Nevada Computer and Technology Standards

Classroom Technology Integration for the 21st Century

2010

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The Nevada Computer and Technology Standards

Introduction

To ensure that Nevada students are prepared for life in the digital age, students must be proficient technology users. It is no longer adequate for instruction to focus solely on basic technology skills as was the basis of previous versions of the Nevada Computer and Technology Standards. Rapid changes in our global society and technological advancements warrant changes to the ways technologies are integrated into classroom instruction. The standards contained in this document still address basic competence, and also incorporate the skills and knowledge that students require to learn effectively and live productively in an increasingly digital society.

ISTE NETS-S

The 2009 Nevada Computer and Technology standards are based on the National Educational Technology Standards for Students (NETS-S) put forth by the International Society for Technology in Education (ISTE). The format of the NETS-S adapts well to the format of the previous standards, but stops short of assigning indicators to specific grade bands. Therefore, the national indicators takes the role of strands and Nevada indicators demonstrate how the NETS-S should be applied within specific grade bands in Nevada.

Standards for Classroom Technology Integration

The Nevada Computer and Technology Standards are unique in that they are not content standards. They are simply standards. The notion of technology integration suggests that technology taught in isolation is not as effective as when technology is used in context. For instance, teaching students how to conduct Internet research without a topic to research does not carry the same rigor or relevance as conducting a web search for information on the Gettysburg Address to write a history report. Therefore, the standards in this document are simply standards, not content standards, and the content is derived from the subject areas in which they are integrated. The intent is to create a set of technology standards that could be easily integrated into any content area or incorporated into the content standards of other subjects.

Standards for 21st Century Classrooms

Across the globe and in Nevada, growth in technology has transformed every aspect of business, government, society and life. Education must adapt to these changes, as well. Effective classroom technology integration is the bridge that invites millennial learners to be successful, engaged, classroom learners. The standards in this document are written to assist district and school staff in the development of curriculum that will help build that bridge.

Additionally, once adopted, standards bear a 5-7 year lifespan. Technology changes rapidly and to accommodate this, the standards and indicators in this document are not specific to the technology, but are specific to the process of classroom technology integration and creating a 21st century learning experience for Nevada students.

Contents of this Document

How to Read this Document

This section will describe the components of the standards section with accompanying definitions, language, and position of elements. According to this page, a standard is the overall description of the learning objective, strands are skill subsets that help define the standard, and indicators are the specific learning expectations at each grade level.

Nevada Computer and Technology Standards

Standards describe what students need to know and be able to do at each grade level. In Nevada, these standards are considered the floor, not the ceiling, for student learning and performance. This document serves as a framework to guide districts in creating their curriculum based on the state standards. It is essential that the standards are not taught in isolation; rather, multiple standards are taught within a single lesson ensuring teachers, students, and parents make the connections between reading and writing to enhance performance.

Glossary

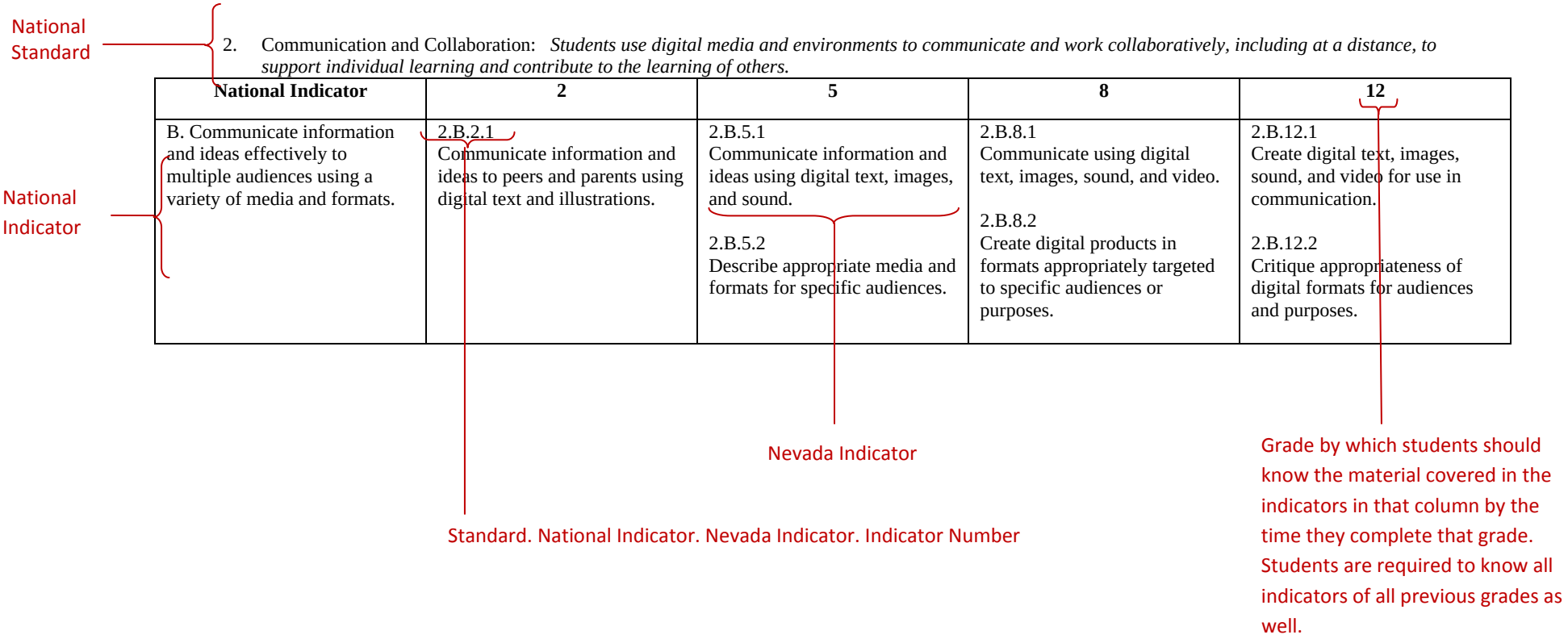
A glossary has been provided to establish a common vocabulary among all Nevada educators, students, and parents. This shared vocabulary provides a foundation for consistent practice across the state.

Acknowledgements

The acknowledgement pages express appreciation to all participants who helped with this document.

How to Read this Document

The chart below represents a typical page in Nevada Computer and Technology standards. The information below is provided to assist with reading this document.



National Indicator	2	5	8	12
B. Communicate information and ideas effectively to multiple audiences using a variety of media and formats.	2.B.2.1 Communicate information and ideas to peers and parents using digital text and illustrations.	2.B.5.1 Communicate information and ideas using digital text, images, and sound. 2.B.5.2 Describe appropriate media and formats for specific audiences.	2.B.8.1 Communicate using digital text, images, sound, and video. 2.B.8.2 Create digital products in formats appropriately targeted to specific audiences or purposes.	2.B.12.1 Create digital text, images, sound, and video for use in communication. 2.B.12.2 Critique appropriateness of digital formats for audiences and purposes.

Nevada Computer and Technology Standards

1. **Creativity and Innovation**: *Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.*

National Indicator	2	5	8	12
A. Apply existing knowledge to generate new ideas, products or processes.	1.A.2.1 Use digital tools to brainstorm and organize new ideas.	1.A.5.1 Process new ideas based on existing knowledge to brainstorm solutions to an authentic problem using digital tools.	1.A.8.1 Apply existing knowledge to independently generate new ideas, products, or processes with digital tools.	1.A.12.1 Apply new and existing knowledge to independently, or in collaboration with others, generate new ideas, products, or processes with digital tools.
B. Create original works as a means of personal or group expression.	1.B.2.1 Create an original work using a variety of digital tools as a means of personal or group expression.	1.B.5.1 Create an original, digital work as a form of personal or group expression with minimal teacher support.	1.B.8.1 Create an original, digital work as a form of personal or group expression.	1.B.12.1 Create an original work using digital tools, including planning, research, editing, and production.
C. Use models and simulations to explore complex systems and issues.	1.C.2.1 Use digital models and simulations with teacher assistance.	1.C.5.1 Use digital models and simulations to explore complex systems and issues.	1.C.8.1 Use digital models and simulations to answer questions or to solve problems.	1.C.12.1 Develop digital models or simulations to answer questions or to solve problems.

National Indicator	2	5	8	12
D. Identify trends and forecast possibilities.	1.D.2.1 Identify patterns and predict possibilities with classroom data using digital tools.	1.D.5.1 Identify and represent trends and make predictions using classroom data.	1.D.8.1 Use technology to track trends and predict possibilities using evidence, experiments, and collaboration to justify their predictions.	1.D.12.1 Use technology to research, conduct, and report experimental data, to determine trends and possibilities using evidence to justify their predictions.

2. **Communication and Collaboration**: *Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.*

National Indicator	2	5	8	12
A. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.	2.A.2.1 Work in classroom groups to create and publish digital products.	2.A.5.1 Collaborate to create and publish digital products to share beyond the classroom.	2.A.8.1 Collaborate to create and publish digital products for authentic audiences in a variety of digital environments.	2.A.12.1 Collaborate electronically with peers, experts and others to create and publish digital products for authentic audiences.
B. Communicate information and ideas effectively to multiple audiences using a variety of media and formats.	2.B.2.1 Communicate information and ideas to peers and parents using digital text and illustrations.	2.B.5.1 Communicate information and ideas using digital text, images, and sound. 2.B.5.2 Describe appropriate media and formats for specific audiences.	2.B.8.1 Communicate using digital text, images, sound, and video. 2.B.8.2 Create digital products in formats appropriately targeted to specific audiences or purposes.	2.B.12.1 Create digital text, images, sound, and video for use in communication. 2.B.12.2 Critique appropriateness of digital formats for audiences and purposes.
C. Develop cultural understanding and global awareness by engaging with learners of other cultures.	2.C.2.1 Use digital resources to learn about places, people, celebrations, and maps.	2.C.5.1 Use digital resources to research about places, people, and world cultures.	2.C.8.1 Use digital resources to communicate with peers and others from a variety of cultures and places.	2.C.12.1 Interact electronically with culturally diverse groups for specific purposes.

National Indicator	2	5	8	12
D. Contribute to project teams to produce original works or solve problems.	2.D.2.1 Work in a team to solve problems using digital tools.	2.D.5.1 Contribute to a group production of an original digital work. 2.D.5.2 Describe a variety of ways to interact and contribute to a digital product.	2.D.8.1 Contribute to project teams to produce original works or solve problems. 2.D.8.2 Choose a method of electronically interacting for a specific goal or purpose.	2.D.12.1 Contribute electronically to a group project that identifies a problem, presents solutions, and evaluates the solutions. 2.D.12.2 Justify method of electronically interacting for a specific goal or purpose.

3. **Research and Information Fluency**: *Students apply digital tools to gather, evaluate, and use information.*

National Indicator	2	5	8	12
A. Plan strategies to guide inquiry.	3.A.2.1 Determine steps to answer a question using digital tools.	3.A.5.1 Use digital tools to plan a timeline and track progress for a research project.	3.A.8.1 Use digital tools to plan and organize research-based inquiry. 3.A.8.2 Use digital tools to plan a timeline, track progress, and cite sources for a research project.	3.A.12.1 Use digital tools to plan, organize, and critique research-based inquiry. 3.A.12.2 Use digital tools to plan a complex timeline, track progress, cite sources, and organize information for a research project.
B. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.	3.B.2.1 Identify and organize keywords and use multiple sources used to answer an essential question.	3.B.5.1 Use keywords to search, organize, locate, and synthesize information in multiple sources to create an original product. 3.B.5.2 Explain the importance of using more than one source and recognize possible bias in digital resources.	3.B.8.1 Use advanced search techniques to locate, access, synthesize, and evaluate information in multiple sources to create an original product. 3.B.8.2 Use digital tools to organize information with main ideas and supporting documentation.	3.B.12.1 Use advanced search techniques to locate, access, synthesize, and evaluate information in multiple sources to create an original product for an authentic audience. 3.B.12.2 Use digital tools to organize and compare information with main ideas and supporting documentation.

National Indicator	2	5	8	12
C. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.	3.C.2.1 Recognize that different information sources and digital tools are appropriate for different tasks.	3.C.5.1 Discern between facts and opinions in digital content. 3.C.5.2 Select and use a digital tool appropriate to a task.	3.C.8.1 Evaluate and compare facts and opinions in digital content sources and describe the point of view. 3.C.8.2 Select and justify using appropriate digital resources to accomplish a variety of tasks.	3.C.12.1 Use digital resources to assemble and evaluate facts, opinions, and points of view appropriate to the task. 3.C.12.2 Evaluate peers' use of resources appropriate to a task.
D. Process data and report results.	3.D.2.1 Collect and display data using a variety of technology resources and report results.	3.D.5.1 Collect, organize, analyze and manipulate data using digital tools and report results in a format appropriate to the task.	3.D.8.1 Use multiple digital tools to collect and process data to test theories and hypotheses. 3.D.8.2 Use a variety of formats to report results and evaluate the strengths and weaknesses of different reporting formats.	3.D.12.1 Use multiple digital tools to analyze data and critique theories and hypotheses. 3.D.12.2 Evaluate and justify the formats for reporting results to a variety of audiences.

4. **Critical Thinking, Problem Solving, and Decision Making**: *Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.*

National Indicator	2	5	8	12
A. Identify and define authentic problems and significant questions for investigation.	4.A.2.1 Investigate an authentic problem using digital resources.	4.A.5.1 Create essential questions to guide investigation of an authentic problem using digital resources.	4.A.8.1 Identify a problem and create essential questions that guide investigation of an authentic problem using digital resources.	4.A.12.1 Identify a complex issue, develop a systematic plan of investigation, and present innovative solutions.
B. Plan and manage activities to develop a solution or complete a project.	4.B.2.1 Use a digital planning tool.	4.B.5.1 Plan and manage projects using a digital planning tool.	4.B.8.1 Select and use appropriate digital planning tools to complete a project.	4.B.12.1 Analyze the capabilities and limitations of several different digital planning tools for developing solutions or for completing a project.
C. Collect and analyze data to identify solutions and/or make informed decisions.	4.C.2.1 Use data to answer an authentic problem using digital tools.	4.C.5.1 Propose a solution to an authentic problem using collected data and digital tools.	4.C.8.1 Use data, examine patterns, and research an authentic problem using digital tools and present a solution.	4.C.12.1 Select and apply digital tools to collect, organize and analyze data to evaluate theories or test hypotheses.

National Indicator	2	5	8	12
D. Use multiple processes and diverse perspectives to explore alternative solutions.	4.D.2.1 Explore alternative solutions to and diverse perspectives on authentic problems using digital tools.	4.D.5.1 Explore alternative solutions to and diverse perspectives on authentic problems and propose a solution using digital tools.	4.D.8.1 Use multiple processes to explore alternative solutions and diverse perspectives on authentic problems and present a solution using digital tools.	4.D.12.1 Use multiple processes and consider diverse perspectives to derive original solutions to authentic problems using digital resources and assess their potential to address social, lifelong learning, and career needs.

5. **Digital Citizenship**: *Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.*

National Indicator	2	5	8	12
A. Advocate and practice safe, legal, and responsible use of information and technology.	5.A.2.1 List classroom rules of safe technology use. 5.A.2.2 List potential dangers in digital environments and how to report potentially unsafe situations.	5.A.5.1 Describe codes of conduct for using technology at school and the consequences for breaking those rules. 5.A.5.2 Describe unacceptable and unsafe behaviors in digital environments such as cyber-bullying, divulging personal information, and plagiarism.	5.A.8.1 Model legal and ethical behaviors when using information and technology including properly selecting, acquiring, and citing resources. 5.A.8.2 Develop an argument for using technology resource safely, legally, and responsibly.	5.A.12.1 Articulate the concepts and issues revolving around intellectual and digital property rights. 5.A.12.2 Compare the similarities and differences between acceptable use of technology resources in school and work environments.
B. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.	5.B.2.1 Use technologies in learning activities.	5.B.5.1 Use technology resources for problem solving, self-directed learning, collaboration, and extended learning activities.	5.B.8.1 Explain the value of existing and emerging technologies on individuals, society, and the global community.	5.B.12.1 Extrapolate how technology will impact collaboration, learning, and productivity of post-secondary life and career.

National Indicator	2	5	8	12
C. Demonstrate personal responsibility for lifelong learning.	5.C.2.1 Describe how technology can enhance learning.	5.C.5.1 Describe the need for life-long learning in a dynamic, global world.	5.C.8.1 Assess the potential of current and emerging technologies to address personal, social, lifelong learning, and career needs.	5.C.12.1 Analyze the capabilities and limitations of current and emerging technologies and assess their potential to address personal, social, lifelong learning, and career needs.
D. Exhibit leadership for digital citizenship.	5.D.2.1 Describe the meaning and responsibilities of digital citizenship.	5.D.5.1 Explain the concepts of digital etiquette, access, and literacy and the personal and societal responsibilities attached to each.	5.D.8.1 Describe principles of leadership and ways to responsibly use current and emerging technologies to foster leadership skills.	5.D.12.1 Model digital citizenship while leading a group of peers through a collaborative project using current and emerging technologies.

6. **Technology Operations and Concepts:** *Students demonstrate a sound understanding of technology concepts, systems, and operations.*

National Indicator	2	5	8	12
A. Understand and use technology systems.	6.A.2.1 List examples of technology tools. 6.A.2.2 Use proper beginning keyboarding techniques.	6.A.5.1 Give examples of technology systems. 6.A.5.2 Demonstrate appropriate keyboarding skills.	6.A.8.1 Explain uses for and advantages of technology systems. 6.A.8.2 Demonstrate keyboarding skills by completing a variety of productivity assignment in a timely manner.	6.A.12.1 Describe the components of technology systems and how they interact.
B. Select and use applications effectively and productively.	6.B.2.1 Navigate age-appropriate software.	6.B.5.1 Select appropriate digital tools for learning activities.	6.B.8.1 Select and justify the use of digital tools and resources to accomplish a variety of tasks.	6.B.12.1 Critique the selection of digital tools, based on efficiency and effectiveness.
C. Troubleshoot systems and applications.	6.C.2.1 Demonstrate proper care of equipment.	6.C.5.1 Analyze and apply given strategies for solving routine hardware and software problems.	6.C.8.1 Develop and apply strategies for solving common hardware and software problems.	6.C.12.1 Analyze and troubleshoot common hardware and software issues to optimize learning and productivity

D. Transfer current knowledge to learning of new technologies.	6.D.2.1 Use routine procedures in classroom technology tools.	6.D.5.1 Generalize routine procedures across a variety of technologies.	6.D.8.1 Apply existing knowledge of technology to a current or emerging technology to answer an authentic question.	6.D.12.1 Analyze the capabilities and limitations of current and emerging technologies based on their potential to address personal learning and career needs, as well as societal issues.

Glossary

Authentic Problem: Instruction that uses real-world problems and projects and that allow students to explore and discuss these problems in ways that are relevant to them.

Classroom Data: Data that are collected by students for use in class projects.

Digital Citizenship: What students should know to use technology appropriately.

Digital Models: Computer-based representation of a natural phenomena that performs simulations.

Digital Planning Tools: Hardware and software that allows users to easily organize and reorganize information to adapt to changing circumstances. Examples are PDAs, Inspiration, MS Outlook, and MS Project.

Digital Resources: An all-encompassing term that refers to electronic tools that assist with instruction and learning. Examples include websites, streaming media, and eBooks.

Digital Tools: Hardware and software. Examples might include projectors, interactive whiteboards, digital recorders, digital cameras.

Essential Questions: Questions that help to frame student inquiry and promote critical thinking.

Life-long Learning: The lifelong, life-wide, voluntary, and self-motivated pursuit of knowledge for either personal or professional reasons.

Multiple Processes: Learning there are often several ways to accomplishing a single goal.

Publish: A variety of ways exist to share projects and work. These include printing hard copies, posting on websites, creating podcasts, distributing on CD or DVD, broadcasting, presenting, etc. Caution should be exercised that personal information is not revealed when sharing student projects or work.

Research-based Inquiry: A process where students formulate investigative questions, obtain factual information, and then build knowledge that ultimately reflects their answer to the original question.

Digital Hardware: Examples could be calculators, computer storage, digital counter, logic circuits, computer-aided circuit design, microprocessor, semiconductor, switching circuit, small computer system interface (SCSI).

Productivity software: An application designed to help individuals complete tasks more efficiently. Examples include word processing program, spreadsheets graphic programs and presentation software.

Technology Systems: Computer hardware, software, and infrastructure and the interaction between them. Examples include the Internet, video production, cell phones, and computer networks.

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