologies. (Knowledge)

INFORMATION AND COMMUNICATION PROCESSES
K-2

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Kindergarten	First Grade	Second Grade
	✓ Participate with others when using technology tools to convey ideas or illustrate simple concepts.	2.CP.1.1 With assistance, demonstrate the ability to work with others when using technology tools to convey ideas or illustrate simple concepts. (Comprehension)

Indicator 2: Students use a variety of technologies to exchange information and ideas for an identified purpose.

Kindergarten	First Grade	Second Grade
	✓ With assistance use a variety of technologies to communicate ideas.	2.CP.2.1 With assistance, use a variety of technologies to communicate and share an idea. (Application)

INFORMATION LITERACY AND DECISION MAKING

K-2

Indicator 1: Students use technology to locate and acquire information.

Kindergarten	First Grade	Second Grade
K.IL.1.1 Identify what information is. (Knowledge)	1.IL.1.1 Identify where information can be found. (Knowledge)	2.IL.1.1 Select from several teacher-selected internet sites to locate information. (Knowledge)
K.IL.1.2 Recognize that information can be represented in a variety of ways. (Knowledge)		✓ Use keywords with assistance as a search strategy.

Indicator 2: Students determine the reliability and relevancy of information.

Kindergarten	First Grade	Second Grade
✓ Distinguish between fact and fiction.	✓ Distinguish between fact and opinion	2.IL.2.1 Distinguish among fact, fiction, and opinion. (Analysis)

Third Grade Nature, Concepts and Systems (systems thinking, interactions, and design) Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples

(Knowledge)	**3.NC.1.1 Describe ways that creative thinking, economics and culture influence the development of technology over time.**
	• Develop a progression timeline of technology to show change over time
	  o Information/communication
	  o Manufacturing
	  o Transportation
	  o Medical
	  o Energy
	  o Construction
	  o Agricultural
	• Describe Influences of the past present and future
	• Interpret and respond to diverse works from various cultures and time periods.
	Example: Transition from the agrarian age to the industrial age changed with the technology invention of the assembly line process.

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**3.NC.2.1 Illustrate, using a flow chart, the parts of the system model as it relates to technology.** • Explain how the components work together to make a system. **Example**: input-information on the keyboard, process- typing, output-printed paper document, feedback-grade. • Define a system. (input, process, output, feedback). **Example**: electric pencil sharpener: put the pencil in, sharpen it, pull it out and decide that it is sharp enough. **Example**: Science 3.L.3.1

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**3.NC.3.1 Categorize technologies into home, school, work or global use.** **Example:** Different technologies are used in different locations e.g. home-lawnmower, school-Smart board, global-Internet

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**3.NC.4.1 Produce a variety of solutions to a defined problem.** **Example**: sending a letter = do you want personalization or speed

Third Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**Third grade students performing at the advanced level:** • Design a technology timeline and explain how creative thinking, economics and culture have influenced various periods of time. • Explain the use of one technology in a variety of locations. • Explain the benefits of each solution given
Proficient	**Third grade students performing at the proficient level:** • Describe ways that creative thinking, economics, and culture influence the development of technology over time. • Diagram all components of systems thinking model as it relates to technology • Classify technologies into home, school or global use • Define a problem and produce a variety of solutions
Basic	**Third grade students performing at the basic level:** • Given a timeline, Identify three major technology events. • Illustrate and label two of the four parts of the systems thinking model. • List technology at school • Given a defined problem can produce two solutions

Third Grade Social Interactions
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**3.SI.1.1 Distinguish among different types of illegal and unethical technology usage.** • Plagiarism-copy pre-existing work • Hacking-breaking into secured location • Pirating- break copyrighting • Licensing- individual vs. site **Example**: Super Mario program copied for all my buddies
(Application)	**3.SI.1.2 Implement safety precautions while online.** **Example**: Protecting personal info. during a simulated safe conversation via Chat/Instant Messaging/ Email
(Knowledge)	**3.SI.1.3 Identify how to cite a source.**

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**3.SI.2.1 Recognize the advantages and disadvantages of technology on the individual.** • Summarize how assistive technologies can benefit persons with disabilities. **Example:** personal computer, PDA, GPS, cell phones, Computer/software for the blind

Third Grade Social Interactions
Performance Descriptors

Advanced	**Third grade students performing at the advanced level:** • Communicate the consequences of illegal and unethical use of technology • Practice safety precautions while online and can recognize unsafe use by others. • Apply proper time and place for citation • Predict how technologies might change in the future to assist persons with disabilities • Predict the advantages and disadvantages of a given technology on the individual
Proficient	**Third grade students performing at the proficient level:** • Distinguish among different types of illegal and unethical technology usage • Demonstrate safety precautions while online • Identify how to cite a source • Explain how technologies assist persons with learning/physical/or developmental disabilities • Compare and contrast a given technology's advantages and disadvantages on the individual
Basic	**Third grade students performing at the basic level:** • List a type of illegal technology usage • List a type of unethical usage • Recognize some safety precautions while online • Locate a source to be identified • List technologies that can assist persons with a disability • List a personal advantage and disadvantage to technology

Third Grade Information and Communication Tools
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**3.CT.1.1 Identify parts of an operating system environment** **Example:** Desktop, start menu, quick-launch bar/ dock, icons, and menu bar
(Comprehension)	**3.CT.1.2 Demonstrate use of home row keyboarding** ✓ Introduce remaining keys **Example:** Have students use a paper keyboard and practice positions of keys, use a keyboard that is no longer in use to practice typing. ✓ Demonstrate proper posture while typing **Example:** Sitting up, feet on floor, arms parallel to keyboard, fingers curved and upright, and wrists at neutral
(Comprehension)	**3.CT.1.3 Demonstrate proper care in the use of hardware, software, peripherals, and storage media.**
(Application)	**3.CT.1.4 Create, save and retrieve folders.** • Create folders • Access the server
	✓ Identify input/output devices and other peripherals. -Knowledge **Example:** Digital camera, scanner, printer, external media storage (CD, floppy, flash drive)

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**3.CT.2.1 Use a word processor to develop a product.** • Incorporating specific formatting **Example:** bold, italics, underline, font size, color and type
(Application)	**3.CT.2.2 Develop documents in design applications.** **Example:** Inspiration, Kidpix, MS paint **Example:** Writing 3.LVS.1.4

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**3.CT.3.1 Differentiate between information tools and technological innovations.** • Tools are one or two communication devices. i.e. A tool can be a one way communication (record player) or two way communication (recording a lecture to playback at a later date). • Innovation makes life easier. • Tools exist, innovations are brand new • Discuss how innovations become information tools. **Example:** Television, telegraph, internet, cell phones **Example:** A tool can be a one way communication (record player) or two way communication (recording a lecture to playback at a later date). **Example:** Science 3.P.3.3

Third Grade Information and Communication Tools

Performance Descriptors

Advanced	**Third grade students performing at the advanced level:** • Explain the role of each part of a computer environment • Access menu bars and use some keyboard/toolbar shortcuts independently • Move and manage files and folders independently. • Demonstrate use of home row keyboarding using touch typing techniques • Develop a document in a design or word processing application with advanced features • Select and justify multiple tools to complete a task. • Based on current tools, predict an innovations
Proficient	**Third grade students performing at the proficient level:** • Identify parts of an operating system environment. • Access and use menu bars and sub-commands • Demonstrate use of home row keyboarding • Demonstrate proper care of technology • Create, save and retrieve files • Given specific formatting criteria, use a word processor to develop a product • Develop documents in a design application • State the difference between technology tools and innovations • Select tools based on a specific tasks.
Basic	**Third grade students performing at the basic level:** • Label parts of a computer desktop environment • Access a menu bar with assistance • Demonstrate proper care of mouse, keyboard and cpu • Identify Home Row Keys • Create, save, and retrieve files with assistance • Create a word processing document with assistance • Given a created document in a design application, make one to two changes in the product • State one technology tool and innovation.

	• Select a tool for a given task. • Identify a tool which may be used to best solve a task

Third Grade Information and Communication Processes
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**3.CP.1.1 Participate within groups to produce a digital output for a given assignment.** **Example:** Collaborate in groups of two or more individuals to create a short story with inserted graphics.

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**3.CP.2.1 Describe how a message communicated through information technology is affected by an audience.** • Identify ways audience receives information (text, graphics, audio, video) • Type of audiences • Location of audience • Experience of audience **Example:** Using different information technologies create an invitation to invite the public to a school event. **Example:** Science 3.P.3.3

Third Grade Information and Communication Processes

Performance Descriptors

Advanced	**Third grade students performing at the advanced level:** • Participate within groups to produce a digital output using a variety of resources for a given assignment • Describe how an audience affects media and format • Justify their reasoning for choosing a communication tool to exchange information
Proficient	**Third grade students performing at the proficient level:** • Collaboratively create a digital output for an assignment. • Identify audience factors that affect a presentation • Identify, describe, and select the best media for communication
Basic	**Third grade students performing at the basic level:** • Use a pre-created digital output with a partner for a given assignment • List types of audiences • Given a media source can use it to communicate with an intended audience

Third Grade Information Literacy and Decision Making
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**3.IL.1.1 Perform a keyword/phrase search on existing databases on a specified topic.** • Local databases • Online databases **Example:** Existing databases have data already created in a structure for an end user. They can include proprietary and free sources- Digital Encyclopedia, dictionary.com, google.com, ask.com • Find results based on a question • Teacher driven topic **Example:** Search for Social Studies or Science topics on a database or website.

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**3.IL.2.1 Identify author, date, and subject within different sources of information.** • Locate source information i.e. Open a webpage and be able to find this info on that page • Identify types of resources i.e. journal, newspaper, books, encyclopedias **Example:** Find author information on three books or articles.

Third Grade Information Literacy and Decision Making
Performance Descriptors

Advanced	**Third grade students performing at the advanced level:** • Can extend the search results of the specified topic beyond to a general topic • Correctly cite author, date and subject of the resource • Select the best type of resource to use based on need
Proficient	**Third grade students performing at the proficient level:** • Can generate multiple relevant search results relating to a specific topic. • Locate author, date and subject within the resource • Identify types of resources
Basic	**Third grade students performing at the basic level:** • Can find a search result relating to a specific topic • Locate author, date, and subject with assistance

Fourth Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**4.NC.1.1 Distinguish how changes in technological tools affect outcomes –** Ex: faster computers = more/better data Charts and graphs are more commonly made by using software programs rather than by hand. Using a calculator in Math. • Explain the relationship between the tool, its development, and productivity. **Example:** the faster the tool the more productivity is gained. Combine (farming machine) vs. hand tools • Explain how creative thinking and economic and cultural influences shape technology.

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**4.NC.2.1 Determine the effects of feedback in the system model.** **Example:** explain how the desire to improve the grade affects the rest of the system. • Define types of feedback Person to person **Example:** How the audience reacts to a presentation. Person to machine **Example:** Using a web page counter to see hits on a page.

	Machine to person **Example:** A machine checking spelling and grammatical errors. Machine to machine **Example:** Information sent from a computer to a printer. **Example:** Science 4.L.3.1 **Example:** Science 4.E.1.1
(Knowledge)	**4.NC.2.2 Identify the resources needed in a system in order for it to work.** **Example:** Water Cycle – needs water and heat for the process of evaporation, condensation, precipitation to occur **Example**: Science 4.L.3.1 **Example**: Science 4.E.1.1

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**4.NC.3.1 Identify examples of how technology changes have affected society** • Identify technology's affects on various cultures **Example:** Technologically literate cultures vs. technologically illiterate cultures • Identify ways changes in technology have affected a cultures history to determine how new changes will impact its future • Identify various sub-cultures with in a society that have alternate views of technology **Example:** religious views of internet usage **Example:** Science 4.S.1.2 **Example:** Social Studies 3.W.1.1

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**4.NC.4.1 Adapt a structured method to produce a variety of solutions to a given problem using the design process. -** **Example:** Brainstorming, clustering, outlining, mind-mapping, graphic organizers • Apply the parts of the design process 1. Define the problem 2. Gather information 3. Create alternative solutions 4. Select optimum solution 5. Develop and produce solution 6. Test solution 7. Report results **Example**: Science 4.S.1.1 **Example**: Science 4.L.1.1

Fourth Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • Design a technology of the future incorporating current technologies • Predict the effects of feedback within the systems thinking model to determine an outcome. • Describe the role of resources needed in a system in order for it to work. • Differentiate changes in technology at home, school and community. • Explain why some culture choose not to embrace technologies • Predict how future technologies will impact various cultures • Explain the benefits of using the design process when finding solutions to a defined problem. • Explain the benefits of using different structures to solve problems
Proficient	**Fourth grade students performing at the proficient level:** • Distinguish how changes in technological tools affect outcomes • Determine the effects of feedback in the systems thinking model. • Identify examples of how technology changes have affected society • List ways changes in technology have affected a culture's history • Describe why some subcultures have different views of technology • Given a scenario, students can apply steps 1-7 in the design process to develop multiple solutions
Basic	**Fourth grade students performing at the basic level:** • Identify the change in the outcome as a result of a change in the technological tool. • Identify one resource needed in a system • Define two types of feedback • Illustrate a change in technology at school, home, and work. • List a sub-culture which has an alternative view of technology

	• List the steps of the design process • Adapt one method to produce more than one solution to a problem

Fourth Grade Social Interactions
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**4.SI.1.1 Compare and contrast consequences of illegal and unethical technology use** **Example**: Having privileges revoked for looking at inappropriate websites. **Example**: Social Studies 4.C.2.1 • Identify the difference between ethical (right) and unethical (wrong) usage • Define consequences of unethical and illegal uses of technology in different environments. o Unethical examples ▪ Home-grounded school-detention o Illegal examples: ▪ Copying a copyrighted cd is illegal in all environments but depending on the environment different consequences might occur -Probation, jail time, loss of privilege or job
(Synthesis)	**4.SI. 1.2 Communicate issues relating to online safety** • Viruses • Social networking sites o **i.e.** myspace.com, facebook.com, chat rooms • Communication etiquette **Example:** Students understand the dangers of giving too much information online.

(Application)	**4.SI.1.3 Determine where and when to cite a source of information.** **Example:** Apply proper citing of information sources in created works when referencing information from an online article.
(Knowledge)	**4.SI.1.4 Identify cultural issues relating to technology.** • Background differences affect societies view of legal and illegal consequence. **Example:** How colonial cultures and third world countries have different views of technology

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**4.SI.2.1 Distinguish advantages and disadvantages of technology on society.** **Example:** Integration of technology can result in loss of jobs for employees but greater productivity for the company. **Example:** Unfiltered information online can result in identity theft.

Fourth Grade Social Interactions
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • Scan files and folders for viruses. • Predict how changes in technology will affect a cultures future • Predict where/how technology will change and how this will affect society's future
Proficient	**Fourth grade students performing at the proficient level:** • Compare and contrast consequences of illegal and unethical technology use. • Communicate issues relating to online safety. • Determine where and when to cite a source of information. • Identify cultural issues relating to technology. • Distinguish advantages and disadvantages of technology on society
Basic	**Fourth grade students performing at the basic level:** • Compare a consequence of illegal technology usage with a consequence of unethical technology usage • List an issue related to online safety in a social networking environment • Given a source, can determine where to cite the source • List 2 ways of how technology has assisted, and been a disadvantage to society

Fourth Grade Information and Communication Tools
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**4.CT.1.1 Demonstrate how to use parts of Application windows and menu options.** • Copy • Cut, • Paste • Spell check • insert **Example:** Student can move document windows, access menus, and navigate toolbars.
(Comprehension)	**4.CT.1.2 Demonstrate the correct use of all letters, punctuation, symbol and command keys using proper techniques.**
(Application)	**4.CT.1.3 Use input/output devices and other peripherals.** **Example:** Students can take a digital photograph and transfer it to the computer and insert it into a document.
	4.CT.1.4 Manage and maintain files and folders independently application. **Example:** Create, save, retrieve, and organize files and folders using server technologies **Example:** Delete old/unused files **Example:** Identify multiple locations to save files and folders
(Analysis)	✓ Compare and contrast different ways of accessing commonly used commands. **Example:** Using multiple ways of completing the same function like print and save (ctrl+s or File> Save).

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**4.CT.2.1 Use presentation application to develop a product.** **Example:** Including sound and multimedia in a presentation for class **Example:** Writing 4.LVS.1.3
	✓ Develop documents in design applications incorporating rich multimedia

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**4.CT.3.1 Explain how problems are solved through innovations.** • Identify how and why innovations occur • Compare different fields of innovations • Apply the design process to create an innovation **Example:** Blender =convenience, phone= communication, use word processing to write a letter, use a spreadsheet to collect data. Manufacturing uses robots, assembly lines.

Fourth Grade Information and Communication Tools
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • Customize toolbars within applications • Determine the best external storage device to use for a specific task • Move and manage folders in an organized way to a variety of locations • Key 10 words per minute with 90% accuracy using proper touch typing techniques. • Develop a presentation documents with embedded media • Create media with design application without assistance • Given a set of problems, students will determine which technology best produces wanted output
Proficient	**Fourth grade students performing at the proficient level:** • Demonstrate use for different parts of Application Windows • Implement use of toolbars buttons and navigation of menu options. • Use input/output devices and other peripherals. • Demonstrate the correct use of all letters, punctuation, symbol, and command keys. • Use touch typing techniques in timed writings. • Manage and maintain folders and files, • Develop documents in a presentations application incorporating media • Explain how problems are solved through innovation.
Basic	**Fourth grade students performing at the basic level:** • Label parts of Application Windows • Use toolbar shortcuts with assistance • Identify and use external devices for a specific task • Key up to 10 words per minute using some touch typing techniques • Manage and maintain folders and files with assistance • Develop a document using a presentation application

	• Explain how an innovation solved a problem

Fourth Grade Information and Communication Processes
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**4.CP.1.1 Utilize virtual collaboration environments to contribute within a group to the production of a digital output** • Communicate ideas, opinions, revisions through electronic communication devices either asynchronously or synchronously **Example:** Utilize email or a bulletin board to collaborate on the development of a web presentation

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**4.CP.2.1 Select the best way to deliver information and ideas based on the audience** • Factors of the audience i.e. age, race, religion- Peers vs. Adults • Formal/informal audience • Presentation format • Media forms used in the presentation • Intended and unintended audiences **Example:** Determine audience level (student or parent) and create a presentation geared at their interests

Fourth Grade Information and Communication Processes
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • Create a media-rich digital output utilizing many virtual collaboration environments • Use communication tools to share, revise and edit a digital document at the same time • Adapt a presentation to multiple audiences using a variety of methods depending on the audience.
Proficient	**Fourth grade students performing at the proficient level:** • Create a digital output utilizing a virtual collaboration environment • Selects tools that will be most effective when exchanging information at the same time. • Select the best way to deliver a presentation/project based on the audience
Basic	**Fourth grade students performing at the basic level:** • Create a digital output for a given assignment with teacher directed assistance in the virtual collaboration environment • Use a given tool when exchanging information at the same time.

Fourth Grade Information Literacy and Decision Making
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**4.IL.1.1 Given a general topic predict what key details will be needed to refine a search in a database for a specific purpose.** • Validate the prediction with a computer generated search. **Examples:** Use a search engine to find all Presidents with birthdays this month, or Hoofed mammals specifically found in North America

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**4.IL.2.1 Evaluate the relevancy of the resource.** • Up-to-date and accurate information. • Analyze the author date and subject for accuracy, and consistency **Example:** Filtering through search results to find the hurricane season in Miami and not sports team 'Miami Hurricanes'.

Fourth Grade Information Literacy and Decision Making
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • Evaluate relevant simple search results to greater focus the topic • Compare and contrast multiple sources to determine the order of relevancy
Proficient	**Fourth grade students performing at the proficient level:** • Generate relevant simple search results for an identified broad topic using existing databases or web-sites • Evaluate the relevancy of a resource
Basic	**Fourth grade students performing at the basic level:** • Given an existing database can generate a simple search for an identified broad topic • Determine if a resource is relevance based on two factors

Fifth Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**5.NC.1.1 Describe the historical evolution of technological inventions as societies wants and needs change.** • Describe flow of information • Describe the impact of technology used at various points in history **Example:** Recognize the technology timeline affects on news events - WWII hours before we got information(telegraph, radio), 9-11 live broadcast(internet streaming, television)
(Application)	**5.NC.1.2 Report on the relationship between technological inventions and societal changes.** • Describe how recent changes in technological inventions have affected processes in and on society. **Example:** unfiltered and abundant information can have a desensitizing affect on society.
(Knowledge)	**5.NC.1.3 Identify ways people have adapted the natural world to meet their needs and wants** • Factors that influence the adaptations economics culture creative thinking **Example**: Using technology in farming to increase a crops productivity

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**5.NC.2.1 Evaluate what changes need to be made within a systems model to accomplish a goal.** • Determine how systems are affected by the resources. • Availability, compatibility, security, and updates. **Example:** the overall process of writing a paper with intent to score an "A". **Example:** Science 5.S.1.1 **Example:** Science 5.S.1.2 **Example:** Science 5.L.3.1
(Evaluation)	**5.NC.2.2 Evaluate how changes in a systems model affect the goal.** **Example:** How ongoing changes will affect the outcome. **Example:** Science 5.S.1.1 **Example:** Science 5.S.1.2 **Example:** Science 5.L.3.1

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**5.NC.3.1 Analyze how careers have changed due to changes in technology.** **Example:** Teachers have had to become more technology savvy as new technology is integrated in to the classroom.

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**5.NC.4.1 Evaluate solutions for positive and negative aspects in order to choose the optimum solution.** **Example:** Best way to cleanup an oil spill, evaluating harm to environment and wildlife and economical impact.

Fifth Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**Fifth grade students performing at the advanced level:** • Predict a technology of the future incorporating future technologies • Justify the reason why a change needs to occur in a process • Implement a change in a systems model and justify the reasons for change. • Predict how careers will change due to changes in technology. • Defend an optimum solution.
Proficient	**Fifth grade students performing at the proficient level:** • Report how recent changes in technology have affected processes in and on society • List 3 technologies from home that didn't exist when they were born • Use a provided diagram to evaluate necessary changes in input and process to improve an output (product). • Describe the progression of technology in career field • Evaluate a variety of solutions for positive and negative aspects in order to choose the optimum result.
Basic	**Fifth grade students performing at the basic level:** • Provide 1 technologies from home that didn't exist when they were born • Explain how changes to input and process will affect a goal • Match careers with a specific type of technology • Evaluate if a single solution is positive or negative using the design process

Fifth Grade Social Interactions
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**5.SI.1.1 Describe the Impact of unethical and illegal technology usage on the individual and society as a system** • Identify the role frequency and duration on has on illegal usage. • Identify reasons rules exist to protect individual created work **Example:** The results some individuals have faced for creating computer viruses that affected businesses **Example:** Consequences of plagiarism
(Synthesis)	**5.SI.1.2 Integrate personal safety precautions and etiquette while online** • Scanning files, • not giving out personal information • Communication etiquette (blogs, email, chat rooms) • Network etiquette **Example:** Determine the difference between safe and unsafe behaviors online.
(Application)	**5.SI.1.3 Implement proper citation for a variety of information sources in created works** **Example:** Citing author, source, and date for sources from Internet, cd, wiki, blog, etc. **Example:** Reading 5.R.5.1
(Comprehension)	**5.SI.1.4 Describe how technology is affecting a cultures heritage** **Example**: Colonies adapting technology into schools, farms, & other work. **Example:** Reading 5.R.3.1

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**5.SI.2.1 Evaluate intended and unintended results of technology** • Inventions have an impact on our daily lives **Examples:** silly putty, tang, sticky notes, smaller computers, fuel efficient cars

Fifth Grade Social Interactions
Performance Descriptors

Advanced	**Fifth grade students performing at the advanced level:** • Justify consequences of inappropriate conduct • Explain why there is a needs for safety precautions • Cite work from a variety of online sources • Predict how technology will continue to change a cultures heritage • Defend and unintended results of technology as either an advantage or a disadvantage on society
Proficient	**Fifth grade students performing at the proficient level:** • Describe how technology has affected a cultures heritage • Describe the impact of unethical and illegal technology usage on the individual and society. • Integrate personal safety precautions and etiquette while online. • Implement proper citation of information sources in created works. • Evaluate intended and unintended results of technology
Basic	**Fifth grade students performing at the basic level:** • Recognize inappropriate uses of technology • Demonstrate safety precautions while online (e.g. virus scanning, personal information). • Recognize the need for proper citing of electronic information in created works. • Label results of technology as either intended or unintended

Fifth Grade Information and Communication Tools
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**5.CT.1.1 Personalize application menus and toolbars for greater productivity.** **Example:** Moving cut/copy/paste buttons to right side of screen for quicker access
(Application)	**5.CT.1.2 Key 15 words per minute using touch typing techniques from hard copy or typing program.** • Number Keys, Shift, Punctuation, Return/Enter, Space Bar and Alphabet Keys • Sitting up, feet on floor, arms parallel to keyboard, fingers curved and upright, and wrists at neutral
(Analysis)	**5.CT.1.3 Compare the difference between input/output devices and other peripherals.** **Examples:** When to use a cell phone, Digital camera, scanner, MP3 device, Navigation device, PDA
(Application)	**5.CT.1.4 Demonstrate the ability to transfer data between devices.** **Examples:** Move a document from hard drive to Flash Drive, Floppy Disk, CD.
(Analysis)	**5.CT.1.5 Compare and contrast different ways of accessing commonly used commands** **Example:** Using shortcut keys and menus to complete common functions • Utilize keyboard shortcut commands -Application PC **Example:**: ctrl+s (save), ctrl+v (copy) Mac **Example:**: apple symbol+s(save) Print, Undo, save

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**5.CT.2.1 Use a spreadsheet application to create a product.**
(Application)	**5.CT.2.2Develop documents in design applications incorporating rich multimedia.** **Examples:** iMovie, iPhoto, Windows Media **Example:** Edit photos using a photo editor (rotate, crop, red-eye, brightness) **Example:** Writing 5.LVS.1.4

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**5.CT.3.1 Compare and contrast the functions and capabilities of technology tools.** **Example:**: Compare/contrast the function and capabilities of the word processing table, a database, and a spreadsheet for gathering data, processing data, performing calculations, and reporting results

Fifth Grade Information and Communication Tools
Performance Descriptors

Advanced	**Fifth grade students performing at the advanced level:** • Personalize keyboard short cuts based on needs • Recommend peripherals to use for a given task • Key 15 words per minute with 100% accuracy using proper touch typing techniques • Uses proper posture while keying without being prompted • Differentiate uses of storage devices and can decide which is best

	to use for a specific task • Create a product that uses a spreadsheet document incorporating a chart • Compare and contrast the benefits of the functions and capabilities of technological tools and innovations.
Proficient	**Fifth grade students performing at the proficient level:** • Customize application menus and toolbars • Use keyboard shortcuts for tasks • use multiple ways of completing the same function • Compare and contrast different ways of accessing commonly used commands • Key 15 words per minute with 90% accuracy using proper touch typing techniques • Demonstrate proper typing posture • Demonstrate the ability to use a portable transfer device • Compare differences between input/output devices • Create a spreadsheet document from data provided • Develop documents in a design application and utilize rich media • Compare and contrast the functions and capabilities of technological tools and innovations.
Basic	**Fifth grade students performing at the basic level:** • Customize application toolbars with assistance • Use a keyboard shortcut for commonly used task • Can use two ways of completing commonly used commands • Save and retrieve files and folders • Key up to 15 words per minute using some proper touch-typing techniques. • Uses proper typing position when prompted • Demonstrate the ability to use a portable transfer device with assistance • Compare two input and output devices • Navigate and enter data into a spreadsheet application • List the function and capability of a technological tool and innovation

Fifth Grade Information and Communication Processes
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**5.CP.1.1 Collaborate with other students outside the classroom utilizing distance technologies to create a media-rich product** • Video conferencing • Social networking web tools **Example:** students utilize a wiki to collaborate with other students around the world to present information

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**5.CP.2.1 Select the most effective tools to deliver information and ideas in different times and places.** • Asynchronous • Synchronous **Example:** Choose between synchronous and asynchronous communications and choose the correct medium for each. **Example:** Writing 5.LVS.1.4

Fifth Grade Information and Communication Processes
Performance Descriptors

Advanced	**Fifth grade students performing at the advanced level:** • Create and present a media-rich product through collaboration using many different distance technologies. • compare and contrast the benefits of different forms of media and formats may being used to share similar information
Proficient	**Fifth grade students performing at the proficient level:** • Collaborate with other students outside the classroom utilizing distance technologies to create a media-rich product • compare and contrast how different forms of media and formats may be used to share similar information depending on the intended audience
Basic	**Fifth grade students performing at the basic level:** • Collaborate with another student outside the classroom utilizing a given distance technology to create a product • Given an intended audience can Identify two types of media and/or formats used to share similar information

Fifth Grade Information Literacy and Decision Making
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**5.IL.1.1Produce relevant information using advanced search functions** EX: Boolean operators, advanced find • Apply different types of filters **Example:**. file format, word filter, domain filter Time filter when performing a web search **Example:** Reading 5.R.1.1 **Example:** Reading 5.R.4.1

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**5.IL.2.1 Apply a given evaluation tool to determine the reliability of an online source** • Identify website domains to determine reliability .com, .edu, .gov, .org, .biz; **Example:** Understand that generally a .com site is less reliable than a .gov, .edu, or .org domain **Example:** Identify information for validity, timeless, and accuracy of online information.

Fifth Grade Information Literacy and Decision Making
Performance Descriptors

Advanced	**Fifth grade students performing at the advanced level:** • Can apply multiple filters at a given time to produce relevant information using advance search features • Locate the evaluation tool and evaluate a website for relevancy and reliability.
Proficient	**Fifth grade students performing at the proficient level:** • Apply different types of filters to produce relevant information using advanced search functions • Evaluate the reliability of a website by using an evaluation tool
Basic	**Fifth grade students performing at the basic level:** • Given a filter can apply it to produce information • Determine if a resource is reliable based on the domain • Identify an online source as either fact and opinion

NATURE, CONCEPTS AND SYSTEMS
(SYSTEMS THINKING, INTERACTIONS, AND DESIGN)
3-5

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology.

Third Grade	Fourth Grade	Fifth Grade
3.NC.1.1 Describe ways that creative thinking, economics and culture influence the development of technology over time. (Knowledge)	4.NC.1.1 Distinguish how changes in technological tools affect outcomes. (Analysis)	5.NC.1.1 Describe the historical evolution of technological inventions as societies wants and needs change. (Knowledge)
		5.NC.1.2 Report on the relationship between technological inventions and societal changes.. (Application)
		5.NC.1.3 Identify ways people have adapted the natural world to meet their needs and wants. (Knowledge)

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Third Grade	Fourth Grade	Fifth Grade

3.NC.2.1 Illustrate, using a flow chart, the parts of the system model as it relates to technology. (Comprehension)	4.NC.2.1 Determine the effects of feedback in the system model. (Application)	5.NC.2.1 Evaluate what changes need to be made within a systems model to accomplish a goal. (Evaluation)
	4.NC.2.2 Identify the resources needed in a system in order for it to work. (Knowledge)	5.NC.2.2 Evaluate how changes in a systems model affect the goal. (Evaluation)

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Third Grade	Fourth Grade	Fifth Grade
3.NC.3.1 Classify technologies into home, school, work, or global use. (Comprehension)	4.NC.3.1 Identify examples of how technology changes have affected society. (Application)	5.NC.3.1 Analyze how careers have changed due to changes in technology. (Analysis)

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Third Grade	Fourth Grade	Fifth Grade
3.NC.4.1 Produce a variety of solutions to a defined problem. (Application)	4.NC.4.1 Adapt a structured method to produce a variety of solutions to a given problem using the design process. (Synthesis)	5.NC.4.1 Evaluate solutions for positive and negative aspects in order to choose the optimum solution. (Evaluation)

SOCIAL INTERACTIONS

3-5

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Third Grade	Fourth Grade	Fifth Grade
3.SI.1.1 Distinguish among different types of illegal and unethical technology usage. (Comprehension)	4.SI.1.1 compare and contrast consequences of illegal and unethical technology use. (Evaluation)	5.SI.1.1 Describe the Impact of unethical and illegal technology usage on the individual and society as a system. (Comprehension)
3.SI.1.2 Implement safety precautions while online. (Comprehension)	4.SI. 1.2 Communicate issues relating to online safety. (Synthesis)	5.SI.1.2 Integrate personal safety precautions and etiquette while online. (Synthesis)
3.SI.1.3 Identify how to cite a source. (Knowledge)	4.SI.1.3 Determine where and when to cite a source of information. (Application)	5.SI.1.3 Implement proper citation for a variety of information sources in created works. (Application)
	4.SI. 1.4 Identify cultural issues relating to technology. (Knowledge)	5.SI.1.4 Describe how technology is affecting a cultures heritage. (Comprehension)

Indicator 2: Students investigate the advantages and disadvantages of technology.

Third Grade	Fourth Grade	Fifth Grade
3.SI.2.1 Recognize the advantages and disadvantages of technology on the individual. (Analysis)	4.SI.2.1 Distinguish advantages and disadvantages of technology on society. (Analysis)	5.SI.2.1 Evaluate intended and unintended results of technology. (Evaluation)

INFORMATION AND COMMUNICATION TOOLS

3-5

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Third Grade	Fourth Grade	Fifth Grade
3.CT.1.1 Identify parts of an operating system environment. (Knowledge)	4.CT.1.1 Demonstrate how to use parts of Application windows and menu options. (Application)	5.CT.1.1 Personalize application menus and toolbars for greater productivity. (Synthesis)
3.CT.1.2 Demonstrate use of home row keyboarding. (Comprehension)	4.CT.1.2 Demonstrate the correct use of all letters, punctuation, symbol and command keys using proper techniques. (Comprehension)	5.CT.1.2 Key 15 words per minute using touch typing techniques from hard copy or typing program. (Application)
3.CT.1.3 Demonstrate proper care in the use of hardware, software, peripherals, and storage media. (Comprehension)	4.CT.1.3 Use input/output devices and other peripherals. (Application)	5.CT.1.3 Compare the difference between input/output devices and other peripherals. (Analysis)
3.CT.1.4 Create, save and retrieve folders. (Application)	4.CT.1.4 Manage and maintain files and folders independently application.	5.CT.1.4 Demonstrate the ability to transfer between devices. (Application)
	4.CT.1.5 Demonstrate the correct use of all letters, punctuation, symbol and command keys. (Comprehension)	5.CT.1.5 Compare and contrast different ways of accessing commonly used commands. (Analysis)

✓ Demonstrate proper posture while typing		
✓ Identify input/output devices and other peripherals. (Knowledge)	✓ Compare and contrast different ways of accessing commonly used commands. (Analysis)	

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Third Grade	Fourth Grade	Fifth Grade
3.CT.2.1 Use a word processor to develop a product. (Application)	4.CT.2.1 Use presentation application to develop a product. (Application)	5.CT.2.1 Use a spreadsheet application to create a product. (Application)
3.CT.2.2 Develop documents in design applications. (Application)	✓ Develop documents in design applications incorporating rich multimedia.	5.CT.2.2 Develop documents in design applications incorporating rich multimedia. (Application)

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Third Grade	Fourth Grade	Fifth Grade
3.CT.3.1 Differentiate between information tools and technological innovations. (Comprehension)	4.CT.3.1 Explain how problems are solved through innovations. (Comprehension)	5.CT.3.1 Compare and contrast the functions and capabilities of technology tools. (Analysis)

INFORMATION AND COMMUNICATION PROCESSES

3-5

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Third Grade	Fourth Grade	Fifth Grade
3.CP.1.1 Participate within groups to produce a digital output for a given assignment. (Application)	4.CP.1.1 Utilize virtual collaboration environments to contribute within a group to the production of a digital output. (Application)	5.CP.1.1 Collaborate with other students outside the classroom utilizing distance technologies to create a media-rich product. (Synthesis)

Indicator 2: Students use a variety of technologies to exchange information and ideas for an identified purpose.

Third Grade	Fourth Grade	Fifth Grade
3.CP.2.1 Describe how a message communicated through information technology is affected by an audience. (Application)	4.CP.2.1 Select the best way to deliver a presentation/project deliver information and ideas based on the audience. (Knowledge)	5.CP.2.1 Select the most effective tools to deliver information and ideas in different times and places. (Knowledge)

INFORMATION LITERACY AND DECISION MAKING

3-5

Indicator 1: Students use technology to locate and acquire information.

Third Grade	Fourth Grade	Fifth Grade
3.IL.1.1 Perform a keyword/phrase search on existing databases on a specified topic. (Application)	4.IL.1.1 Given a general topic predict what key details will be needed to refine a search in a database for a specific purpose. (Synthesis)	5.IL.1.1Produce relevant information using advanced search functions. (Application)

Indicator 2: Students determine the reliability and relevancy of information.

Third Grade	Fourth Grade	Fifth Grade
3.IL.2.1 Identify author, date, and subject within different sources of information. (Knowledge)	4.IL.2.1 evaluate the relevancy of the resource. (Evaluation)	5.IL.2.1 Apply a given evaluation tool to determine the reliability of an online source. (Application)

Sixth Grade Nature, Concepts and Systems
(Systems thinking, interactions, and design)
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**6.NC.1.1 Compare technology from the past to the present as a progression of input, process, output.** • Maps to GIS systems • Airmail to Email to Text Messaging • Pony Express to FedEx **Example:** Progression from two-way radio to cell phone; cell phone to merging of PDA and cell phone.

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**6.NC.2.1 Analyze the processes of technology systems.** **Example:** Graphically illustrate a laboratory procedure **Example:** Create a flow chart that illustrates the steps in packing and transporting household items when moving to a new home. • Diagram and Describe

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**6.NC.3.1 Identify careers in various technology areas.** **Example:** Students match career topics to the appropriate career cluster. **Example:** Students make a list of medical personnel that use technology in their job. • Identify technology careers in different career clusters • Identify careers in different technological systems o Medical o Agricultural o Energy and Power o Information and Communication o Transportation o Manufacturing o Construction

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**6.NC.4.1 Demonstrate the iterative (repetitive or cyclical) nature of the design process.** **Example:** construct repetitive models **Example:** During a basketball game students run the same play more than once. **Example:** In production, assembly process are repeated (Henry Ford) **Example:** In computer programming, a routine may be called multiple times.

Sixth Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • Based on the past, can design a model of a future technology component. (Input, process, output) • Evaluate processes of technology systems: Input, process, output and feedback • Compare careers in information and communication technology. • Critique the effectiveness of using the design process to problem-solve.
Proficient	**Sixth grade students performing at the proficient level:** • Compare technology from the past to the present as a progression of input, process, and output. • Analyze the four processes: Input, process, output and feedback. • Identify careers in information and communication technology. • Provide examples illustrating the iterative nature of the design process.
Basic	**Sixth grade students performing at the basic level:** • Identify progression in technology. • Classify the four processes: Input, process, output and feedback. • List careers in information and communication technology. • Apply the design process to existing problem-solving activities.

Sixth Grade Social Interactions
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**6.SI.1.1 Apply basic software/hardware solutions to protect themselves and others when using Information and Communications Technologies. (ICT)** **Example:** Determine where and when firewalls or other protection methods are necessary. • Firewalls • Software settings • Software updates • Wireless security

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**6.SI.2.1 Analyze how adoption of technological advancements produces change.** **Example:** Cotton gin, Rail transportation, Flight, Telephone **Example:** Social Studies 8.E.1.3 • Investigate past innovations

Sixth Grade Social Interactions

Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • Investigate additional ways to secure computers and networks. • Predict the impact of a new technological advancement.
Proficient	**Sixth grade students performing at the proficient level:** • Apply basic security settings within platform or applications. • Apply security settings to devices on a home network. • Generate examples of how adoption of technological advancements produces change.
Basic	**Sixth grade students performing at the basic level:** • List basic security settings within platform of applications • Understand that technology advancements produce change.

Sixth Grade Information and Communication Tools
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**6.CT.1.1 Demonstrate touch-type at 20 gwam with 2 or fewer errors per minute in a 3 minute time period.** • Transposing from hard copy **Example:** Students create electronic documents from hand-written or printed copy within the established parameters for time and accuracy.
(Analysis)	**6.CT.1.2 Investigate the functionality of various storage devices providing rationale for their uses.** • Articulate the use of media devices for a given use. **Example:** flash drive for easily transporting data. DVD for universal video sharing.

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**6.CT.2.1 Demonstrate ways to present and publish information using a variety of common applications.** • Compare various applications and the individual benefits each may provide. **Example:** Desktop publishing document for paper flyers. **Example:** Add graphs from a spreadsheet application into a word processing document. **Example:** Save an electronic file as a pdf file or other common standard format and publish to a web site.

(Synthesis)	**6.CT.2.2 Incorporate the use of software features for self-directed learning.** **Example:** Go to application integrated help system and find out how to do something they haven't been taught.

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**6.CT.3.1 Differentiate versions of software and file formats.** **Example:** Note the differences between certain file application extensions and the applications available to open such documents.

Sixth Grade Information and Communication Tools
Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • Explain the reasoning behind using posture and technique while keying • Type 20 gwam with 2 or fewer errors per minute. • Compare and contrast functionality of storage devices to determine the best solution. • Provide assistance to peers when creating a project using word processing, spreadsheet, and presentation software. • Utilize the help feature of an application, either online or in the application itself, to gain additional knowledge. • Convert documents from one file format to another
Proficient	**Sixth grade students performing at the proficient level:** • Demonstrate all of the components of posture and technique while keying • Type 15 gwam with 2 or fewer errors per minute. • Provide rationale for using a particular storage device. • Present or publish information using word processing, spreadsheet, and presentation software • Utilize the help feature of an application, not online, to gain additional knowledge. • Differentiate versions of software and file formats.
Basic	**Sixth grade students performing at the basic level:** • With prompting, demonstrate all of the components of posture and technique while keying • Type 10 gwam with 2 or fewer errors per minute. • Name a variety of storage devices. • Present or publish information using word-processing or presentation software. • Utilize the help feature of an application with guided help • Identify different versions of software and file formats

Sixth Grade Information and Communication Processes
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**6.CP.1.1 Identify the reasons for using technology tools for interpersonal interactions.** **Example:** Cell phone to quickly communicate, email/website to disseminate information to large groups. • Why or when these tools would or would not be used.

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**6.CP.2.1 Compare and contrast the effects of different forms of technology on different audiences.** **Example:** video conference collaboration versus text messaging

Sixth Grade Information and Communication Processes

Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • Put into practice 5 reasons how technology tools assist collaborative communication. • Contrast several technology tools used to communicate with others.
Proficient	**Sixth grade students performing at the proficient level:** • Identify five reasons of how technology tools assist in collaborative communication. • Compare 3 technology tools you would use to communicate with other.
Basic	**Sixth grade students performing at the basic level:** • Given a list, students can identify three technology tools used to communicate collaboratively. • List 3 technology tools used to communicate with others.

Sixth Grade Information Literacy and Decision Making
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**6.IL.1.1 Describe the organizational structure of searchable resources.** • key words • subject directories • meta-tags **Example:** library catalogues and search engines

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**6.IL.2.1 Select online sources based on a list of criteria.** • Choose based on source relevance **Example:** Research/University site versus community search site.

Sixth Grade Information Literacy and Decision Making
Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • Analyze a searchable resource to determine how effective searches can be performed. • Create a list of 5 criteria to evaluate online sources.
Proficient	**Sixth grade students performing at the proficient level:** • Describe the organizational structure of a given resource in terms of how key words, subject directories and meta-tags aid in using the resource. • Select 3 online sources that meet a given list of criteria.
Basic	**Sixth grade students performing at the basic level:** • Identify key words, subject directories and meta-tags. • Selects 1 online source that meets a given list of criteria.

Seventh Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**7.NC.1.1 Outline the implications of increasing computing potential over time.** Moore's Law - speed/space/size/cost **Example**: Rate in 1960s and 1970s as opposed to future rate of computing potential increase; microprocessors smaller and faster.

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**7.NC.2.1 Describe how subsystems work within a larger system.** • Identify subsystems within larger systems • Describe how they work within the larger system **Example:** the systems of the human body or structure of cells to tissues to organs to systems to organisms – • **Example:** Science 7.L.1.2 **Example:** how the transmission, electrical, and combustion systems of a car work together.

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**7.NC.3.1 Compare technology education skills required to pursue a variety of career paths.** **Example:** Understand complex technical information and be able to explain it to others. **Example:** Planning, organizing, communication, problem-solving, decision-making, adaptability

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**7.NC.4.1 Apply the universal nature of the design process to different situations.** **Example**: Take a manufacturing process for cars and apply the process to toys, candy or other reproducible items. **Example:** Follow reproducible steps throughout multiple trials in order to ensure a consistent outcome. • Construct charts or models.

Seventh Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**Seventh grade students performing at the advanced level:** • Support the implications of increasing computing potential over time. • Diagram the interrelationship between subsystems of a larger system • Evaluate technology education skills required to pursue a variety of career • Break down the individual steps of the design process to discuss its universal nature.
Proficient	**Seventh grade students performing at the proficient level:** • Analyze the implications of increasing computing potential over time.(Moore's Law - speed/space/size/cost) • Example – rate in 60s and 70s as opposed to future rate • Give 3 examples of subsystems working within a larger system and explain how they work together • Compare technology education skills required to pursue a variety of career paths. • Provide examples of the design process in use in 5 different settings.
Basic	**Seventh grade students performing at the basic level:** • Recognize that changes have occurred in speed, space, size and cost. • Give one example of a subsystem working within a larger system. • Identify technology education skills required to pursue a variety of career paths. • List the individual steps of the design process.

Seventh Grade Social Interactions
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	7.SI.1.1 **Correlate the illegal/unethical use of technology to the consequences as it relates to changes in society.** **Example:** Downloading copyrighted works negatively impacts the profits or intellectual property rights of the copyright holder and the related entities. • Copyright, DMCA, Creative Commons and other intellectual property rights, • Identity theft, costs, plagiarism, viruses, hacking, FERPA and CIPA, bullying and file sharing

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**7.SI.2.1 Determine which innovations in technology have produced the greatest impact on society.** • Positive and Negative **Example:** impact on productivity, health, environment and social interaction.

Seventh Grade Social Interactions

Performance Descriptors

Advanced	**Seventh grade students performing at the advanced level:** • Design policies addressing issues of illegal/unethical use of technology • Predict the impact of an innovation in technology on society.
Proficient	**Seventh grade students performing at the proficient level:** • Compare 5 ways technology has been used illegally/unethically and the impact that has had on society in terms of cost and other consequences. • Compare 3 innovations in technology to determine which had the greatest impact on society.
Basic	**Seventh grade students performing at the basic level:** • List examples of illegal/unethical use of technology. • Provide examples where innovations in technology affect people's lives.

Seventh Grade Information and Communication Tools
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**7.CT.1.1 Describe the factors that contribute to increased/decreased functionality in a technological system.** **Example:** Size of circuitry/power available increases processing potential.

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**7.CT.2.1 Recognize differences between applications and their uses.** **Example:** word processing vs. spreadsheet
(Comprehension)	**7.CT.2.2 Demonstrate ways that communication technologies interrelate.** **Example:** podcasting, video streaming , mobile multimedia devices (e.g. mobile phones with integrated audio/video players) **Example:** take 2 tools such as camera and computer and use them together
(Synthesis)	**7.CT.2.3 Create projects using technology applications and tools.** • Demonstrate touch-type at 25 gwam with 2 or fewer errors per minute in a 3 minute time period. – Application **Example:** create a paragraph in a word processing application

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**7.CT.3.1 Evaluate the effectiveness of new tools.** **Example:** Compare a list of criteria to judge which tool is most effective for a provided task.

Seventh Grade Information and Communication Tools
Performance Descriptors

Advanced	**Seventh grade students performing at the advanced level:** • Determine a plan to ensure that a technological system performs at optimum levels. • Critique applications on their effectiveness as wordprocessing, spreadsheet, presentation, and database. • Design projects that capitalize on the interrelationship of communication technologies. • Demonstrate a rate of more than 25 gwam with 2 or fewer errors while using keyed technology in a learning environment. • Develop strategies for adapting and applying new tools.
Proficient	**Seventh grade students performing at the proficient level:** • Describe the effect on technological systems when computer settings are changed, 3rd party utilities are installed, or additional components are added to a system. • Categorize applications into basic groups of wordprocessing, spreadsheet, presentation, and database. • Explain, given a list of communication technologies, how the technologies are interrelated. • Demonstrate a rate of at least 25 gwam with 2 or fewer errors while using keyed technology in a learning environment. • Evaluate the effectiveness of new tools.

Basic	**Seventh grade students performing at the basic level:** • List changes that can be made to computer settings, types of 3rd party utilities available, and types of components that can be added to a system. • Identity at least one application each for wordprocessing, spreadsheet, presentation, and database. • List 5 communication technologies. • Demonstrate a rate of at least 20 gwam with 2 or fewer errors while using keyed technology in a learning environment. • Generate a list of new tools**.**

Seventh Grade Information and Communication Processes
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**7.CP.1.1 Compare various ways in which you can use collaborative technologies to present information.** **Examples:** Personal communication, social communication, Civic responsibility**.**

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**7.CP.2.1 Apply information technology to design on demand communication.** **Example:** Use a graphic organizer to create a web page layout. • Organize • Plan

Seventh Grade Information and Communication Processes
Performance Descriptors

Advanced	**Seventh grade students performing at the advanced level:** • Implement presentation technologies into a collaborative project. • Provide assistance to others when using available technology tools to create projects.
Proficient	**Seventh grade students performing at the proficient level:** • Compare three presentation technologies which can be used while working with a group. • Independently use the technology tools available to design, develop, and enhance materials, publications, or presentations.
Basic	**Seventh grade students performing at the basic level:** • Compare two presentation technologies which can be used while working with a group. • Construct a project based on a given set of directions.

Seventh Grade Information Literacy and Decision Making Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**7.IL.1.1 Compare technology systems and resources.** **Example:** Technology systems such as library catalogue systems, search engines, SQL server

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**7.IL.2.1 Categorize validated and non-validated sources.** **Example:** Make a chart of valid and non-validated sources for a given research project. **Example:** Understanding when to use primary sources with information supported by research versus information retrieved from wikis or blogs

Seventh Grade Information Literacy and Decision Making
Performance Descriptors

Advanced	**Seventh grade students performing at the advanced level:** • Compare and contrast library catalogue systems or search engines to determine which best fits the needs of the student. • Critique the validity of multiple online sources based on accuracy, relevance, comprehensiveness and bias using a rubric
Proficient	**Seventh grade students performing at the proficient level:** • Analyze various systems, such as a library catalogues and search engines to be able to best utilize the resources. • Determine the validity of an online source based on accuracy, relevance, comprehensiveness and bias using a rubric.
Basic	**Seventh grade students performing at the basic level:** • Describe the difference between a library catalogue and a search engine. • Determine the validity of an online source based on accuracy and relevance using a rubric.

Eighth Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**8.NC.1.1 Evaluate the innovations contributed by individuals and institutions related to the development and design of technology.** • Understand the roles of inventors and entrepreneurs • Example - handheld multimedia devices • Example - the development of the transistor • Example - graphing calculator

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**8.NC.2.1 Compare the effect one system has on another system** • Subsystem to subsystem **Example:** Systems of the body • Individual system to individual system **Example:** Effect of human action on the environment **Example:** 8.SI.2.1

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**8.NC.3.1 Evaluate technology education skills required to pursue a chosen personal career path.** **Example:** Understand complex technical information. **Example:** Make a booklet of five technical skills required for a selected career.

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**8.NC.4.1 Defend the design process in problem-solving activities.** **Example:** Analyze aspects of the manufacturing/scientific process through teacher provided case studies.

Eighth Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**Eighth grade students performing at the advanced level:** • Critique the contributions of individuals and institutions relating to future communication technologies. • Determine the effect of one system on another system and its positive or negative effect. • Map personal educational choices required to pursue a chosen career path • Evaluate the effectiveness of using the design process in problem solving activities.
Proficient	**Eighth grade students performing at the proficient level:** • Recognize the names and contributions of individuals and institutions important to the innovations of information and communication technologies • Diagram the relationship of a subsystem to a subsystem • Diagram the relationship of a system to a system. • Evaluate technology education skills required to pursue a chosen career path • Integrate the design process in problem solving activities.
Basic	**Eighth grade students performing at the basic level:** • Match individuals and institutions with accomplishments in communication technologies. • Give examples of how systems affect each other. • List the technology skills required to pursue a chosen career path. • Give examples where the design process has been used in problem solving activities.

Eighth Grade Social Interactions
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**8.SI.1.1 Outline the components and purpose of school acceptable use policies.** **Example**: Identify levels of rights and permissions • Compare student to staff and school to school

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**8.SI.2.1 Predict the effects that may result from society's increasing reliance on technology** **Example:** Summarize the economic, social and political changes **Example:** Social Studies 6.W.1.7 • Reflect on personal experiences with loss of technology services and distinguish longer term or greater scale issues.

Eighth Grade Social Interactions
Performance Descriptors

Advanced	**Eighth grade students performing at the advanced level:** • Compare and contrast educational acceptable use policies with those outside of a school setting. • Organize a presentation on the effects resulting from society's increasing reliance on technology.
Proficient	**Eighth grade students performing at the proficient level:** • Identify levels of rights and permissions on a network. • Outline the components and purpose of an acceptable use policy and compare it to a similar policy. • Distinguish the effects that may result from society's increasing reliance on technology.
Basic	**Eighth grade students performing at the basic level:** • Understands the basic concept of an acceptable use policy. • Identify effects of society's increasing reliance on technology.

Eighth Grade Information and Communication Tools
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**8.CT.1.1 Categorize the causes of routine hardware or software problems.** **Example:** Computer screen does not display through LCD projector. • Internal/external device failure • Virus and malware • Improper use of equipment

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**8.CT.2.1 Recommend applications that could be extended to other situations.** **Example:** GIS for emergency services, transportation systems and design.
(Comprehension)	**8.CT.2.2 Demonstrate the ability to utilize virtual learning environments in a classroom setting** **Example:** WebCT, BlackBoard, Blogs, eboard, Web-based portals
(Synthesis)	**8.CT.2.3 Incorporate the use of keyed technology into any learning environment.** **Example:** Create word processing document for course notes. ✓ Demonstrate touch-type at 30 gwam with 2 or fewer errors per minute in a 3 minute time period. - Application

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**8.CT.3.1 Develop a repertoire of strategies to apply new technologies to tasks.** **Example:** Students implement an online podcast or student newsletter to reach a varied audience.

Eighth Grade Information and Communication Tools
Performance Descriptors

Advanced	**Eighth grade students performing at the advanced level:** • Apply corrective action to routine hardware and software problems • Independently utilize more than one application to complete a specific task. • Differentiate between available virtual learning environments to determine the most productive environment. • Demonstrate a rate of more than 30 gwam with 2 or fewer errors while using keyed technology in a learning environment. • Instruct others in using strategies to apply new technologies to task. (EX-Prepare a brochure of strategies to share with peers, teachers, and others.)
Proficient	**Eighth grade students performing at the proficient level:** • Categorize a variety of common computer problems as either hardware or software related. • Determine a secondary application that could be used to complete a specific task • Independently utilize virtual learning environments in a classroom setting. • Demonstrate a rate of at least 30 gwam with 2 or fewer errors while using keyed technology in a learning environment • Develop 3 strategies to apply new technologies to tasks.

Basic	**Eighth grade students performing at the basic level:** • Construct a list of common computer problems. • Use a secondary application to complete a specific task if directed to do so. • Use a virtual learning environment in a classroom setting if given specific directions. • Demonstrate a rate of at least 25 gwam with 2 or fewer errors while using a keyed technology in a learning environment. • Use a strategy to apply a new technology to a task

Eighth Grade Information and Communication Processes Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**8.CP.1.1 Evaluate a variety of communication tools for effective and efficient collaboration.** **Example:** Choose between using a webcam and a closed-circuit studio**.** **Example:** Choosing between Instant messaging/texting or making a voice phone call.

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**8.CP.2.1 Integrate effective information technology to manage personal and education information.** **Example:** Create a personal portfolio or online journal to track assignments, notes and other pertinent information. (Google Pages, Moodle and other collaborative environments). **Example:** Posting information or media to the web cannot be "recalled" or taken back. Once data is disseminated, it is available somewhere, somehow for all time. • Podcasts • Streaming video • Website

Eighth Grade Information and Communication Processes
Performance Descriptors

Advanced	**Eighth grade students performing at the advanced level:** • Compare multiple current communication tools and how they may be used in the future. • Evaluate the content of, as well as the process used, when using communication tools such as email, chat, and blogs to send, receive, and post information for personal and educational use.
Proficient	**Eighth grade students performing at the proficient level:** • Compare three communication tools used to collaborate and evaluate the effectiveness of the process used. • Independently utilize communication tools such as email, chat, and blogs to send, receive, and post information for both personal and educational use.
Basic	**Eighth grade students performing at the basic level:** • Describe how one communication tool is used for collaboration. • Use communication tools such as email and chat to send, receive, and post information when directed by a teacher.

Eighth Grade Information Literacy and Decision Making Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**8.IL.1.1 Design a plan for conducting a search of electronic resources for a given task.** **Example:** For any given assignment, provide details on search method/engine used, keywords and operators used. **Example:** Design a plan for conducting a search of electronic sources for a given task.

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**8.IL.2.1 Analyze predetermined online sources for accuracy, relevance, comprehensiveness, and bias.** **Example:** Create a rubric to compare online sources. **Example:** Analyze predetermined online sources for accuracy, relevance, comprehensiveness and bias.

Eighth Grade Information Literacy and Decision Making
Performance Descriptors

Advanced	**Eighth grade students performing at the advanced level:** • Anticipate the outcome of a search using a variety of electronic resources to determine which resource would be most productive. • Compare and contrast multiple online sources for accuracy, relevance, comprehensiveness and bias. •
Proficient	**Eighth grade students performing at the proficient level:** • Design a plan for conducting a search for a given topic that includes which electronic resources to use and how to perform and effective search. • Compare and contrast 2 online sources for accuracy, relevance, comprehensiveness and bias. •
Basic	**Eighth grade students performing at the basic level:** • Conduct a search for a given topic using a variety of electronic resources. • Compare and contrast 2 online sources for accuracy and relevance.

NATURE, CONCEPTS AND SYSTEMS
(SYSTEMS THINKING, INTERACTIONS, AND DESIGN)
6-8

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology.

Sixth Grade	Seventh Grade	Eighth Grade
6.NC.1.1 Compare technology from the past to the present as a progression of input, process, output. (Analysis)	7.NC.1.1 Outline the implications of increasing computing potential over time. (Analysis)	8.NC.1.1 Evaluate the innovations contributed by individuals and institutions related to technology to understand that role in the development and design of technology. (Evaluation)

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Sixth Grade	Seventh Grade	Eighth Grade
6.NC.2.1 Analyze the processes of technology systems. (Analysis)	7.NC.2.1 Describe how subsystems work within a larger system. (Comprehension)	8.NC.2.1 Compare the effect one system has on another system. (Analysis)

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Sixth Grade	Seventh Grade	Eighth Grade
6.NC.3.1 Identify careers in various technology areas. (Knowledge)	7.NC.3.1 Compare technology education skills required to pursue a variety of career paths. (Synthesis)	8.NC.3.1 Evaluate technology education skills required to pursue a chosen personal career path. (Evaluation)

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Sixth Grade	Seventh Grade	Eighth Grade
6.NC.4.1 Demonstrate the iterative nature of the design process. (Comprehension)	7.NC.4.1 Provide examples that show the universal nature of the design process. (Application)	8.NC.4.1 Validate the design process in problem-solving activities. (Synthesis)

SOCIAL INTERACTIONS

6-8

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Sixth Grade	Seventh Grade	Eighth Grade
6.SI.1.1 Apply basic software/hardware solutions to protect themselves and others when using Information and Communications Technologies (ICT). (Application)	7.SI.1.1 Correlate the costs and consequences resulting from illegal/unethical use of technology as it relates to changes in society. (Analysis)	8.SI.1.1 Outline the components and purpose of school acceptable use policies. (Analysis)

Indicator 2: Students investigate the advantages and disadvantages of technology.

Sixth Grade	Seventh Grade	Eighth Grade
6.SI.2.1 Analyze how adoption of technological advancements produces change. (Analysis)	7.SI.2.1 Determine which innovations in technology have produced the greatest impact on society. (Application)	8.SI.2.1 Distinguish the effects that may result from society's increasing reliance on technology. (Analysis)

INFORMATION AND COMMUNICATION TOOLS
6-8

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Sixth Grade	Seventh Grade	Eighth Grade
6.CT.1.1 Demonstrate touch-type at 20 gwam with 2 or fewer errors per minute in a 3 minute time period. (Application)	7.CT.1.1 Describe the factors that contribute to increased/decreased functionality in a technological system. (Knowledge)	8.CT.1.1 Categorize the causes of routine hardware or software problems. (Synthesis)
6.CT.1.2 Investigate the functionality of various storage devices providing rationale for their uses. (Analysis)		

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Sixth Grade	Seventh Grade	Eighth Grade
6.CT.2.1 Demonstrate ways to present and publish information using a variety of common applications. (Comprehension)	7.CT.2.1 Recognize differences between applications and their uses. (Analysis)	8.CT.2.1 Recommend applications that could be extended to other situations. (Evaluation)
6.CT.2.2 Incorporate the use of software features that demonstrate a broader understanding of the software. (Synthesis)	7.CT.2.2 Demonstrate ways that communication technologies interrelate. (Comprehension)	8.CT.2.2 Demonstrate the ability to utilize virtual learning environments in a classroom setting. (Comprehension)
	7.CT.2.3 Create projects using technology applications and tools. (Synthesis)	8.CT.2.3 Incorporate the use of keyed technology into any learning environment. (Synthesis)

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Sixth Grade	Seventh Grade	Eighth Grade
6.CT.3.1 Differentiate versions of software and file formats. (Analysis)	7.CT.3.1 Evaluate the effectiveness of new tools. (Evaluation)	8.CT.3.1 Develop a repertoire of strategies to apply new technologies to tasks. (Synthesis)

INFORMATION AND COMMUNICATION PROCESSES

6-8

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Sixth Grade	Seventh Grade	Eighth Grade
6.CP.1.1 Identify the reasons for using technology tools for interpersonal interactions. (Knowledge)	7.CP.1.1 Compare various ways in which you can use collaborative technologies to present information. (Analysis)	8.CP.1.1 Evaluate a variety of communication tools for effective and efficient collaboration. (Evaluation)
		8.CP.1.2 Evaluate the process of communicating clearly to peers, teachers and others using collaborative technologies. (Evaluation)

Indicator 2: Students use a variety of technologies to exchange information and ideas for an identified purpose.

Sixth Grade	Seventh Grade	Eighth Grade
6.CP.2.1 Compare and contrast the effects of different forms of technology on different audiences. (Analysis)	7.CP.2.1 Apply information technology to design on demand communication. (Application)	8.CP.2.1 Integrate effective information technology to managing personal and education information. (Synthesis)

INFORMATION LITERACY AND DECISION MAKING

6-8

Indicator 1: Students use technology to locate and acquire information.

Sixth Grade	Seventh Grade	Eighth Grade
6.IL.1.1 Describe the organizational structure of searchable resources. (Comprehension)	7.IL.1.1 Compare technology systems and resources. (Analysis)	8.IL.1.1 Design a plan for conducting a search of electronic resources for a given task. (Synthesis)

Indicator 2: Students determine the reliability and relevancy of information.

Sixth Grade	Seventh Grade	Eighth Grade
6.IL.2.1 Select online sources based on a list of criteria. (Knowledge)	7.IL.2.1 Analyze online sources for accuracy, relevance, comprehensiveness and bias. (Analysis)	8.IL.2.1 Compare and contrast online sources for accuracy, relevance, comprehensiveness and bias. (Evaluation)

Ninth-Twelfth Grade Nature, Concepts and Systems (systems thinking, interactions, and design) Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the history and progression of technology in relation to the development and design of future technology

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**9-12.NC.1.1 Compare and contrast how societal changes mirror innovations and emerging technologies.** **Example:** Emerging technology effects on future legal issues **Example:** How downloading music has affected the music industry **Example:** Compare how people responded to emergencies in the past as compared to today. **Example:** Science 9-12.S.5.2 **Example:** Science9-12.S.2.1
(Evaluation)	**9-12.NC.1.2 Predict how the evolution of technology will influence the design and development of future technology.—** **Example:** Relate how historical and current events affect the design of new technologies -View the Connections video series or read Pinball Effect by James Burke **Example:** Reference the Technological Method that provides a standard structure for development of products and/or technologies **Example:** The more we e-mail or create electronic documents, the more need there is for digital storage **Example:** The FAX machine is an example of the convergence of the telephone, a scanner and a printer **Example**: Read magazines such as Business 2.0 and Business Week **Example**: Science 9-12.S.2.2

Indicator 2: Students analyze the parts of a technological system in terms of input, process, output, and feedback.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**9-12.NC.2.1 Analyze technology systems to make informed choices.** • Analyze a system to describe the interrelationship between its inputs, process, and output **Example:** Analyze a production process in terms of its product **Example:** Analyze e-mail in terms of its inputs, process, and output **Example:** Analyze the relationship between electronic resources, infrastructure, and connectivity **Example:** Writing 10.W.1.1 • Analyze how changes in inputs and process affect output **Example:** Landline vs. mobile phone, hardwire vs. wireless **Example:** Changes in hardware and software

Indicator 3: Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**9-12.NC.3.1 Analyze intended and unintended impacts of a system.** **Example:** Social networks (MySpace, FaceBook) impact on society **Example:** Cell phones and text messaging in schools **Example:** Chat and Blogging
(Synthesis)	**9-12.NC.3.2 Integrate technology into school, home and community.** **Example:** Incorporate academic knowledge into a Technology project **Example:** Incorporate on-line financial information into a Community Action program **Example:** Include gps coordinates to map community manhole covers on streets being resurfaced

	Example: Use on-line credit reports, on-line credit applications, and on-line research tools (ie, carfax, Consumer Reports, Kelly's On-line, on-line surveys, Epinions (epinions.com) to make a home purchasing decision (home purchase, loan, student loan, appliance, etc **Example:** Social Science 9-12.G.1.1 **Example:** Social Science 9-12.G.1.2 **Example:** Social Science 9-12.E.1.5 **Example:** Writing 9.LVS.1.4 **Example:** Writing 12.LVS.1.3
(Evaluation)	**9-12.NC.3.3 Evaluate technologies that increase educational and workplace opportunities** **Example:** Existing technology; positive and negative aspects of assistive technology **Example:** Internet job searches **Example:** On-line learning (free tutorials to expand personal knowledge)

Indicator 4: Students understand the purpose and demonstrate the use of the design process in problem solving.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**9-12.NC.4.1 Compare and contrast other problem-solving and decision-making methods.** **Example:** Scientific vs. Technological **Example:** Compare simplified problem solving methods **Example:** Math 9-12.S.2.1 **Example:** Math 9-12.S.2.2
(Synthesis)	**9-12.NC.4.2 Formulate a technological solution using data-driven decision making.** **Example:** Marzano's Decision-Making Model **Example:** Math 9-12.S.1.1

Ninth-Twelfth Grade Nature, Concepts and Systems
(systems thinking, interactions, and design)
Performance Descriptors

Advanced	**9-12th grade students performing at the advanced level:** • Predict how the evolution of technology will influence the development of future technology • Analyze how changes in inputs and process produce different output • Evaluate an example of an intended and unintended impact in a changed system • Incorporate knowledge from several subjects and incorporate data resources from school, home or community into a technology project • Apply knowledge gained from a tutorial or external resource to complete a technology project and enhance life-long learning • Defend and Justify a technological solution using a decision making method
Proficient	**9-12th grade students performing at the proficient level:** • Compare and contrast how an emerging technology changes society • Relate how the convergence of technologies affect industries/businesses • Analyze technology systems and how the parts of the system work together • Analyze an example of an intended and unintended impact in a system • Incorporate knowledge from a subject and real-time data into a technology project • Compare and contrast external sources for additional knowledge to complete a technology project • Compare and contrast other problem-solving and decision-making methods and choose a method to solve a given problem.

Basic	**9-12th grade students performing at the basic level:** • Research and report on an emerging technology within a career cluster • Identify a system and determine its parts • Identify an example of an intended and unintended impact in a system • Incorporate knowledge from a subject into a technology project • Compare external sources needed for additional knowledge to complete a technology project • Formulate a solution given a specific problem-solving and decision-making model

Ninth-Twelfth Grade Social Interactions
Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the safe, ethical, legal, and societal issues related to technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**9-12.SI.1.1 Evaluate the need for acceptable use policies.** • Identify different types of policies • Critique common elements of policies **Example:** (compare the bill of rights with acceptable AUP and discuss the correlation to freedom of speech) **Example:**. (compare the schools policy with a business policy) **Example:** compare HS to college
(Synthesis)	**9-12.SI.1.2 Compile a list of immediate and long-range effects of ethical and unethical uses of technology on individual and society.** • Personal protection through establishing legal ownership of a creative work **Example:** Copyright of work • Cost ($, emotional, criminal) **Example:** Research different types of penalties and consequences for misuse or stealing of copyrighted work • Consequences of virus spreading, file pirating, hacking, packet sniffing, identity theft, encryption **Example:** Research how the lives of victims and perpetrators (i.e. Kevin Mitnick) are changed due to the above practices. **Example:** Analyze how business (i.e. banking, financial) practices have changed to protect information

Indicator 2: Students investigate the advantages and disadvantages of technology.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**9-12.SI.2.1 Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole.** **Example:** discuss what happens when emergency 911 response computers go down, How do power outage effects society. Private company outages vs. publicly controlled power outages
(Evaluation)	**9-12.SI.2.2 compare and contrast society's influence on technology and technology's influence on society.** • Informational technology vs. production technology • Identify Cultural factors: age, religion, sex, political **Example:** Ads on identify theft **Example:** Training for businesses, workplaces **Example:** Discuss the emergence of new "11" numbers as a result of influence of technology, i.e. 211,511,411 **Example:** Science 9-12.S.2.1

Ninth-Twelfth Grade Social Interactions

Performance Descriptors

Advanced	**9-12th grade students performing at the advanced level:** • Design an appropriate and legal AUP • Advocate the ethical use of technology in home, school, and community • Predict how technology could transform business processes and relationships
Proficient	**9-12th grade students performing at the proficient level:** • Critique and evaluate an AUP • Model ethical use of technology at home, in school, and in the community • Outline the process to establish legal ownership of personal work. • Analyze and evaluate technological developments that have changed the way humans do their work • Evaluate the advantages and disadvantages of reliance of technology in the workplace and in society
Basic	**9-12th grade students performing at the basic level:** • Explain the legal consequences of breaking acceptable use policies (Hacking, sniffing) • Recognize the ethical use of technology (Licensing, copyright, plagiarism, ownership, security, responsibility privacy issues, (CIPA)) • Identify the effects of unethical use of technology • Still function as a human being when the power goes out & they lose their Internet connection • Describe how technology has changed social mores including attitudes toward work, family, school, and other cultures • Describe the impact of technology on the skills needed in the workplace • Describe an advantage and a disadvantage of the reliance on technology in the workplace and in society

Ninth-Twelfth Grade Information and Communication Tools Grade Standards, Supporting Skills, and Examples

Indicator 1: Students recognize and demonstrate skills in operating technological systems.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**9-12.CT.1.1 Incorporate knowledge and enhanced usage skills to create a product.** **Example:** Include a data table in a science lab report **Example:** Math 9-12.S.1.3 **Example:** Writing 9.LVS.1.2 **Example:** Science 9-12.N.2.1
(Application)	**9-12.CT.1.2 Apply strategies for identifying and solving routine hardware and software issues.** • Online help menu **Examples:** Voice call lines –tech support

Indicator 2: Students use technology to enhance learning, extend capability, and promote creativity.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**9-12.CT.2.1 Utilize a virtual learning environment as a strategy to build 21st century learning skills.** • critical thinking skills • collaboration • information and literacy skills • decision making **Example:** Enroll in an online learning class
(Application)	**9-12.CT. 2.2 Investigate to apply expert systems, intelligent agents, and simulations in real-world situations.** **Example:** Using a virtual chemistry laboratory **Example:** Dissect a frog on the computer **Example:** Using context sensitive help system with computer software
(Application)	**9-12.CT.2.3 Utilize online information resources routinely and efficiently to meet needs for collaboration, research, publication, communication, and productivity.** **Example:** Utilize online reservation systems and ticket booking **Example:** Plan a trip using online airline schedules **Example:** Writing 9.LVS.1.4 **Example:** Writing 11.W.1.2

Indicator 3: Students evaluate and select information tools based on the appropriateness to specific tasks.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**9-12.CT.3.1 Select and apply technology tools for research, information analysis, problem solving, and decision making in content learning.** **Examples:** Decide which type of software (slide presentation, interactive whiteboard) can best communicate classroom information **Example:** Science 9-12.N.2.1 **Example:** Writing 12.W.1.1 **Example:** Social Science 9-12.G.1.1A **Example:** Social Science 9-12.G.1.2
(Analysis)	**9-12.CT.3.2 Organize and manage personal/professional information using technology tools. (e.g., finances, schedules, addresses, purchases, correspondence).** **Examples:** Certification in use of defibrillator; MOUS certification; CNA certification; CISCO certification; A+ certification **Example:** Writing 10.LVS.1.8 **Example:** Writing 10.W.1.3 **Example:** Writing 11.W.1.2

Ninth-Twelfth Grade Information and Communication Tools Performance Descriptors

Advanced	**9-12th grade students performing at the advanced level:** • Recommend strategies in order to assist others in solving technical issues. • Create a virtual environment to build 21st century learning skills. • Investigate and apply expert systems, intelligent agents, and simulations in real-world situations • Utilize online information resources routinely and efficiently to meet needs for collaboration, research, publication, communication, and productivity. • Develop a plan for completing industry certifications

Proficient	**9-12th grade students performing at the proficient level:** • Incorporate knowledge and enhanced usage skills to create a product, • Apply strategies for identifying and solving routine hardware and software issues, • Utilize a virtual learning environment as a strategy to build 21st century learning skills. • Investigate and apply expert systems, intelligent agents, and simulations in real-world situations • Utilize online information resources routinely and efficiently to meet needs for collaboration, research, publication, communication, and productivity. • Select and apply technology tools for research, information analysis, problem solving, and decision making in content learning • Organize and manage personal/professional information using multiple technology tools. (spreadsheets, databases, calendars)
Basic	**9-12th grade students performing at the basic level:** • Recognize a problem and request help in solving the issue. • Incorporate knowledge and enhanced usage skills to create a product with assistance. • Utilize a virtual environment with assistance. • Organize and manage personal/professional information using a technology tool.

Ninth-Twelfth Grade Information and Communication Processes Grade Standards, Supporting Skills, and Examples

Indicator 1: Students understand the purpose of information technologies to communicate with a variety of collaborators.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**9-12.CP.1.1 collaborate with external peers, experts, and others by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works.** **Examples:** Think quest, online project, Course ware, Wiki **Example:** Writing 12.W.1.1

Indicator 2: Students exchange information and ideas for an identified purpose through Information Technologies.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**9-12.CP.2.1 Adapt delivery of communication based on available information technologies.** **Examples:**. WebCT, Blackboard, Wiki, Blog, Share drives/Share Points, Tracking changes in documents, Create a tutorial using Flash, Camtasia, or other recording technology **Example:** Social Science 9-12.G.1.1 **Example:** Social Science 9-12.G.1.2 **Example:** Social Science 9-12.G.1.2A **Example** Writing 10.W.1.3 **Example:** Writing 12.W.1.1

Ninth-Twelfth Grade Information and Communication Processes
Performance Descriptors

Advanced	**9-12th grade students performing at the advanced level:** • Teach others how to use a collaborative workspace • Consider several methods and choose the best for building group collaboration in research, communication and presentation among students in physically separated locations • Teach others to use technology tools for communicating information.
Proficient	**9-12th grade students performing at the proficient level:** • Collaborate to create a product to disseminate information by utilizing a collaborate workspace (such as WebCT) • Contribute digitized material (e.g., video interviews, scanned pictures, text, and graphic information) to a project archive and create links to resource material • Utilize three or more technology tools for communicating information.
Basic	**9-12th grade students performing at the basic level:** • Recognize the value of collaboration • Utilize one or two technology tools for communicating information.

Ninth-Twelfth Grade Information Literacy and Decision Making Grade Standards, Supporting Skills, and Examples

Indicator 1: Students use technology to locate and acquire information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**9-12.IL.1.1 Design a research project using a variety of technologies to find information to solve a real-world problem.** **Example:** Use GIS (Geographic Information System) mapping to locate a proposed railroad track **Example:** Math 9-12.S.1.1 **Example:** Writing 9.LVS.1.3 **Example:** Writing 10.LVS.1.4

Indicator 2: Students determine the reliability and relevancy of information.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Evaluation)	**9-12.IL.2.1 Independently evaluates the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources.** • Defend the choice of sources in their bibliography (in any assigned project or paper). **Examples**: Form a panel to discuss the results of the evaluation, debate the validity of specific electronics resources, prepare a case study and report results , keep a reflective log of research results from various resources, develop a web page or web site that publishes results of evaluations for others to use. **Example**: Reading 10.R.5.1 **Example**: Reading 11.R.5.1 **Example**: Reading 12.R.5.1 **Example**: Writing 9.LVS.1.1 **Example**: Writing 10.W.1.3 **Example**: Writing 10.LVS.1.1 **Example**: Writing 11.LVS.1.1 **Example**: Writing 11.LVS.1.2 **Example**: Social Science 9-12.G.1.1A **Example**: Social Science 9-12.C.2.4A

Ninth-Twelfth Grade Information Literacy and Decision Making Performance Descriptors

Advanced	**9-12th grade students performing at the advanced level:** • Critique the methods used to find information to solve real-world problems. • Recommend digital sources for a research project.
Proficient	**9-12th grade students performing at the proficient level:** • Design a research project using a variety of technologies to find information to solve a real-world problem. • Defend the choice of sources used for a research project.
Basic	**9-12th grade students performing at the basic level:** • Compare technologies used to find information to solve an identified problem. • Cite the sources used for a research project.

SOUTH DAKOTA EDUCATIONAL TECHNOLOGY STANDARDS GLOSSARY

Note: This glossary contains explanations that are not necessarily formal scientific definitions of terms used in the standards document.

21st Century Skills-the skills needed to succeed in the 21st century and include: problem solving and decision making, higher order thinking, collaboration, creativity and innovation, global and cultural awareness

Appropriate -suitable or fitting for a particular purpose, person, occasion, etc

Accurate -true information from a source

Assistance -the act of helping, aiding or providing support

Asynchronous-a different times

AUP (Acceptable Use Policy-An acceptable use policy (AUP; also sometimes acceptable usage policy) is a set of rules that defines what is an is not permitted for use on information communication technologies.

Bloom's Taxonomy-structured created by Benjamin Bloom, for categorizing level of abstraction of knowledge that commonly occur in educational settings

CIPA (Child Internet Protection Act)-Child Internet Protection Act passed in 2000 by Congress to protect students from harmful effects of the Internet.

Closed-Circuit-a means by which a signal is transmitted to a specific, limited set of monitors. It differs from broadcast television in that the signal is not openly transmitted, though it may employ point to point wireless links

Collaboration-to work together with individuals and cooperate on a project

Communication Technology-a process to store or deliver information using electronic

and graphic means; Processes include encoding, transmitting, receiving, storing, retrieving and decoding

Community (home, school, work, global)-a social, religious, occupational, or other group sharing common characteristics or interests and perceived or perceiving itself as distinct in some respect from the larger society within which it exists.

Components-a part or element of a whole that can be separated from or attached to a system

Content Standards-represent expected outcomes for students completely each grade level.

Control keys-these keys are used alone or in combination with other keys to perform certain actions. The most frequently used control keys are CTRL, ALT, the Windows logo key , and ESC.

Convey-to communicate; impart; make known

Copyright-a legal right to publish a work for a specified number of years

Creative commons-intellectual property format which includes ownership of a work and grants permission to republish/reuse

Decision making model-a cognitive process involves the weighing of options to determine the most appropriate course of action

Design-as an idea: An interactive decision-making process that produces plans by which resources are converted into products or systems that meet human needs and wants or solve problems.
As a process: plan: make or work out a plan for; create something for a specific role, purpose or effect; create the idea for; create or execute in an artistic or highly skilled manner (see technological method)

Digital citizenship-the norms of behavior with regard to technology use

Directed-guided, regulated, or managed

Educational Technology-the incorporation of technology into the delivery of educational content to improve teaching and learning

Explore-to look into closely; scrutinize; examine

External Device-see removable storage

FAX (Facsimile) -transmission of data through voice lines

Feedback-using all or a portion of the information from the output of a system to regulate or control the processes or inputs in order to modify the output

File Management-the process of handling files

Files-a computer file is a block of arbitrary information, or resource for storing information, that is available to a computer program and is usually based on some kind of durable storage. Computer files can be considered as the modern counterpart of the files of printed documents that traditionally existed in offices and libraries, which are the source of the term.

Function key-the function keys are used to perform specific tasks. They are labeled as F1, F2, F3, and so on.

GPS (Global Positioning System)-a worldwide radio-navigation system, used to determine location worldwide

GIS (Geographic Information Systems)-an organized collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information

Gross Words A Minute (GWAM)-is the overall typing speed regardless of how many errors you make. GWAM is often used as a measurement for users who are just learning

to type and is later replaced by WPM.

Hardware-the mechanical, magnetic, electronic, and electrical devices comprising a computer system, as the CPU, disk drives, keyboard, or monitor.

Home row-starting standard keyboard finger placements
(a-s-d-f-j-k-l-;)

Identify-to recognize or establish as being a particular person or thing

Indicators-common threads of a strand that represent expected outcomes for all students preparing to graduate from South Dakota schools.

Information and Communication Technology (ICT)-a range of technologies for gathering, storing, retrieving, processing, analyzing and transmitting information

Information System-a system, whether automated or manual, that comprises people, machines, and/or methods organized to collect, process, transmit, and disseminate data that represent user information.

Input-anything that enters a system process such as resources or data

Instant Message (IM)-a client which allows instant text communication between two or more people through a network such as the Internet

Iterative-circular or repetitive in design

Licensing (Software)-comprises the permissions, rights and restrictions imposed on software

Malware-a term increasingly being used to describe any form of malicious software; eg, viruses, Trojan Horses, malicious active content, etc

Media-materials that hold data in any form or that allow data to pass through them, including paper, transparencies, multipart forms, hard, floppy and optical disks, magnetic

tape, wire, cable and fiber. Media is the plural of "medium."; or any form of information, including music and movies. May also refer to CDs, DVDs, videotapes and other prerecorded material.

Net-words-the overall typing speed adjusted for the number of errors made

Online-a general term for when one computer is interacting directly and simultaneously with another computer

Online Journal-a journal that is published electronically rather than on a paper medium

Output-the results of the operation of any system

Ownership rights-see copyright

Performance Descriptors-the performance descriptors are organized into proficiency levels. These proficiency levels describe the content and processes that a student at a given proficiency level would be expected to know, demonstrate, or perform. To identify increasing proficiency educational technology, the levels are labeled as follows:

Presentation-the sharing of information with an audience

Printer-a device that accepts text and graphic output from a computer and transfers the information to a hardcopy source such as paper

Process-a systematic sequence of actions that combines inputs to produce an output.

Relevancy-pertains to the topic**;** the accuracy of information and its relationship to the topic

Reliability-the dependability of information and its relationship to the topic

Removable storage device-portable storage device that can be moved and removed repeatedly See also, External Device, Media

Rubric-a scoring guide used in subjective assessments and makes explicit expected qualities of performance on a rating scale

Scanner-a device that converts visual information into digital data

Short Cut Keys-allows a computer user to immediately perform a specific command via the keyboard- CTL (PC) or Command Key (Mac) followed by the appropriate character on the keyboard.

Software-the programs that enable a computer to perform a specific task

Special keys-keys used for special purposes on the keyboard, and don't really fit into the other categories. I.e. Print Screen / Sys Rq key

Spreadsheet-a grid of information with in a program that displays mathematical or logical functions

Strand-broad conceptual content areas that define Educational Technology; They are: Nature, Concepts and Systems (systems thinking, interactions, and design), Social Interactions, Information and Communication Tools, Information and Communication Processes, and Information Literacy.

Storage/Storage Device-a collective term for disks, tapes, disk arrays, tape arrays, and any other mechanisms capable of non-volatile data storage

Symbol keys-Ex. $,?, &,"

System-a group of independent but interrelated elements comprising a unified whole

Sub-System-a secondary or subordinate part of a unified whole (see System)

Systems-thinking model-a graphic that displays the parts of a system (Input, Process, Output, Feedback)

Synchronous-at the same time

Task-a purposeful action performed

Technology-the branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society and the environment

Technological Method-a specific problem-solving method for doing technology.

Define the problem
Research solutions
Generate alternative solutions
Select the best solution
Develop and produce a result
Test and evaluate a result
Report results

(see design)

Technological System-a system which is unique to the study of technology

Technology Literacy-the ability to use, manage, assess, and understand technology.

Telecommunications-the transmission of signals over a distance for the purpose of communication

Texting/Text Message-sending short messages to a smart phone, pager, PDA, or other handheld device

Tool-a device that is used to complete a task

Touch Typing-the act of typing using the sense of touch rather than sight to find the keys. A technique that usually places the eight fingers in a horizontal row along the middle of the keyboard (the home row) and has them reach for other keys.

Privacy Policy-a declaration made by an organization regarding its use of personal information.

Validated-evidence that provides a high degree of assurance that a specific process will consistently produce a result meeting its predetermined specification

Virus-a code planted illegally in a computer program, often to damage or shut down a system or network.

Virtual Learning Environment-an electronic system designed to communicate content

Word Processing-a computer application used for the production (including composition, editing, formatting, and possibly printing) of any sort of printable material

Bibliography

21st Century Skills. EnGauge. North Central Regional Educational Laboratory. http://www.ncrel.org/enguage/skills/growup.htm.

Academic Content Standards K-12 Technology: Joint Council of the State Board of Education and the Ohio Board of Regents Academic Content Standards. Ohio Center for Curriculum and Assessment, Office of Curriculum and Instruction.

Arizona Technology Education Standards Document; adopted 2000; School Effectiveness Division; Arizona Department of Education; http://www.ade.state.az.us/standards/technology/

Career Clusters: Information Technology. (2003) Glencoe/McGraw-Hill. http://www.careers.glencoe.com.

ComputerHope.com. http://www.computerhope.com/jargon/g/gwam.htm.

Cyrs, Thomas E, ED. D. *Engaging Students in Distance Learning: Interactive Exercises and Activities for Field Sites.* (1999) Center for Educational Development, New Mexico State University. ISBN 0-9628477-4-7. http://www.nmsu.edu/~ced/pubs.htm.

Cyrs, Thomas E. Cyrs & Eugenia D. Conway. (1999). *Teaching At A Distance with the Merging Technologies: An Instructional Systems Approach.* Center for Educational Development New Mexico State University.

Devaney, Laura. ESchool News online: Where K-12 Education and Technology Meet. (February 7, 2007*).* http://www.eschoolnews.org/news/pfshowstory.cfm?ArticleID=6864.

Dictionary.com. http://dictionary.reference.com.

Educational Technology Standards And Expectations. Michigan Department of Education. http://www.michigan.gov/mde.

Hutchings, Kiyomi and Marky Standley. *Global Project-Bases Learning with*

Technology. Visions Leadership Series. Visions Technology in Education. ISBN #1-57369-744-3. http://www.toolsforteachers.com.

Hutchinson, Patricia Dr. *The Design Loop.* Technical College of New Jersey. Accessed at http://rcas.org/tsd.

International Technology Education Association. Standards for Technological Literacy. 2nd ed. Reston, VA: International Technology Education Association, 2002

Learning for the 21st Century. A Report & Mile Guide For 21st Century Skills. Partnership for 21st Century Skills. http://www.21stcenturyskills.org.

Louisiana K-12 Educational Technology Standards.(2003); Louisiana Department of Education

Montana Standards For Technology; **Montana Office of Public Instruction,** 1999.

National Educational Technology Standards For Students (NETS). International Society For Technology In Education (ISTE). http://www.iste.org, http://cnets.iste.org/students/s_stands.html.

Networked For Learning. (2006). Education Networks of America (ENA) and Infotech Strategies. http://www.ena.com, http://www.istrategies.com.

New Hampshire Technology Education Curriculum Guide. (2001) State of New Hampshire Department of Education. Hew Hampshire Department of Education, 101 Pleasant Street, Concord, NH 03301-3860.

North Carolina's COMPUTER TECHNOLOGY SKILLS & INFORMATION SKILLS: Computer Technology Skills Standard Course of Study Grade Level Competencies (2004) Edition: Notebook-ready. http://www.ncpublicschools.org/curriculum/computerskills/scos/

Ohio. Office of Curriculum and Instruction, ed. Ohio K-12 Technology Academic Content Standards. Columbus, OH: Ohio Department of Education, 2004.

SEIR*TEC Publications: Review of the Professional Literature on the Integration of Technology into Educational Programs. http://www.weirtec.org/publications/lireview.html#Barriers.

Snyder, James & James Hales. *Universal System Model of Technology*; adapted from the work of Jay Forrester, Massachusetts Institute of Technology. Accessed at http://rcas.org/tsd.

South Dakota Content Standards (math, science, language arts & social studies). South Dakota Department of Education. http://www.doe.sd.gov.

South Dakota, The Information Edge: Using Data to Accelerate Achievement. A Special State-Focused Supplement to Education Week's Technology Counts 2006. Editorial projects in Education Research Center. http://www.edweek.org/rc.

The Partnership for 21st Century Skills. http://www.21stcenturyskills.org/index.php.

Webb, Norman L. *Alignment, Depth of Knowledge, & Change.* Wisconsin Center for Education Research. http://facstaff.wcer.wisc.edu/normw.

Bellingham Washington Information Literacy Standards For Student Learning; American Association of School Librarians and Association for Educational Communications and Technology; 1998

Other online references used in the creation of this document for definitions or other additions include:

http://www.21stcenturyskills.org
http://dictionary.reference.com
http://en.wikipedia.org
http://www.fcc.gov
http://www.techweb.com/encyclopedia
http://www.computerhope.com/jargon
http://www.managementhelp.org
http://www.iteaconnect.org/TAA

http://linux.about.com/library/gnome/blgnome1n2a.htm
http://www.phys.ufl.edu/docs/emacs/emacs_10.html