Contents

ISTE's NETS for Students (NETS•S)

All K–12 students should be prepared to meet the following standards and performance indicators:

1. Creativity and Innovation

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

- **a.** apply existing knowledge to generate new ideas, products, or processes
- **b.** create original works as a means of personal or group expression
- **c.** use models and simulations to explore complex systems and issues
- **d.** identify trends and forecast possibilities

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. Students:

- **a.** interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
- **b.** communicate information and ideas effectively to multiple audiences using a variety of media and formats
- **c.** develop cultural understanding and global awareness by engaging with learners of other cultures
- **d.** contribute to project teams to produce original works or solve problems

3. Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students:

- **a.** plan strategies to guide inquiry
- **b.** locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
- **c.** evaluate and select information sources and digital tools based on the appropriateness to specific tasks
- **d.** process data and report results

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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. Students:

- **a.** identify and define authentic problems and significant questions for investigation
- **b.** plan and manage activities to develop a solution or complete a project
- **c.** collect and analyze data to identify solutions and make informed decisions
- **d.** use multiple processes and diverse perspectives to explore alternative solutions

5. Digital Citizenship

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

- **a.** advocate and practice the safe, legal, and responsible use of information and technology
- **b.** exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
- **c.** demonstrate personal responsibility for lifelong learning
- **d.** exhibit leadership for digital citizenship

6. Technology Operations and Concepts

Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:

- **a.** understand and use technology systems
- **b.** select and use applications effectively and productively
- **c.** troubleshoot systems and applications
- **d.** transfer current knowledge to the learning of new technologies

Skills and Examples for Students Ages 4–8

1. Creativity and Innovation

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

a. Apply existing knowledge to generate new ideas, products, or processes

Skills and Examples: Describe what they already know and need to know about a challenge/problem selected by the teacher to elicit creative thinking (e.g., cyberbullying, recycling, resolving an issue in the school environment); then brainstorm and record ideas that might contribute to a new solution to the problem or issue, using technology to gather and organize ideas and information (e.g., a concept map or What I Know [KWHL] chart), and propose one or more new possible solutions.

b. Create original works as a means of personal or group expression

Skills and Examples: Create an original presentation based on a story, activity, or event including text, images, and/or sound files using digital tools and resources.

c. Use models and simulations to explore complex systems and issues

Skills and Examples: Use digital tools and resources to find and organize data. With the help of the teacher, create a visual model or use a simulation (e.g., graph or concept map of the life cycle of plants and animals, seasonal changes, school-day activities, or how community workers contribute to the community).

d. Identify trends and forecast possibilities

Skills and Examples: Use graphic organizers and simulations (developed specifically for this age group) to identify key variables and patterns and to predict outcomes in everyday events and relationships.

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. Students:

a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media

Skills and Examples: Collaborate in pairs using age-appropriate digital media to learn about, develop, and share information and works with fellow students, teachers, parents, and family members (e.g., collaborate with a partner to illustrate and present a nursery rhyme or story using concept mapping, collaborative graphic organizer, or story-building software developed for this age group).

b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats

Skills and Examples: Share curriculum-related concepts with their classmates, families, and others using developmentally appropriate online curriculum-based resources (e.g., online songs, stories, games, puzzles, clip art, presentations, templates, and web pages).

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c. Develop cultural understanding and global awareness by engaging with learners of other cultures

Skills and Examples: Use technology tools to exchange—classroom to classroom—stories, artifacts, and information about their lives, communities, and cultures.

d. Contribute to project teams to produce original works or solve problems

Skills and Examples: Share steps for using age-appropriate technology tools to create a product; with a partner or team solve a problem; or illustrate a song, rhyme, or story.

3. Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students:

a. Plan strategies to guide inquiry

Skills and Examples: With the teacher's help and using age-appropriate technology, make a KWHL chart of the steps involved in planning a project (such as investigating weather, exploring why birds fly south in the winter, or determining what makes a good friend, town, or day) including what they already know, what else they want to know, how they can find and organize information, and what they learned and how to share it with others.

b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media

Skills and Examples: With the help of the teacher, locate and gather information from preselected digital sources or subject directories, choose effective key words for age-appropriate search engines, then choose relevant information and identify new questions. Use age-appropriate tools or teacher-created templates to organize and share what they learned (e.g., in text document, graphic file, or multimedia organizer).

c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks

Skills and Examples: Describe the uses of a variety of age-appropriate digital tools and select tools or resources from those available to effectively accomplish a variety of tasks.

d. Process data and report results

Skills and Examples: Use digital resources to collect data about a topic (e.g., weather, current events, personal interests) and to create ordered lists, identify patterns, and display results and conclusions in text and/or graphic formats.

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. Students:

a. Identify and define authentic problems and significant questions for investigation

Skills and Examples: Identify ways technology can help them explore and understand everyday problems (e.g., how to dress for the day's weather, important aspects of taking care of a pet, which community helper might help in a given situation). Record questions and capture answers and additional questions.

b. Plan and manage activities to develop a solution or complete a project
Skills and Examples: With teacher support, identify and apply strategies to select information and digital resources to complete an activity or solve a particular problem. With teacher support, identify and record steps to complete a task.

c. Collect and analyze data to identify solutions and/or make informed decisions
Skills and Examples: Collect data on an everyday problem or issue. Record results using age-appropriate digital graphing tools (e.g., online survey tool, electronic chart). Identify patterns and propose a decision or solution.

d. Use multiple processes and diverse perspectives to explore alternative solutions
Skills and Examples: In pairs or small groups, compare problem-solving processes and solutions (captured using charts, concept maps, and timelines) and discuss similarities and differences.

5. Digital Citizenship

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

a. Advocate and practice safe, legal, and responsible use of information and technology
Skills and Examples: Demonstrate an understanding of age-appropriate issues related to safe, healthy, and acceptable use of digital devices (e.g., online safety and privacy, amount of daily screen use, safe searching, online etiquette) and describe personal consequences of inappropriate use.

b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
Skills and Examples: Articulate and demonstrate ongoing cooperative and collaborative use of technology to contribute to an effective learning environment (e.g., work productively with a partner or in a small group on a technology-based activity and discuss or reflect on the benefits of working with a partner to complete the task).

c. Demonstrate personal responsibility for lifelong learning
Skills and Examples: Recognize the value of and use technology as a way to communicate with others and to access information for formal and informal learning.

d. Exhibit leadership for digital citizenship
Skills and Examples: Model technology use, sharing, and safety rules and encourage peers to follow accepted guidelines.

6. Technology Operations and Concepts

Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:

a. Understand and use technology systems
Skills and Examples: Communicate about technology using developmentally appropriate and accurate terminology (e.g., be able to identify and refer to parts of the computer with proper terms). Perform basic hardware and software operations (e.g., copy and paste, navigate among open windows, use input devices, control sound and

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brightness of image, undo/redo). Demonstrate the ability to navigate in electronic environments (e.g., e-books, educational games and simulations, digital presentation software, mobile devices, and websites) with assistance as needed.

b. Select and use applications effectively and productively

Skills and Examples: Select from a teacher-approved list and independently apply age-appropriate applications and resources to address content-related tasks and problems (e.g., use games to practice basic skills, text readers and e-books to read, word processors to write, digital cameras to record stages in science projects, graphics programs to draw).

c. Troubleshoot systems and applications

Skills and Examples: Identify and, with the help of the teacher, resolve common problems that occur during everyday use (e.g., frozen screen, failure to print, difficulty accessing internet, computer doesn't power up).

d. Transfer current knowledge to learning of new technologies

Skills and Examples: Recognize common terminology, icons, and symbols related to basic functions of technology and apply that knowledge to new technologies.

Skills and Examples for Students Ages 8–11

1. Creativity and Innovation

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

a. Apply existing knowledge to generate new ideas, products, or processes

Skills and Examples: Identify local or global problems that need creative solutions. In small groups, engage in divergent thinking to explore options for solutions. Use technology (e.g., graphs, wikis, other group authoring tools) to capture and share promising strategies with the whole group. Select and describe specific ideas or create products or processes that could provide new solutions.

b. Create original works as a means of personal or group expression

Skills and Examples: Use technology resources (e.g., photo-editing tools, digital video-editing tools, green screen technology, animation tools) to modify or create digital works; produce a media-rich digital story, individually or collaboratively (e.g., write a story based on a first-person interview or historical research); document a reflection of processes and results.

c. Use models and simulations to explore complex systems and issues

Skills and Examples: Program a robot to perform a task or use online simulations and visualization tools to explore effects of manipulating variables individually and in groups; record and display results or conclusions using electronic tools (e.g., graphs, word clouds, ranking or sorting tools).

d. Identify trends and forecast possibilities

Skills and Examples: Collect and electronically store data based on observations of changes in one or more variables over time (e.g., plant growth, population growth, pollution reduction). Use graphs to identify trends; make a data-driven prediction about future outcomes.

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. Students:

a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media

Skills and Examples: Collaborate in pairs or groups to develop technology-based presentations or products for content-related topics using digital audio, photos, images, video, or charts (e.g., interact via email, videoconferencing, or blogging with young adult authors, musicians, artists, or scientists to collaborate on a multimedia product).

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b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats

Skills and Examples: Create and edit products in a variety of media environments (e.g., presentation, newsletter, video, annotated calendar, wiki) to effectively communicate individual and group curriculum activities, ideas, or results to multiple audiences.

c. Develop cultural understanding and global awareness by engaging with learners of other cultures

Skills and Examples: Use technology communications tools (e.g., online forums, blogs, email, text messaging, chat, voice over IP (VoIP), videoconferencing) to interact with students or experts from other cultures, communities, or countries on a collaborative, content-specific activity or project.

d. Contribute to project teams to produce original works or solve problems

Skills and Examples: Working in pairs or small groups with assigned roles, use digital tools to explore specific subject-related concepts or content and present problem solutions or create original works using appropriate tools (e.g., animation and drawing software, visual data tools, graphic organizers, simulation development tools, programming languages, video cameras, editing software, music software).

3. Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students:

a. Plan strategies to guide inquiry

Skills and Examples: Individually, in pairs, or in small groups develop and refine questions for investigating a learning-related topic (e.g., What makes one country more just than another? What should we do to improve our readiness for natural disasters?). List possible sources of the information needed and appropriate information-gathering tools. Outline the steps in the investigation using digital planning tools (e.g., concept mapping, KWHL charting).

b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media

Skills and Examples: Use digital tools (e.g., age-appropriate search engines, subject directories, or graphic organizers) to locate and organize relevant and reliable information from a variety of digital sources. Analyze and synthesize results to answer a question or clarify an issue. Document sources appropriately.

c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks

Skills and Examples: Compare and contrast the effectiveness of two or more digital tools and information resources used to accomplish an assigned task. Validate sources and document possible bias by checking credentials and analyzing the urls (e.g., consider whether the source is a .gov, .org, .com).

d. Process data and report results

Skills and Examples: Use digital tools (e.g., spreadsheets, graphs, visualization, individual response systems) to process data and display meaningful patterns. Present a report using appropriate visual formats (e.g., graphs, info graphics, 3-D animations, video, etc.).

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. Students:

a. Identify and define authentic problems and significant questions for investigation
Skills and Examples: Use print and online resources to identify significant issues for their school, community, or beyond (e.g., making their school more energy efficient, cyberbullying, reducing school trash and litter, hunger and poverty issues in their community). Record the results of their investigations along with relevant questions and analyze results (e.g., using ranking and sorting tools, visualization tools) to clarify and focus the issue or problem.

b. Plan and manage activities to develop a solution or complete a project
Skills and Examples: Conceptualize, guide, and manage individual or group activities using digital planning tools for completing a project or solving a problem (e.g., wikis, age-appropriate project management software, learning management system, social bookmarking tools).

c. Collect and analyze data to identify solutions and/or make informed decisions
Skills and Examples: Select and apply digital tools to collect, organize, and analyze data for evaluating theories and testing hypotheses (e.g., cause and effect tools, spreadsheets, graphs, modeling and simulation tools).

d. Use multiple processes and diverse perspectives to explore alternative solutions
Skills and Examples: Apply digital tools and resources (e.g., online surveys, video interviews, blogs, forums, wikis, webinars) to explore a topic from the perspective of multiple stakeholders and propose more than one possible solution.

5. Digital Citizenship

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

a. Advocate and practice safe, legal, and responsible use of information and technology
Skills and Examples: Research, discuss, and apply safe, responsible, and legal use of technology (e.g., privacy, security, copyright, file-sharing, accessibility, plagiarism). Use technology resources to convey the relevance of these issues to other students and the public at large.

b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
Skills and Examples: Select and apply technology resources and describe how these tools improve their ability to communicate, collaborate, be productive, and achieve goals.

c. Demonstrate personal responsibility for lifelong learning
Skills and Examples: Describe how they select and use technology resources to pursue their personal and academic learning projects outside of the classroom.

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