

Chapter 126. Texas Essential Knowledge and Skills for Technology Applications

Subchapter B. Middle School

Statutory Authority: The provisions of this Subchapter B issued under the Texas Education Code, §7.102(c)(4) and §28.002, unless otherwise noted.

§126.11. Implementation of Texas Essential Knowledge and Skills for Technology Applications, Middle School.

The provisions of §126.12 of this subchapter shall be superseded by §§126.14-126.16 of this subchapter beginning with the 2012-2013 school year.

Source: The provisions of this §126.11 adopted to be effective September 1, 1998, 22 TexReg 5203; amended to be effective September 26, 2011, 36 TexReg 6263.

§126.12. Technology Applications (Computer Literacy), Grades 6-8.

- (a) General requirements. Districts have the flexibility of offering technology applications (computer literacy) in a variety of settings, including a specific class or integrated into other subject areas.
- (b) Introduction.
 - (1) The technology applications curriculum has four strands: foundations, information acquisition, work in solving problems, and communication.
 - (2) Through the study of technology applications foundations, including technology-related terms, concepts, and data input strategies, students learn to make informed decisions about technologies and their applications. The efficient acquisition of information includes the identification of task requirements; the plan for using search strategies; and the use of technology to access, analyze, and evaluate the acquired information. By using technology as a tool that supports the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create a solution, and evaluate the results. Students communicate information in different formats and to diverse audiences. A variety of technologies will be used. Students will analyze and evaluate the results.
- (c) Knowledge and skills.
 - (1) Foundations. The student demonstrates knowledge and appropriate use of hardware components, software programs, and their connections. The student is expected to:
 - (A) demonstrate knowledge and appropriate use of operating systems, software applications, and communication and networking components;
 - (B) compare, contrast, and appropriately use the various input, processing, output, and primary/secondary storage devices;
 - (C) demonstrate the ability to select and use software for a defined task according to quality, appropriateness, effectiveness, and efficiency;
 - (D) delineate and make necessary adjustments regarding compatibility issues including, but not limited to, digital file formats and cross platform connectivity;
 - (E) use technology terminology appropriate to the task;
 - (F) perform basic software application functions including, but not limited to, opening an application program and creating, modifying, printing, and saving documents;
 - (G) explain the differences between analog and digital technology systems and give examples of each;

- (H) use terminology related to the Internet appropriately including, but not limited to, electronic mail (e-mail), Uniform Resource Locators (URLs), electronic bookmarks, local area networks (LANs), wide area networks (WANs), World Wide Web (WWW) page, and HyperText Markup Language (HTML); and
 - (I) compare and contrast LANs, WANs, Internet, and intranet.
- (2) Foundations. The student uses data input skills appropriate to the task. The student is expected to:
- (A) demonstrate proficiency in the use of a variety of input devices such as mouse/track pad, keyboard, microphone, digital camera, printer, scanner, disk/disc, modem, CD-ROM, or joystick;
 - (B) demonstrate keyboarding proficiency in technique and posture while building speed;
 - (C) use digital keyboarding standards for data input such as one space after punctuation, the use of em/en dashes, and smart quotation marks; and
 - (D) develop strategies for capturing digital files while conserving memory and retaining image quality.
- (3) Foundations. The student complies with the laws and examines the issues regarding the use of technology in society. The student is expected to:
- (A) discuss copyright laws/issues and model ethical acquisition and use of digital information, citing sources using established methods;
 - (B) demonstrate proper etiquette and knowledge of acceptable use while in an individual classroom, lab, or on the Internet and intranet;
 - (C) describe the consequences regarding copyright violations including, but not limited to, computer hacking, computer piracy, intentional virus setting, and invasion of privacy;
 - (D) identify the impact of technology applications on society through research, interviews, and personal observation; and
 - (E) demonstrate knowledge of the relevancy of technology to future careers, life-long learning, and daily living for individuals of all ages.
- (4) Information acquisition. The student uses a variety of strategies to acquire information from electronic resources, with appropriate supervision. The student is expected to:
- (A) use strategies to locate and acquire desired information on LANs and WANs, including the Internet, intranet, and collaborative software; and
 - (B) apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies.
- (5) Information acquisition. The student acquires electronic information in a variety of formats, with appropriate supervision. The student is expected to:
- (A) identify, create, and use files in various formats such as text, bitmapped/vector graphics, image, video, and audio files;
 - (B) demonstrate the ability to access, operate, and manipulate information from secondary storage and remote devices including CD-ROM/laser discs and on-line catalogs; and
 - (C) use on-line help and other documentation.
- (6) Information acquisition. The student evaluates the acquired electronic information. The student is expected to:
- (A) determine and employ methods to evaluate the electronic information for accuracy and validity;

- (B) resolve information conflicts and validate information through accessing, researching, and comparing data; and
 - (C) demonstrate the ability to identify the source, location, media type, relevancy, and content validity of available information.
- (7) Solving problems. The student uses appropriate computer-based productivity tools to create and modify solutions to problems. The student is expected to:
- (A) plan, create, and edit documents created with a word processor using readable fonts, alignment, page setup, tabs, and ruler settings;
 - (B) create and edit spreadsheet documents using all data types, formulas and functions, and chart information;
 - (C) plan, create, and edit databases by defining fields, entering data, and designing layouts appropriate for reporting;
 - (D) demonstrate proficiency in the use of multimedia authoring programs by creating linear or non-linear projects incorporating text, audio, video, and graphics;
 - (E) create a document using desktop publishing techniques including, but not limited to, the creation of multi-column or multi-section documents with a variety of text-wrapped frame formats;
 - (F) differentiate between and demonstrate the appropriate use of a variety of graphic tools found in draw and paint applications;
 - (G) integrate two or more productivity tools into a document including, but not limited to, tables, charts and graphs, graphics from paint or draw programs, and mail merge;
 - (H) use interactive virtual environments, appropriate to level, such as virtual reality or simulations;
 - (I) use technical writing strategies to create products such as a technical instruction guide; and
 - (J) use foundation and enrichment curricula in the creation of products.
- (8) Solving problems. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. The student is expected to:
- (A) participate with electronic communities as a learner, initiator, contributor, and teacher/mentor;
 - (B) complete tasks using technological collaboration such as sharing information through on-line communications;
 - (C) use groupware, collaborative software, and productivity tools to create products;
 - (D) use technology in self-directed activities by sharing products for defined audiences; and
 - (E) integrate acquired technology applications skills, strategies, and use of the word processor, database, spreadsheet, telecommunications, draw, paint, and utility programs into the foundation and enrichment curricula.
- (9) Solving problems. The student uses technology applications to facilitate evaluation of work, both process and product. The student is expected to:
- (A) design and implement procedures to track trends, set timelines, and review/evaluate progress for continual improvement in process and product; and
 - (B) resolve information conflicts and validate information through research and comparison of data.

- (10) Communication. The student formats digital information for appropriate and effective communication. The student is expected to:
- (A) use productivity tools to create effective document files for defined audiences such as slide shows, posters, multimedia presentations, newsletters, brochures, or reports;
 - (B) demonstrate the use of a variety of layouts in a database to communicate information appropriately including horizontal and vertical layouts;
 - (C) create a variety of spreadsheet layouts containing descriptive labels and page settings;
 - (D) demonstrate appropriate use of fonts, styles, and sizes, as well as effective use of graphics and page design to effectively communicate; and
 - (E) match the chart style to the data when creating and labeling charts.
- (11) Communication. The student delivers the product electronically in a variety of media, with appropriate supervision. The student is expected to:
- (A) publish information in a variety of ways including, but not limited to, printed copy, monitor display, Internet documents, and video;
 - (B) design and create interdisciplinary multimedia presentations for defined audiences including audio, video, text, and graphics; and
 - (C) use telecommunication tools for publishing such as Internet browsers, video conferencing, or distance learning.
- (12) Communication. The student uses technology applications to facilitate evaluation of communication, both process and product. The student is expected to:
- (A) design and implement procedures to track trends, set timelines, and review and evaluate the product using technology tools such as database managers, daily/monthly planners, and project management tools;
 - (B) determine and employ technology specifications to evaluate projects for design, content delivery, purpose, and audience, demonstrating that process and product can be evaluated using established criteria or rubrics;
 - (C) select representative products to be collected and stored in an electronic evaluation tool; and
 - (D) evaluate the product for relevance to the assignment or task.

Source: The provisions of this §126.12 adopted to be effective September 1, 1998, 22 TexReg 5203.

§126.13. Implementation of Texas Essential Knowledge and Skills for Technology Applications, Middle School, Beginning with School Year 2012-2013.

The provisions of §§126.14-126.16 of this subchapter shall be implemented by school districts beginning with the 2012-2013 school year.

Source: The provisions of this §126.13 adopted to be effective September 26, 2011, 36 TexReg 6263.

§126.14. Technology Applications, Grade 6, Beginning with School Year 2012-2013.

- (a) General requirements. Districts have the flexibility of offering technology applications in a variety of settings. Districts are encouraged to offer technology applications in all content areas. This content may also be offered in a specific class while being integrated in all content areas.
- (b) Introduction.
 - (1) The technology applications curriculum has six strands based on the National Educational Technology Standards for Students (NETS•S) and performance indicators developed by the

International Society for Technology in Education (ISTE): creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts.

- (2) Through the study of technology applications, students make informed decisions by understanding current and emerging technologies, including technology systems, appropriate digital tools, and personal learning networks. As competent researchers and responsible digital citizens, students use creative and computational thinking to solve problems while developing career and college readiness skills.
 - (3) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.
- (c) Knowledge and skills.
- (1) Creativity and innovation. The student uses creative thinking and innovative processes to construct knowledge, generate new ideas, and create products. The student is expected to:
 - (A) identify, create, and use files in various formats such as text, raster and vector graphics, video, and audio files;
 - (B) create original works as a means of personal or group expression;
 - (C) explore complex systems or issues using models, simulations, and new technologies to make predictions, modify input, and review results; and
 - (D) discuss trends and possible outcomes.
 - (2) Communication and collaboration. The student collaborates and communicates both locally and globally to reinforce and promote learning. The student is expected to:
 - (A) participate in personal learning networks to collaborate with peers, experts, or others using digital tools such as blogs, wikis, audio/video communication, or other emerging technologies;
 - (B) communicate effectively with multiple audiences using a variety of media and formats; and
 - (C) read and discuss examples of technical writing.
 - (3) Research and information fluency. The student acquires, analyzes, and manages content from digital resources. The student is expected to:
 - (A) create a research plan to guide inquiry;
 - (B) discuss and use various search strategies, including keyword(s) and Boolean operators;
 - (C) select and evaluate various types of digital resources for accuracy and validity; and
 - (D) process data and communicate results.
 - (4) Critical thinking, problem solving, and decision making. The student makes informed decisions by applying critical-thinking and problem-solving skills. The student is expected to:
 - (A) identify and define relevant problems and significant questions for investigation;
 - (B) plan and manage activities to develop a solution, design a computer program, 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;
 - (E) make informed decisions and support reasoning; and
 - (F) transfer current knowledge to the learning of newly encountered technologies.

- (5) Digital citizenship. The student practices safe, responsible, legal, and ethical behavior while using technology tools and resources. The student is expected to:
- (A) understand copyright principles, including current laws, fair use guidelines, creative commons, open source, and public domain;
 - (B) practice ethical acquisition of information and standard methods for citing sources;
 - (C) practice safe and appropriate online behavior, personal security guidelines, digital identity, digital etiquette, and acceptable use of technology; and
 - (D) understand the negative impact of inappropriate technology use, including online bullying and harassment, hacking, intentional virus setting, invasion of privacy, and piracy such as software, music, video, and other media.
- (6) Technology operations and concepts. The student demonstrates a thorough understanding of technology concepts, systems, and operations. The student is expected to:
- (A) define and use current technology terminology appropriately;
 - (B) select technology tools based on licensing, application, and support;
 - (C) identify, understand, and use operating systems;
 - (D) understand and use software applications, including selecting and using software for a defined task;
 - (E) identify, understand, and use hardware systems;
 - (F) understand troubleshooting techniques such as restarting systems, checking power issues, resolving software compatibility, verifying network connectivity, connecting to remote resources, and modifying display properties;
 - (G) demonstrate effective file management strategies such as file naming conventions, location, backup, hierarchy, folder structure, file conversion, tags, labels, and emerging digital organizational strategies;
 - (H) discuss how changes in technology throughout history have impacted various areas of study;
 - (I) discuss the relevance of technology as it applies to college and career readiness, life-long learning, and daily living;
 - (J) use a variety of local and remote input sources;
 - (K) use keyboarding techniques and ergonomic strategies while building speed and accuracy;
 - (L) create and edit files with productivity tools, including:
 - (i) a word processing document using digital typography standards such as page layout, font formatting, paragraph formatting, and list attributes;
 - (ii) a spreadsheet workbook using basic computational and graphic components such as basic formulas and functions, data types, and chart generation;
 - (iii) a database by manipulating components such as entering and searching for relevant data; and
 - (iv) a digital publication using relevant publication standards;
 - (M) plan and create non-linear media projects using graphic design principles; and
 - (N) integrate two or more technology tools to create a new digital product.

Source: The provisions of this §126.14 adopted to be effective September 26, 2011, 36 TexReg 6263.

§126.15. Technology Applications, Grade 7, Beginning with School Year 2012-2013.

- (a) General requirements. Districts have the flexibility of offering technology applications in a variety of settings. Districts are encouraged to offer technology applications in all content areas. This content may also be offered in a specific class while being integrated in all content areas.
- (b) Introduction.
 - (1) The technology applications curriculum has six strands based on the National Educational Technology Standards for Students (NETS•S) and performance indicators developed by the International Society for Technology in Education (ISTE): creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts.
 - (2) Through the study of technology applications, students make informed decisions by understanding current and emerging technologies, including technology systems, appropriate digital tools, and personal learning networks. As competent researchers and responsible digital citizens, students use creative and computational thinking to solve problems while developing career and college readiness skills.
 - (3) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.
- (c) Knowledge and skills.
 - (1) Creativity and innovation. The student uses creative thinking and innovative processes to construct knowledge, generate new ideas, and create products. The student is expected to:
 - (A) identify, create, and use files in various formats such as text, raster and vector graphics, video, and audio files;
 - (B) create and present original works as a means of personal or group expression;
 - (C) explore complex systems or issues using models, simulations, and new technologies to make predictions, modify input, and review results; and
 - (D) discuss trends and make predictions.
 - (2) Communication and collaboration. The student collaborates and communicates both locally and globally to reinforce and promote learning. The student is expected to:
 - (A) create personal learning networks to collaborate and publish with peers, experts, or others using digital tools such as blogs, wikis, audio/video communication, or other emerging technologies;
 - (B) communicate effectively with multiple audiences using a variety of media and formats; and
 - (C) create products using technical writing strategies.
 - (3) Research and information fluency. The student acquires, analyzes, and manages content from digital resources. The student is expected to:
 - (A) create a research plan to guide inquiry;
 - (B) use and evaluate various search strategies, including keyword(s) and Boolean operators;
 - (C) select and evaluate various types of digital resources for accuracy and validity; and
 - (D) process data and communicate results.
 - (4) Critical thinking, problem solving, and decision making. The student makes informed decisions by applying critical-thinking and problem-solving skills. The student is expected to:
 - (A) identify and define relevant problems and significant questions for investigation;

- (B) plan and manage activities to develop a solution, design a computer program, 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;
 - (E) make informed decisions and support reasoning; and
 - (F) transfer current knowledge to the learning of newly encountered technologies.
- (5) Digital citizenship. The student practices safe, responsible, legal, and ethical behavior while using technology tools and resources. The student is expected to:
- (A) understand and practice copyright principles, including current laws, fair use guidelines, creative commons, open source, and public domain;
 - (B) practice ethical acquisition of information and standard methods for citing sources;
 - (C) practice and explain safe and appropriate online behavior, personal security guidelines, digital identity, digital etiquette, and acceptable use of technology; and
 - (D) understand the negative impact of inappropriate technology use, including online bullying and harassment, hacking, intentional virus setting, invasion of privacy, and piracy such as software, music, video, and other media.
- (6) Technology operations and concepts. The student demonstrates a thorough understanding of technology concepts, systems, and operations. The student is expected to:
- (A) define and use current technology terminology appropriately;
 - (B) select and apply technology tools based on licensing, application, and support;
 - (C) identify, understand, and use operating systems;
 - (D) understand and use software applications, including selecting and using software for a defined task;
 - (E) identify, understand, and use hardware systems;
 - (F) understand troubleshooting techniques such as restarting systems, checking power issues, resolving software compatibility, verifying network connectivity, connecting to remote resources, and modifying display properties;
 - (G) implement effective file management strategies such as file naming conventions, location, backup, hierarchy, folder structure, file conversion, tags, labels, and emerging digital organizational strategies;
 - (H) explain how changes in technology throughout history have impacted various areas of study;
 - (I) explain the relevance of technology as it applies to college and career readiness, life-long learning, and daily living;
 - (J) use a variety of local and remote input sources;
 - (K) use keyboarding techniques and ergonomic strategies while building speed and accuracy;
 - (L) create and edit files with productivity tools, including:
 - (i) a word processing document using digital typography standards such as page layout, font formatting, paragraph formatting, and list attributes;
 - (ii) a spreadsheet workbook using advanced computational and graphic components such as complex formulas, basic functions, data types, and chart generation;

- (iii) a database by manipulating components such as defining fields, entering data, and designing layouts appropriate for reporting; and
- (iv) a digital publication using relevant publication standards;
- (M) plan and create non-linear media projects using graphic design principles; and
- (N) integrate two or more technology tools to create a new digital product.

Source: The provisions of this §126.15 adopted to be effective September 26, 2011, 36 TexReg 6263.

§126.16. Technology Applications, Grade 8, Beginning with School Year 2012-2013.

- (a) General requirements. Districts have the flexibility of offering technology applications in a variety of settings. Districts are encouraged to offer technology applications in all content areas. This content may also be offered in a specific class while being integrated in all content areas.
- (b) Introduction.
 - (1) The technology applications curriculum has six strands based on the National Educational Technology Standards for Students (NETS•S) and performance indicators developed by the International Society for Technology in Education (ISTE): creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts.
 - (2) Through the study of technology applications, students make informed decisions by understanding current and emerging technologies, including technology systems, appropriate digital tools, and personal learning networks. As competent researchers and responsible digital citizens, students use creative and computational thinking to solve problems while developing career and college readiness skills.
 - (3) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.
- (c) Knowledge and skills.
 - (1) Creativity and innovation. The student uses creative thinking and innovative processes to construct knowledge, generate new ideas, and create products. The student is expected to:
 - (A) identify, create, and use files in various formats, including text, raster and vector graphics, video, and audio files;
 - (B) create, present, and publish original works as a means of personal or group expression;
 - (C) explore complex systems or issues using models, simulations, and new technologies to develop hypotheses, modify input, and analyze results; and
 - (D) analyze trends and forecast possibilities.
 - (2) Communication and collaboration. The student collaborates and communicates both locally and globally to reinforce and promote learning. The student is expected to:
 - (A) create and manage personal learning networks to collaborate and publish with peers, experts, or others using digital tools such as blogs, wikis, audio/video communication, or other emerging technologies;
 - (B) communicate effectively with multiple audiences using a variety of media and formats; and
 - (C) create and publish products using technical writing strategies.
 - (3) Research and information fluency. The student acquires, analyzes, and manages content from digital resources. The student is expected to:
 - (A) create a research plan to guide inquiry;

- (B) plan, use, and evaluate various search strategies, including keyword(s) and Boolean operators;
 - (C) select and evaluate various types of digital resources for accuracy and validity; and
 - (D) process data and communicate results.
- (4) Critical thinking, problem solving, and decision making. The student makes informed decisions by applying critical-thinking and problem-solving skills. The student is expected to:
- (A) identify and define relevant problems and significant questions for investigation;
 - (B) plan and manage activities to develop a solution, design a computer program, 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;
 - (E) make informed decisions and support reasoning; and
 - (F) transfer current knowledge to the learning of newly encountered technologies.
- (5) Digital citizenship. The student practices safe, responsible, legal, and ethical behavior while using technology tools and resources. The student is expected to:
- (A) understand, explain, and practice copyright principles, including current laws, fair use guidelines, creative commons, open source, and public domain;
 - (B) practice and explain ethical acquisition of information and standard methods for citing sources;
 - (C) practice and explain safe and appropriate online behavior, personal security guidelines, digital identity, digital etiquette, and acceptable use of technology; and
 - (D) understand and explain the negative impact of inappropriate technology use, including online bullying and harassment, hacking, intentional virus setting, invasion of privacy, and piracy such as software, music, video, and other media.
- (6) Technology operations and concepts. The student demonstrates a thorough understanding of technology concepts, systems, and operations. The student is expected to:
- (A) define and use current technology terminology appropriately;
 - (B) evaluate and select technology tools based on licensing, application, and support;
 - (C) identify, understand, and use operating systems;
 - (D) understand and use software applications, including selecting and using software for a defined task;
 - (E) identify, understand, and use hardware systems;
 - (F) apply troubleshooting techniques, including restarting systems, checking power issues, resolving software compatibility, verifying network connectivity, connecting to remote resources, and modifying display properties;
 - (G) implement effective file management strategies such as file naming conventions, location, backup, hierarchy, folder structure, file conversion, tags, labels, and emerging digital organizational strategies;
 - (H) evaluate how changes in technology throughout history have impacted various areas of study;
 - (I) evaluate the relevance of technology as it applies to college and career readiness, life-long learning, and daily living;

- (J) use a variety of local and remote input sources;
- (K) use keyboarding techniques and ergonomic strategies while building speed and accuracy;
- (L) create and edit files with productivity tools, including:
 - (i) a word processing document using digital typography standards such as page layout, font formatting, paragraph formatting, mail merge, and list attributes;
 - (ii) a spreadsheet workbook using advanced computational and graphic components such as complex formulas, advanced functions, data types, and chart generation;
 - (iii) a database by manipulating components, including defining fields, entering data, and designing layouts appropriate for reporting; and
 - (iv) a digital publication using relevant publication standards and graphic design principles;
- (M) plan and create non-linear media projects using graphic design principles; and
- (N) integrate two or more technology tools to create a new digital product.

Source: The provisions of this §126.16 adopted to be effective September 26, 2011, 36 TexReg 6263.