

# Technology and the Florida Sunshine State Standards

Students must learn to use technology effectively to be prepared to live and work in our complex, information-rich world. Technology skills for students are woven throughout Florida's Sunshine State Standards. Although technology can be used to help students meet many of these standards, a panel of Florida's educational technology leaders has identified the following in which technology should be considered an integral component.

For more information about the Standards, visit the Florida Department of Education Sunshine State Standards website at <http://www.firn.edu/doe/menu/sss.htm>. In addition, the Florida Instructional Technology Resource Center (ITRC) at UCF maintains a resource page for other Standards resources at <http://www.itrc.ucf.edu/sss>.

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## •PreK-2nd Grade•

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### Language Arts:

- **LA.A.2.1.4** - knows strategies to use to discover whether information presented in a text is true, including asking other and checking another source.
- **LA.A.2.1.5** - uses simple materials of the reference system to obtain information.
- **LA.B.2.1.3** - uses basic computer skills for writing, such as basic word-processing techniques such as keying words, copying, cutting, and pasting; using email; accessing and using basic educational software for writing.
- **LA.D.2.1.3** - recognizes that use of more than one medium increases the power to influence how one thinks and feels.
- **LA.D.2.1.4** - knows the various types of mass media (including billboards, newspapers, radio, and television).

### Math:

- **MA.A.3.1.3** - adds and subtracts whole numbers to solve real-world problems using appropriate methods of computing, such as objects, mental mathematics, paper and pencil, and calculator.
- **MA.B.4.1.2** - selects and uses appropriate instruments, such as scales, rulers, clocks, and technology to measure within customary or metric systems.

### Math:(continued)

- **MA.E.1.1.1** - displays solutions to problems by generating, collecting, organizing, and analyzing data using simple graphs and charts.
- **MA.E.1.1.3** - analyzes real-world data by surveying a sample space and predicting the generalization onto a larger population through the use of appropriate technology, including calculators and computers.
- **MA.E.3.1.1** - designs a simple experiment to answer a class question, collects appropriate information, and interprets the results using graphical displays of information, such as line graphs, pictographs, and charts.

### Science:

- **SC.H.1.1.5** - uses the senses, tools, and instruments to obtain information from his or her surroundings.
- **SC.H.3.1.1** - knows that scientists and technologists use a variety of tools to obtain information in more detail and to make work easier.

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## *PreK-2nd Grade (continued)*

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### **Social Studies:**

- **SS.A.2.1.1** - knows methods of communication from long ago and the technological developments that facilitated communications.
- **SS.A.3.1.1** - knows the accomplishments of major scientists and inventors (e.g., specific scientists and inventors, what they created, and how their creations have influenced society).
- **SS.A.5.1.1** - knows significant individuals in United States history since 1880 (e.g., presidents, scientists and inventors, significant women, and people who have worked to achieve equality and improve individual lives).
- **SS.A.5.1.4** - understands changes in community life over time (e.g., changes in goods and services; changes in architecture and landscape; and changes in jobs, schooling, transportation, communication, religion, and recreation).

### **The Arts:**

- **VA.A.1.1.1** - uses two-dimensional and three-dimensional media, techniques, tools, and processes to depict works of art from personal experiences, observation, or imagination.
- **VA.A.1.1.2** - uses art materials and tools to develop basic processes and motor skills, in a safe and responsible manner.
- **VA.B.1.1.2** - understands that works of art can communicate an idea and elicit a variety of responses through the use of selected media, techniques, and processes.
- **VA.E.1.1.2** - knows various careers that are available to artists.

### **Health/Physical Education:**

- **HE.B.2.1.1** - recognizes the ways in which media, technology, and other sources provide information about health.

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## •3rd-5th Grade•

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### Language Arts:

- **LA.A.2.2.8** - selects and uses a variety of appropriate reference materials, including multiple representations of information, such as maps, charts, and photos, to gather information for research projects.
- **LA.B.2.2.1** - writes notes, comments, and observations that reflect comprehension of content and experiences from a variety of media.
- **LA.B.2.2.4** - uses electronic technology, including word-processing software and electronic encyclopedias, to create, revise, retrieve, and verify information.
- **LA.C.2.2.1** - determines main concept and supporting details in a nonprint media message.
- **LA.C.2.2.2** - recognizes and responds to nonverbal cues used in a variety of nonprint media, such as motion pictures, television advertisements, and works of art.
- **LA.D.2.2.4** - selects and uses appropriate technologies to enhance efficiency and effectiveness of communication.

### Math:

- **MA.A.3.2.3** - adds, subtracts, and multiplies whole numbers, decimals, and fractions, including mixed numbers, and divides whole numbers to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.
- **MA.B.4.2.2** - selects and uses appropriate instruments and technology, including scales, rulers, thermometers, measuring cups, protractors, and gauges, to measure in real-world situations.
- **MA.D.1.2.1** - describes a wide variety of patterns and relationships through models, such as manipulatives, tables, graphs, rules using algebraic symbols.
- **MA.E.1.2.1** - solves problems by generating, collecting, organizing, displaying, and analyzing data using histograms, bar graphs, circle graphs, line graphs, pictographs, and charts.

### Math:(continued)

- **MA.E.1.2.3** - analyzes real-world data to recognize patterns and relationships of the measures of central tendency using tables, charts, histograms, bar graphs, line graphs, pictographs, and circle graphs generated by appropriate technology, including calculators and computers.
- **MA.E.3.2.1** - designs experiments to answer class or personal questions, collects information, and interprets the results using statistics (range, mean, median, and mode) and pictographs, charts, bar graphs, circle graphs, and line graphs.

### Science:

- **SC.A.1.2.1** - determines that the properties of materials (e.g., density and volume) can be compared and measured (e.g., using rulers, balances, and thermometers).
- **SC.H.3.2.1** - understands that people, alone or in groups, invent new tools to solve problems and do work that affects aspects of life outside of science.
- **SC.H.3.2.3** - knows that before a group of people build something or try something new, they should determine how it may affect other people.

### Social Studies:

- **SS.A.2.2.1** - knows the significant scientific and technological achievements of various societies.
- **SS.A.2.2.2** - understands developments in transportation and communication in various societies.
- **SS.A.3.2.1** - knows significant people and their contributions in the field of communication and technology and the impact of these devices on society.
- **SS.A.5.2.1** - knows that after the Civil War, massive immigration, big business, and mechanized farming transformed American life.
- **SS.A.5.2.2** - knows the social and political consequences of industrialization and urbanization in the United States after 1880.

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## 3rd-5th Grade *(continued)*

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### Social Studies: *(continued)*

- **SS.B.1.2.1** - uses maps, globes, charts, graphs, and other geographic tools including map keys and symbols to gather and interpret data and to draw conclusions about physical patterns.
- **SS.B.1.2.4** - knows how changing transportation and communication technology have affected relationships between locations.
- **SS.B.2.2.4** - understands how factors such as population growth, human migration, improved methods of transportation and communication, and economic development affect the use and conservation of natural resources.

### Foreign Language:

- **FL.A.2.2.2** - answers or formulates questions about a variety of media experiences produced in the target language (e.g., video, radio, television, songs, or computer programs).

### The Arts:

- **MU.A.2.2.1** - independently performs melodies and patterns with various rhythmic, melodic, and harmonic classroom instruments (e.g., recorders, keyboards, barred instruments, and autoharps) with appropriate instrumental techniques.
- **MU.B.2.2.1** - knows how to compose short songs and instrumental pieces within specified guidelines and with a variety of traditional and nontraditional sound sources (e.g., voices, instruments, drum machine, paper tearing, foot tapping, and finger snapping) to express an idea or feeling.
- **TH.E.1.2.1** - understands the emotional and social impact of theatre, film, and television on an individual's life and community and in other cultures.

### The Arts: *(continued)*

- **TH.E.1.2.2** - understands the artistic characteristics of various media (e.g., theatre, dramatic media, dance, music, and visual arts) and the advantages and disadvantages of telling stories through those artistic media.
- **VA.A.1.2.1** - uses and organizes two-dimensional and three-dimensional media, techniques, tools, and processes to produce works of art that are derived from personal experience, observation, or imagination.
- **VA.A.1.2.2** - uses control in handling tools and materials in a safe and responsible manner.
- **VA.A.1.2.4** - uses good craftsmanship in a variety of two-dimensional and three-dimensional media.
- **VA.B.1.2.2** - understands what makes different art media, techniques, and processes effective or ineffective in communicating various ideas.
- **VA.E.1.2.2** - knows the types of tasks performed by various artists and some of the required training.

### Health/Physical Education:

- **HE.A.2.2.2** - knows how to locate resources from home, school, and community that provide valid health information.
- **HE.B.2.2.3** - knows the ways in which technology can influence personal health.

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## •6th-8th Grade•

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### Language Arts:

- **LA.A.2.3.5** - locates, organizes, and interprets written information for a variety of purposes, including classroom research, collaborative decision making, and performing a school or real-world task.
- **LA.A.2.3.6** - uses a variety of reference materials, including indexes, magazines, newspapers, and journals, and tools, including card catalogs and computer catalogs, to gather information for research topics.
- **LA.A.2.3.7** - synthesizes and separates collected information into useful components using a variety of techniques, such as source cards, note cards, spreadsheets, and outlines.
- **LA.B.2.3.1** - writes text, notes, outlines, comments, and observations that demonstrate comprehension of content and experiences from a variety of media.
- **LA.B.2.3.4** - uses electronic technology including databases and software to gather information and communicate new knowledge.
- **LA.C.2.3.1** - determines main concept, supporting details, stereotypes, bias, and persuasion techniques in a nonprint message.
- **LA.D.2.3.4** - understands how the multiple media tools of graphics, pictures, color, motion, and music can enhance communication in television, film, radio, and advertising.
- **LA.D.2.3.5** - incorporates audiovisual aids in presentations.
- **LA.D.2.3.6** - understands specific ways that mass media can potentially enhance or manipulate information.
- **LA.D.2.3.7** - understands that laws exist that govern what can and cannot be done with mass media.

### Math:

- **MA.A.3.3.3** - adds, subtracts, multiplies, and divides whole numbers, decimals, and fractions, including mixed numbers, to solve real-world problems, using appropriate method of computing, such as mental mathematics, paper and pencil, and calculator.
- **MA.B.4.3.2** - selects and uses appropriate instruments, technology, and techniques to measure quantities in order to achieve specified degrees of accuracy in a problem situation.

### Math:(continued)

- **MA.D.1.3.1** - describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities.
- **MA.D.1.3.2** - creates and interprets tables, graphs, equations, and verbal descriptions to explain cause-and-effect relationships.
- **MA.E.1.3.1** - collects, organizes, and displays data in a variety of forms, including tables, line graphs, charts, bar graphs, to determine how different ways of presenting data can lead to different interpretations.
- **MA.E.1.3.3** - analyzes real-world data by applying appropriate formulas for measures of central tendency and organizing data in a quality display, using appropriate technology, including calculators and computers.
- **MA.E.3.3.1** - formulates hypotheses, designs experiments, collects and interprets data, and evaluates hypotheses by making inferences and drawing conclusions based on statistics (range, mean, median, and mode) and tables, graphs, and charts.

### Science:

- **SC.H.3.3.4** - knows that technological design should require taking into account constraints such as natural laws, the properties of the materials used, and economic, political, social, ethical, and aesthetic values.
- **SC.H.3.3.5** - understands that contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times and are an intrinsic part of the development of human culture.
- **SC.H.3.3.6** - knows that no matter who does science and mathematics or invents things, or when or where they do it, the knowledge and technology that result can eventually become available to everyone.
- **SC.H.3.3.7** - knows that computers speed up and extend people's ability to collect, sort, and analyze data; prepare research reports; and share data and ideas with others.

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## 6th-8th Grade (Continued)

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### Social Studies:

- **SS.A.2.3.3** - understands important technological developments and how they influenced human society.
- **SS.A.2.3.6** - knows the major events that shaped the development of various cultures (e.g., the spread of agrarian societies, population movements, technological and cultural innovation, and the emergence of new population centers).
- **SS.A.5.3.3** - knows the causes and consequences of urbanization that occurred in the United States after 1880 (e.g., causes such as industrialization; consequences such as poor living conditions in cities and employment conditions).
- **SS.B.1.3.1** - uses various map forms (including thematic maps) and other geographic representations, tools, and technologies to acquire, process, and report geographic information including patterns of land use, connections between places, and patterns and processes of migration and diffusion.
- **SS.B.1.3.4** - understands how factors such as culture and technology influence the perception of places and regions.
- **SS.B.1.3.7** - understands the spatial aspects of communication and transportation systems.

### Foreign Language:

- **FL.A.2.3.2** - comprehends and interprets the main ideas and details from television, movies, videos, radio, or live presentations produced in the target language.
- **FL.A.2.3.4** - recognizes the relationship between verbal and nonverbal signals in communication, while listening to a live speaker of the target language or while viewing and listening to a mass-media product (i.e., film, video, or concert).

### The Arts:

- **DA.E.2.3.2** - understands the ways various media (e.g., technology, music, and visual art) can be used to reinforce, enhance, or alter a dance idea.
- **MU.B.2.3.1** - uses basic principles of composition to create short pieces for voice and/or instruments using both traditional and nontraditional sound sources that express an idea or a feeling.
- **TH.A.3.3.2** - develops and uses technical sound effects such as microphones, synthesizers, tapes, and CDs to emphasize and enhance the meaning of a play.
- **TH.E.1.3.3** - knows pertinent skills, discipline, and knowledge needed to pursue careers and recreational opportunities in theatre, film, television, and electronic media.
- **VA.A.1.3.1** - uses two-dimensional and three-dimensional media, techniques, tools, and processes to solve visual arts problems with refinement and control.
- **VA.A.1.3.2** - uses refinement and control in handling tools and materials in a safe and responsible manner.
- **VA.A.1.3.4** - creates two-dimensional and three-dimensional works of art that reflect competency and craftsmanship.
- **VA.B.1.3.2** - knows how the qualities and characteristics of art media, techniques, and processes can be used to enhance communication of experiences and ideas.
- **VA.E.1.3.2** - understands the skills artists use in various careers and how they can be developed in art school or college or through internships.

### Health/Physical Education:

- **HE.A.2.3.4** - knows how to access a variety of technologies for health information.
- **HE.B.2.3.1** - knows how messages from media and other sources influence health behavior.

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## •9th-12th Grade•

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### Language Arts:

- **LA.A.2.4.4** - locates, gathers, analyzes, and evaluates written information for a variety of purposes, including research projects, real-world tasks, and self-improvement.
- **LA.A.2.4.6** - selects and uses appropriate study and research skills and tools according to the type of information being gathered or organized, including almanacs, government publications, microfiche, news sources, and information services.
- **LA.A.2.4.8** - synthesizes information from multiple sources to draw conclusions.
- **LA.B.2.4.1** - writes text, notes, outlines, comments, and observations that demonstrate comprehension and synthesis of content, processes, and experiences from a variety of media.
- **LA.B.2.4.2** - organizes information using appropriate systems.
- **LA.B.2.4.4** - selects and uses a variety of electronic media, such as the Internet, information services, and desktop publishing software programs, to create, revise, retrieve, and verify information.
- **LA.C.2.4.1** - determines main concept and supporting details in order to analyze and evaluate nonprint media messages.
- **LA.C.2.4.2** - understands factors that influence the effectiveness of nonverbal cues used in nonprint media, such as the viewer's past experiences and preferences, and the context in which the cues are presented.
- **LA.C.3.4.3** - uses details, illustrations, analogies, and visual aids to make oral presentations that inform, persuade, or entertain.
- **LA.D.2.4.3** - recognizes production elements that contribute to the effectiveness of a specific medium.
- **LA.D.2.4.4** - effectively integrates multimedia and technology into presentations.
- **LA.D.2.4.5** - critically analyzes specific elements of mass media with regard to the extent to which they enhance or manipulate information.
- **LA.D.2.4.6** - understands that laws control the delivery and use of media to protect the rights of authors and the rights of media owners.

### Math:

- **MA.A.3.4.3** - adds, subtracts, multiplies, and divides real numbers, including square roots and exponents, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.

### Math: (continued)

- **MA.B.4.4.2** - selects and uses appropriate instruments, technology, and techniques to measure quantities in order to achieve specified degrees of accuracy in a problem situation.
- **MA.D.1.4.1** - describes, analyzes, and generalizes relationships, patterns, and functions using words, symbols, variables, tables, and graphs.
- **MA.E.1.4.1** - interprets data that has been collected, organized, and displayed in charts, tables, and plots.
- **MA.E.1.4.3** - analyzes real-world data and makes predictions of larger populations by applying formulas to calculate measures of central tendency and dispersion using the sample population data, and using appropriate technology, including calculators and computers.
- **MA.E.3.4.1** - designs and performs real-world statistical experiments that involve more than one variable, then analyzes results and reports findings.

### Science:

- **SC.H.3.4.1** - knows that performance testing is often conducted using small-scale models, computer simulations, or analogous systems to reduce the chance of system failure.
- **SC.H.3.4.2** - knows that technological problems often create a demand for new scientific knowledge and that new technologies make it possible for scientists to extend their research in a way that advances science.
- **SC.H.3.4.5** - knows that the value of a technology may differ for different people and at different times.
- **SC.H.3.4.6** - knows that scientific knowledge is used by those who engage in design and technology to solve practical problems, taking human values and limitations into account.

### Social Studies:

- **SS.A.2.4.8** - understands cultural, religious, political, and technological developments of civilizations in Asia and Africa.
- **SS.A.3.4.1** - understands the significant political and economic transformations and significant cultural and scientific events in Europe during the Renaissance.
- **SS.A.3.4.5** - understands the significant scientific and social changes from the Age of Reason through the Age of Enlightenment.

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## 9th-12th Grade (Continued)

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### Social Studies: (continued)

- **SS.A.3.4.8** - understands the effects of the Industrial Revolution.
- **SS.A.5.4.1** - knows the causes of the Industrial Revolution and its economic, political, and cultural effects on American society.
- **SS.B.1.4.1** - uses a variety of maps, geographic technologies including geographic information systems (GIS) and satellite-produced imagery, and other advanced graphic representations to depict geographic problems.
- **SS.B.1.4.4** - understands how cultural and technological characteristics can link or divide regions.

### Foreign Language:

- **FL.A.2.4.2** - understands the main ideas and significant details of extended discussions, presentations, and feature programs on radio and television, in movies, and in other forms of media designed for use by native speakers.
- **FL.C.1.4.1** - conducts research on a topic of interest from an academic discipline (e.g., an event, a historical figure, or a scientific concept) using a variety of target-language sources (e.g., print, audio, and CD-ROM).
- **FL.C.2.4.4** - uses target-language sources to obtain information (in person or via the Internet) about a hobby, sport, or topic of personal, community, or world interest.
- **FL.C.2.4.5** - uses the target language to access, process, and discuss information that is only available through the target language or within the target culture (e.g., by using technology such as databases and CD-ROMs produced in the target language).
- **FL.D.2.4.2** - recognizes different world views as presented in the media (e.g., TV, newspapers, and radio).

### The Arts:

- **DA.E.2.4.1** - uses technology to enhance a movement study.

### The Arts: (continued)

- **MU.A.2.4.2** - performs music of moderate to advanced difficulty of diverse genres and styles on at least one instrument (e.g., keyboard, wind, percussion, or string instruments).
- **MU.B.2.4.1** - uses basic principles to create compositions in distinct styles and in different media to express an idea or feeling.
- **TH.A.2.4.1** - uses unified production concepts and techniques for various media (e.g., theatre, film, television, and electronic media).
- **TH.A.3.4.1** - uses scientific and technological advances to develop visual and aural staging elements that complement the interpretation of a text.
- **TH.D.1.4.3** - understands theatrical performances from the perspective of current personal, national, and international issues, through the evaluation of artistic choices in film, television, and electronic media (e.g., different depictions of the story of Aladdin).
- **TH.E.1.4.1** - understands how to use various arts media to enhance communication in theatrical productions.
- **VA.A.1.4.1** - uses two-dimensional and three-dimensional media, techniques, tools, and processes to communicate an idea or concept based on research, environment, personal experience, observation, or imagination.
- **VA.A.1.4.2** - uses tools, media, processes, and techniques proficiently, knowledgeably, and in a safe and responsible manner.
- **VA.B.1.4.2** - understands that works of art can communicate an idea and elicit a variety of responses through the use of selected media, techniques, and processes.
- **VA.E.1.4.2** - understands and identifies the skills that artists use in various careers to promote creativity, fluency, flexibility, and elaboration within the arts and across life.

### Health/Physical Education:

- **HE.A.2.4.2** - knows resources from home, school, and community that provide valid health information.
- **HE.B.2.4.1** - understands the impact of technology on personal, family, and community health.
- **HE.C.2.4.1** - knows oral, written, audio, and visual communication methods to accurately express health message (e.g., through an audiovisual public service announcement).
- **PE.B.1.4.3** - uses technology to assess, enhance, and maintain fitness and skills.