

# Nebraska Student Essential Learnings in Technology

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Guidelines from the  
Nebraska Department of  
Education

Education Technology  
Center

This document was created by a task force made up of representatives from the Nebraska Department of Education, Nebraska State Education Association, Nebraska Education Technology Association, K-12 Classroom Teachers, Higher Education, Technology Coordinators and Educational Service Units.

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It is based on the International Society for Technology in Education (ISTE) National Education Technology Standards for Students (NETS). There were a few instances where additions or revisions were made to the original NETS standards. Each modification is noted.

- 1. Basic Operations and Concepts**
- 2. Ethical, Cultural, and Societal Issues**
- 3. Productivity Tools**
- 4. Technology Communication Tools**
- 5. Technology Research Tools**
- 6. Technology problem-solving and decision-making tools**

## 1. Basic Operations and Concepts

- Students demonstrate a sound understanding of the nature and operation of technology systems.
- Students are proficient in the use of technology.

Grade Level	General Indicators	Examples of Performance
2.1.1	Use input and output devices to successfully operate hardware.	Students operate: <ul style="list-style-type: none"> <li>• VCRs</li> <li>• audio tapes</li> <li>• CD-ROM</li> <li>• mouse</li> <li>• keyboard</li> <li>• monitors</li> <li>• other devices</li> </ul>
2.1.2	Navigate software packages.	Students demonstrate the ability to: <ul style="list-style-type: none"> <li>• launch</li> <li>• interact</li> <li>• exit</li> </ul>
2.1.3	Use a variety of media and technology resources for directed and independent learning activities.	Students use: <ul style="list-style-type: none"> <li>• interactive books</li> <li>• curriculum software</li> <li>• electronic encyclopedias</li> <li>• Web resources</li> </ul>
2.1.4	Communicate about technology using developmentally appropriate and accurate terminology.	Students use terminology: <ul style="list-style-type: none"> <li>• computer</li> <li>• mouse</li> <li>• keyboard</li> <li>• monitor</li> <li>• disks</li> <li>• printer</li> <li>• VCRs</li> <li>• audio tapes</li> <li>• CD-ROM</li> <li>• other technical terminology</li> </ul>
2.1.5	Use developmentally appropriate resources to support learning.	Students use: <ul style="list-style-type: none"> <li>• interactive books</li> <li>• curriculum software</li> <li>• electronic encyclopedias</li> <li>• Web resources</li> </ul>

Grade Level	General Indicators	Examples of Performance
5.1.1	Utilize and understand appropriate storage devices.	Students use: <ul style="list-style-type: none"> <li>• diskettes</li> <li>• hard drives</li> <li>• network devices</li> <li>• other external devices</li> </ul>
5.1.2	Use input and output devices to successfully operate computers and other hardware devices.	Students use: <ul style="list-style-type: none"> <li>• CD-ROMs</li> <li>• scanners</li> <li>• projection devices</li> <li>• calculators</li> <li>• audio/video recorders and players</li> <li>• cameras</li> </ul>
5.1.3	Discuss common uses of technology in daily life and the advantages and disadvantages those provide.	Students discuss: <ul style="list-style-type: none"> <li>• automobile computer diagnostic equipment</li> <li>• grocery store scanners, checkout</li> <li>• stoplights</li> <li>• telecommunications</li> <li>• cable TV</li> <li>• modems</li> <li>• satellite dishes</li> </ul>
5.1.4	Demonstrate an understanding of the touch typing method, emphasizing accuracy and technique.	Students demonstrate: <ul style="list-style-type: none"> <li>• proper technique</li> <li>• correct fingering</li> </ul>
8.1.1	Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use.	Students: <ul style="list-style-type: none"> <li>• select printers</li> <li>• connect peripheral devices</li> <li>• locate and save files</li> </ul>
8.1.2	Demonstrate an understanding of concepts underlying hardware, software, and connectivity, and of practical applications to learning and problem solving.	Students: <ul style="list-style-type: none"> <li>• identify problems</li> <li>• design a plan</li> <li>• gather information</li> <li>• utilize search strategies</li> <li>• compare information</li> <li>• analyze results</li> <li>• share results</li> </ul>
8.1.3	Demonstrate proficiency in the touch method of keyboarding, emphasizing speed, accuracy and productivity.	Students demonstrate: <ul style="list-style-type: none"> <li>• use of proper technique</li> <li>• correct fingering</li> <li>• speed and accuracy</li> <li>• composition at the keyboard</li> </ul>

Grade Level	General Indicators	Examples of Performance
12.1.1	Demonstrate an understanding and explanation of troubleshooting concepts.	Students: <ul style="list-style-type: none"> <li>• select appropriate hardware and/or software</li> <li>• develop troubleshooting sequences</li> <li>• implement problem solving techniques</li> </ul>
12.1.2	Make informed choices among technology systems, resources, and services.	Students select from: <ul style="list-style-type: none"> <li>• appropriate software applications</li> <li>• electronic reference tools</li> <li>• online card catalogs</li> <li>• listservs</li> <li>• email</li> <li>• keypals</li> <li>• web browsers</li> <li>• discussion groups</li> <li>• print media</li> </ul>

## 2. Ethical, Cultural, and Societal Issues

- Students understand the ethical, cultural, and societal issues related to technology.
- Students practice responsible use of technology systems, information and software.
- Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Grade Level	General Indicators	Examples of Performance
2.2.1	Work cooperatively and collaboratively with peers, family members, and others when using technology in the classroom.	Students demonstrate: <ul style="list-style-type: none"> <li>• cooperation in group work</li> <li>• collaboration in home to school projects</li> </ul> Students may become aware of technology in societies and cultures through: <ul style="list-style-type: none"> <li>• keypals</li> <li>• video conferencing</li> <li>• online projects</li> </ul>
2.2.2	Demonstrate positive social and ethical behaviors when using technology.	Students demonstrate the ability to: <ul style="list-style-type: none"> <li>• share equipment</li> <li>• help others</li> </ul>
2.2.3	Practice responsible use of technology systems and software.	Students: <ul style="list-style-type: none"> <li>• demonstrate safe and ethical use of online resources</li> <li>• practice appropriate care and use of equipment, resources and facilities</li> <li>• develop positive attitudes toward technology</li> </ul>
5.2.1	Discuss common uses of technology in daily life and the advantages and disadvantages those uses provide.	Students will be aware of and discuss technologies advantages and disadvantages in: <ul style="list-style-type: none"> <li>• problem solving</li> <li>• organizing, preparing, and presenting information</li> <li>• searching and locating information</li> <li>• homes, schools, and businesses</li> <li>• the misuse and privacy issue</li> <li>• human lives (transportation, communication, nutrition, sanitation, health care, entertainment)</li> </ul>

Grade Level	General Indicators	Examples of Performance
5.2.2	Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use.	Students discuss strategies for: <ul style="list-style-type: none"> <li>• evaluating information to separate fact, opinion, and point of view</li> <li>• determining accuracy, relevance and comprehensiveness</li> <li>• identifying inaccurate and misleading information</li> <li>• presenting information to others accurately</li> </ul> Students have an understanding that copy and paste is a form of plagiarism.
8.2.1	Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse.	Students are able to: <ul style="list-style-type: none"> <li>• demonstrate an understanding of the school's acceptable use policy</li> <li>• use correct form to cite resources</li> <li>• practice fair use policies</li> <li>• describe legal consequences from school and society for plagiarism and software piracy</li> </ul>
8.2.2	Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems.	The students check: <ul style="list-style-type: none"> <li>• the authenticity of resources</li> <li>• degree of bias</li> <li>• misinformation</li> <li>• corroborating evidence</li> </ul>
12.2.1	Identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services to address personal, lifelong learning, and workplace needs.	Students: <ul style="list-style-type: none"> <li>• research a current or emerging technology</li> <li>• describe how it affects society today</li> <li>• describe its potential to affect society in the future</li> </ul>
12.2.2	Make informed choices among technology systems, resources, and services.	Students match the technology tools and resources for the intended task or audience (i.e. charting data to represent complex information).

Grade Level	General Indicators	Examples of Performance
12.2.3	Analyze advantages and disadvantages of widespread use and reliance of technology in the workplace and in society as a whole.	<p>Students debate issues in a variety of different environments:</p> <ul style="list-style-type: none"> <li>• electronic commerce</li> <li>• face-to-face communication/ electronic communication</li> <li>• information overload</li> <li>• world wide web</li> <li>• networks</li> <li>• daily living</li> </ul>
12.2.4	Demonstrate and advocate for legal and ethical behaviors among peers, family, and community regarding the use of technology and information.	<p>Students use technology to promote and educate others regarding legal and ethical policies.</p> <p>Students participate in the development of classroom guidelines for practicing appropriate behaviors.</p>

### 3. Productivity Tools

- Students use technology tools to enhance learning, increase productivity, and promote creativity.
- Students use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Grade Level	General Indicators	Examples of Performance
2.3.1	Use a variety of media and technology resources for directed and independent learning activities.	Students use: <ul style="list-style-type: none"> <li>• an automated library system</li> <li>• the Internet</li> <li>• a CD-ROM</li> <li>• software</li> </ul>
2.3.2	Create developmentally appropriate multimedia products with support from teachers, family members, or student partners.	Students create: <ul style="list-style-type: none"> <li>• a slide show</li> <li>• a multimedia stack</li> <li>• a musical composition</li> </ul>
2.3.3	Use technology resources for problem solving, communication, and illustration of thoughts, ideas and stories. (modified)	Students: <ul style="list-style-type: none"> <li>• use drawing tools</li> <li>• copy and paste graphics or images into a story</li> <li>• use writing or drawing tools to write a story or report</li> <li>• use software to create a graph</li> <li>• create a presentation incorporating sound</li> <li>• use software to organize and sequence ideas</li> </ul>
5.3.1	Use general purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, and facilitate learning throughout the curriculum.	Students use: <ul style="list-style-type: none"> <li>• a spreadsheet to enter data and create a graph</li> <li>• a database to enter data and retrieve information</li> <li>• word processing tools such as spell checking in editing and revising to support writing</li> </ul>

Grade Level	General Indicators	Examples of Performance
5.3.2	Use technology tools for individual and collaborative writing, communication, and publishing activities to create knowledge products for audiences inside and outside the classroom. (modified)	Students: <ul style="list-style-type: none"> <li>• use a scanner or digital camera to incorporate art in a digital format</li> <li>• use text or images to illustrate a concept</li> <li>• edit and format documents</li> <li>• use drawing tools for creative expression</li> </ul>
8.3.1	Use content-specific tools, software, and simulations to support learning and research. (modified)	Students: <ul style="list-style-type: none"> <li>• create formulas for a spreadsheet project</li> <li>• use a simulation to illustrate a cause/effect relationship</li> <li>• use mathematical and scientific instruments for recording and manipulating data</li> <li>• use Internet search engines to research a topic</li> <li>• use a presentation tool to develop a product</li> <li>• use Internet data information collections such as census data to complete a research project</li> </ul>
8.3.2	Apply productivity/multimedia tools and peripherals to support personal productivity, group collaboration, and learning throughout the curriculum.	Students: <ul style="list-style-type: none"> <li>• develop web pages for a specific audience</li> <li>• use technology to take notes, create an outline, or a develop a study guide</li> <li>• use technology to monitor or track learning</li> <li>• develop a presentation using advanced multimedia options</li> <li>• use design principles to create effective multimedia</li> <li>• create a persuasive essay using a word processing tool</li> <li>• use manuals and online support to enhance and update use of productivity tools</li> <li>• compose at the keyboard</li> </ul>

Grade Level	General Indicators	Examples of Performance
12.3.1	Use technology tools and resources for managing and communicating personal/professional information. (modified)	Students: <ul style="list-style-type: none"> <li>• use word processor and database to create a mail merged document</li> <li>• create a database to manage information</li> <li>• use a spreadsheet to manage a check book and/or create a budget</li> <li>• use advanced word processing features in creating research projects</li> <li>• develop a web site which applies effective design principles</li> <li>• use technology tools to calculate a loan payment</li> <li>• use the Internet to explore career options</li> <li>• compose at the keyboard</li> </ul>
12.3.2	Investigate and apply expert systems, intelligent agents, and simulations in real-world situations.	Students: <ul style="list-style-type: none"> <li>• use a program for creating a model in a science project</li> <li>• use a technology to understand and/or illustrate a physics concept</li> <li>• use software that estimates the costs of a project</li> <li>• use technology for personal planning and scheduling</li> <li>• use an information based systems for making a purchasing decision</li> </ul>

#### 4. Technology Communication Tools

- Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
- Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Grade Level	General Indicators	Examples of Performance
2.4.1	Gather information and communicate with others using telecommunications, with support from teachers, family members, or student partners.	Students use: <ul style="list-style-type: none"> <li>• e-mail</li> <li>• video conferencing</li> <li>• desktop conferencing</li> <li>• word processing programs</li> <li>• digital imaging               <ul style="list-style-type: none"> <li>• cameras</li> <li>• scanner</li> </ul> </li> <li>• drawing programs</li> </ul>
5.4.1	Use technology tools for individual and collaborative writing, communication, and publishing activities to create products for audiences inside and outside the classroom.	Students use: <ul style="list-style-type: none"> <li>• multimedia tools</li> <li>• web tools</li> <li>• digital imaging</li> <li>• word processing</li> <li>• presentation tools</li> </ul>
5.4.2	Use telecommunications and online resources to participate in collaborative problem-solving activities for the purpose of developing solutions or products for audiences inside and outside the classroom.	Students use: <ul style="list-style-type: none"> <li>• e-mail</li> <li>• moderated chat</li> <li>• web page authoring</li> <li>• web browser               <ul style="list-style-type: none"> <li>• search engines</li> <li>• submission of forms</li> <li>• downloading of appropriate files/content</li> </ul> </li> </ul>
5.4.3	Use telecommunications efficiently and effectively to access remote information, communicate with others in support of direct and independent learning, and pursue personal interests.	Students use: <ul style="list-style-type: none"> <li>• e-mail</li> <li>• online discussions</li> <li>• web environments               <ul style="list-style-type: none"> <li>• moderated discussion forums</li> <li>• moderated chat</li> <li>• video/audio conferencing</li> </ul> </li> </ul>

Grade Level	General Indicators	Examples of Performance
8.4.1	Design, develop, publish, and present products using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom.	Students publish and share: <ul style="list-style-type: none"> <li>• word processed documents</li> <li>• web pages</li> <li>• online surveys</li> <li>• videos</li> <li>• multimedia presentations</li> <li>• online projects</li> </ul>
8.4.2	Collaborate with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems and issues. (modified)	Students use: <ul style="list-style-type: none"> <li>• moderated discussion forums</li> <li>• moderated chat</li> <li>• e-mail</li> <li>• groupware</li> <li>• online simulations</li> <li>• online projects</li> </ul>
12.4.1	Use technology tools and resources for managing and communicating personal/professional information.	Students use: <ul style="list-style-type: none"> <li>• database for addresses</li> <li>• spreadsheet for finance</li> <li>• web publishing for survey</li> <li>• multimedia for resume</li> </ul>
12.4.2	Select and apply technology tools for research, information analysis, problem-solving, and decision-making in content learning.	Students use: <ul style="list-style-type: none"> <li>• appropriate technology tools based upon the project assigned               <ul style="list-style-type: none"> <li>• database for addresses</li> <li>• spreadsheet for finance</li> <li>• web publishing for survey</li> <li>• multimedia for resume</li> </ul> </li> </ul>
12.4.3	Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works.	Students use: <ul style="list-style-type: none"> <li>• moderated discussion forums</li> <li>• moderated chat</li> <li>• e-mail</li> <li>• groupware</li> <li>• online simulations</li> <li>• online projects</li> </ul>

## 5. Technology Research Tools

- Students use technology to locate, review, and collect information from a variety of sources.
- Students use technology tools to process data and report results.
- Students evaluate and select new information resources and technological innovations based on the appropriateness of specific tasks.

Grade Level	General Indicators	Examples of Performance
2.5.1	Use technology resources to gather, process and report information. (modified)	Students use: <ul style="list-style-type: none"> <li>• electronic card catalogs</li> <li>• disk technologies</li> <li>• online resources</li> <li>• online experts</li> <li>• print materials</li> <li>• digital images</li> <li>• drawing tools</li> <li>• writing tools</li> <li>• logical thinking programs</li> </ul>
5.5.1	Use technology resources for self-directed learning and extended learning activities. (modified)	
5.5.2	Use telecommunications and online resources to participate in collaborative research activities. (modified)	Students participate in: <ul style="list-style-type: none"> <li>• online discussions</li> <li>• video conferences</li> </ul>
5.5.3	Determine when technology is useful and select the appropriate tool(s) and technology resources to address a variety of tasks and problems. (modified)	Students: <ul style="list-style-type: none"> <li>• select applicable technology research tools</li> <li>• generate an evaluation rubric to assess quality or value of a resource</li> <li>• document bibliographic resources appropriately</li> </ul>
8.5.1	Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems.	Students select and use: <ul style="list-style-type: none"> <li>• electronic card catalogs</li> <li>• disk technologies</li> <li>• online resources</li> <li>• online experts</li> <li>• print materials</li> <li>• digital images</li> <li>• drawing tools</li> <li>• writing tools</li> </ul>

Grade Level	General Indicators	Examples of Performance
8.5.2	Use content-specific tools, software and simulations to support learning and research.	Students produce a project using synthesized information from a variety of resources: <ul style="list-style-type: none"> <li>• books</li> <li>• electronic resources</li> <li>• environmental probes</li> <li>• graphing calculators</li> <li>• exploratory environments</li> <li>• web tools</li> </ul>
8.5.3	Collaborate with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems and issues. (modified)	Students participate in: <ul style="list-style-type: none"> <li>• online discussions</li> <li>• video conferencing</li> <li>• web based collaborations</li> </ul>
8.5.4	Evaluate electronic information sources concerning real-world problems. (modified)	Students: <ul style="list-style-type: none"> <li>• assess accuracy and relevance</li> <li>• determine the appropriateness</li> <li>• analyze the thoroughness</li> <li>• evaluate the bias</li> </ul>
12.5.1	Routinely and efficiently use online information resources to meet learning needs. (modified)	Students: <ul style="list-style-type: none"> <li>• collaborate</li> <li>• research</li> <li>• publish results and communicate findings</li> </ul>
12.5.2	Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology. (modified)	Students: <ul style="list-style-type: none"> <li>• compile data</li> <li>• synthesize information</li> <li>• produce and disseminate new information</li> <li>• construct models and creative works</li> </ul>
12.5.3	Evaluate technology-based options for lifelong learning. (modified)	Students utilize: <ul style="list-style-type: none"> <li>• distance education</li> <li>• distributed education</li> <li>• online coursework</li> </ul>
12.5.4	Select and apply technology tools for research, information analysis, problem-solving, and decision-making in content learning.	Students use appropriate technology tools based upon the project assigned: <ul style="list-style-type: none"> <li>• database for addresses</li> <li>• spreadsheet for finance</li> <li>• web publishing for survey</li> <li>• multimedia for resume</li> </ul>

## 6. Technology problem-solving and decision-making tools

- Students use technology resources for solving problems and making informed decisions.
- Students employ technology in the development of strategies for solving problems in the real world.

Grade Level	General Indicators	Examples of Performance
2.6.1	Use technology resources for problem solving. (modified)	Students use: <ul style="list-style-type: none"> <li>• graphic organizers</li> <li>• simple drawing tools</li> <li>• puzzles</li> <li>• logical thinking programs</li> <li>• writing tools</li> <li>• digital cameras</li> <li>• drawing tools</li> </ul>
5.6.1	Use technology resources for problem-solving, self-directed, and extended learning activities.	Students use: <ul style="list-style-type: none"> <li>• simulation software</li> <li>• calculators</li> <li>• data collection probes</li> <li>• videos</li> <li>• multimedia authoring software</li> </ul>
5.6.2	Determine when technology is useful and select the appropriate tools and technology resources to address a variety of tasks and problems. (modified)	Students choose to use: <ul style="list-style-type: none"> <li>• charting software to display the results of a survey</li> <li>• spreadsheets to analyze data</li> <li>• multimedia authoring or presentation software to communicate their ideas</li> <li>• databases to organize their data</li> </ul>
5.6.3	Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources.	Students are introduced to the evaluation of a web site to determine: <ul style="list-style-type: none"> <li>• if the information is consistent with generally accepted facts</li> <li>• if the author has credibility</li> <li>• if the content is appropriate for their use</li> </ul>

Grade Level	General Indicators	Examples of Performance
8.6.1	Apply productivity/multimedia tools and peripherals to support problem solving, collaboration, and learning throughout the curriculum. (modified)	Students create products using: <ul style="list-style-type: none"> <li>• charting software to display the results of a survey</li> <li>• spreadsheets to analyze data</li> <li>• multimedia authoring or presentation software to communicate their ideas</li> <li>• databases to organize their data</li> <li>• telecommunications for collaboration</li> </ul>
8.6.2	Select and use appropriate tools and technology resources to solve problems. (modified)	Given a problem, students select and use tools for: <ul style="list-style-type: none"> <li>• data collection</li> <li>• analysis</li> <li>• presentation</li> <li>• collaboration</li> <li>• creativity</li> </ul>
8.6.3	Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems.	Students evaluate web site content to determine: <ul style="list-style-type: none"> <li>• if the information is consistent with generally accepted facts</li> <li>• if the author has credibility</li> <li>• if the content is appropriate for their use</li> <li>• if the content is relevant to the problem</li> </ul>
8.6.4	Design, develop, publish, and present products using technology resources that demonstrate and communicate curriculum concepts for audiences inside and outside the classroom.	After solving a problem, students develop: <ul style="list-style-type: none"> <li>• videos</li> <li>• multimedia presentations</li> <li>• web pages</li> <li>• documents</li> </ul>
12.6.1	Investigate and apply expert systems, intelligent agents, and simulations in real-world situations.	Students investigate and communicate real world situations using: <ul style="list-style-type: none"> <li>• online knowledge bases</li> <li>• software simulations</li> <li>• trend prediction software</li> <li>• multimedia authoring</li> <li>• databases and spreadsheets</li> <li>• presentation software</li> </ul>

Grade Level	General Indicators	Examples of Performance
12.6.2	Routinely and efficiently use online information resources to meet needs for learning and decision making. (modified)	Students independently use: <ul style="list-style-type: none"> <li>• online information resources</li> <li>• information literacy skills</li> </ul>
12.6.3	Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works.	Students collaborate on a project: <ul style="list-style-type: none"> <li>• to collect and analyze data electronically</li> <li>• synthesize their findings using multimedia and productivity tools</li> <li>• publish their findings on a web site, network or other shared resource</li> </ul>