

Technology Applications TEKS Review Work Group E Draft Recommendations

Texas Essential Knowledge and Skills (TEKS) Technology Applications, Kindergarten–Grade 8 Draft Recommendations

The document reflects draft recommendations to the standards for the technology applications Texas Essential Knowledge and Skills (TEKS) for kindergarten–grade 8 that have been recommended by the State Board of Education’s TEKS review **Work Group E**. The document is presented in a vertical alignment chart to present vertical alignment across grade levels.

Proposed additions are shown in green font with underline (additions). Proposed deletions are shown in red font with strikethroughs (~~deletions~~). Text proposed to be moved from its current student expectation is shown in purple italicized font with strikethrough (~~*moved text*~~) and is shown in the proposed new location in purple italicized font with underlines (*new text location*). Numbering for the knowledge and skills statements in the document will be finalized when the proposal is prepared to file with the *Texas Register*.

Comments in the right-hand column provide explanations for the proposed changes. Abbreviations in the explanations refer to the following.

CSTA: Computer Science Teachers Association

SE: student expectation

VA: change to support VA

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(a) Introduction

- (1) Technology includes data communication, data processing, and the devices used for these tasks locally and across networks. Learning to apply these technologies motivates students to develop critical-thinking skills, higher-order thinking, and innovative problem solving. Technology applications incorporates the study of digital tools, devices, communication, and programming to empower students to apply current and emerging technologies in their careers, their education, and beyond.
- (2) The technology applications standards consist of five strands developed to prepare students to be literate in technology applications by grade 8: computational thinking; creativity and innovation; data literacy, management, and representation; digital citizenship; and practical technology concepts. Communication and collaboration skills are embedded across the strands.
 - (A) Computational thinking. Students break down the problem-solving process into four steps that include decomposition, pattern recognition, abstraction, and algorithms.
 - (B) Creativity and innovation. Students use innovative design processes to develop solutions to problems. Students will plan a solution, create the solution, test the solution, iterate, and debug the solution as needed, and implement a completely new and innovative product.
 - (C) Data literacy, management, and representation. Students collect, organize, manage, analyze, and publish various types of data for an audience.
 - (D) Digital citizenship. Students practice ethical and effective application of technology and develop an understanding of cybersecurity and the impact of a digital footprint to become safe, productive, and respectful digital citizens.
 - (E) Practical technology concepts. Students build their knowledge of software applications and hardware focusing on keyboarding and use of the applications and tools. (Grades 3-8 only) Students also build their knowledge and use of technology systems including integrating the use of multiple applications.
- (3) The standards can be integrated into all content areas and can support stand-alone courses. Districts have the flexibility of offering technology applications in a variety of settings.
- (4) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

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Strand: Communication and Collaboration									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
			<i>NEW SE: define digital collaboration</i>	<i>NEW SE: demonstrate appropriate digital etiquette for various forms of digital collaboration such as shared documents, video conferencing, and other platforms</i>	<i>NEW SE: demonstrate appropriate digital etiquette for collaborating with different audiences such as peers, teachers, and other adults</i>	<i>NEW SE: collaborate on digital platforms such as recording a video conference presentation using appropriate formal and informal digital etiquette</i>	<i>NEW SE: collaborate on digital platforms such as recording a video conference presentation using appropriate formal and informal digital etiquette</i>	<i>NEW SE: collaborate and publish for a global audience on digital platforms such as recording and editing videos using appropriate formal and informal digital etiquette</i>	This work group agrees with the decision of Work Group D to embed student expectations that encompass communication and collaboration skills in the other student expectations for all strands. Learning objectives will still be included. This decision would only slightly change teacher understanding. In other content standards there are communication and collaboration already embedded. Not all districts have tech apps as a stand-alone class; embedding may help to clear understanding for non-specialists. This approach simplifies the student expectations for teachers and purposely integrates the standards in a meaningful way. Communication and collaboration are the 21st century skills that cover all other subjects. Thee student expectations were moved to the digital citizenship strand.

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Strand: Computational Thinking									
Substrand: Foundations									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
Computational thinking--foundations. The student explores the core concepts of computational thinking, a set of problem-solving processes that involve decomposition, pattern recognition, abstraction, and algorithms. The student is expected to:									
NEW (A) identify a problem or task such as making a sandwich and break it down (decompose) into smaller pieces	NEW (A) identify and discuss a problem or task and break down (decompose) the solution into sequential steps	NEW (A) identify and communicate a problem or task and break down (decompose) multiple solutions into sequential steps	NEW (A) decompose story problems into smaller, manageable subproblems and identify a solution to the problem	NEW (A) decompose story problems into smaller, manageable subproblems and discuss and document various solutions to the problem	NEW (A) decompose a real-world problem into smaller, manageable subproblems using graphic organizers such as learning maps, concept maps, or other representations of data	NEW (A) decompose real-world problems into structured parts by using visual representation	NEW (A) decompose real-world problems into structured parts by using flowcharts	NEW (A) decompose real-world problems into structured parts by using pseudocode	

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Strand: Computational Thinking									
Substrand: Foundations									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
NEW (B) identify simple patterns and make predictions based on the pattern	NEW (B) identify the simple patterns found in the solutions to everyday problems or tasks	NEW (B) identify complex patterns and make predictions based on the pattern	NEW (B) identify <u>simple and complex</u> patterns in story problems	NEW (B) identify patterns in story problems and make predictions based on the pattern	NEW (B) identify patterns in real-world problems and make predictions based on the pattern	NEW (B) analyze the patterns and sequences found in visual representations <u>such as learning maps, concept maps, or other representations of data</u>	NEW (B) analyze the patterns and sequences found in flowcharts	NEW (B) analyze the patterns and sequences found in pseudocode and identify its variables	Clarified language
						NEW (C) define abstraction and distinguish between generalized information versus specific information in the context of solving a problem or completing a task	NEW (C) identify abstraction and analyze how an algorithm the student created can be generalized to solve additional problems	NEW (C) practice abstraction by developing a generalized algorithm that can solve different types of problems	
		<u>NEW (C) analyze a plan with teacher guidance that outlines the steps needed to complete a task</u>	<u>NEW (C) develop collaboratively and document a plan that outlines specific steps taken to complete a project</u>	<u>NEW (C) communicate design plans and solutions using a variety of options</u>	<u>NEW (C) design and create an outline collaboratively that documents the problem, solution(s), and an expected timeline for the development of a coded solution</u>	<u>NEW (D) design a plan collaboratively using visual representations that document a problem, possible solutions, and an expected timeline for the development of a coded solution</u>	<u>NEW (D) design a plan collaboratively using flowcharts that document a problem, possible solutions, and an expected timeline for the development of a coded solution</u>	<u>NEW (D) design a plan collaboratively using pseudocode that documents a problem, possible solutions, and an expected timeline for the development of a coded solution</u>	The work group believes there was something missing between the foundations and applications substrands. The group added this row to explicitly address that students should plan before creating tasks in the application substrand. Planning is critical to the process and should explicitly be taught.

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Strand: Computational Thinking									
Substrand: Foundations									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
NEW (C) identify algorithms (step-by-step instructions) using a sequential process such as first, next, then, and last	NEW (C) create a simple algorithm (step-by-step instructions) as it applies to an everyday task	NEW (D) (E) create and troubleshoot simple algorithms (step-by-step instructions) that include conditionals such as if-then statements as they apply to an everyday task	NEW (D) (E) debug simple algorithms (set of procedures) by identifying and removing errors	NEW (D) (E) debug algorithms (set of procedures) by identifying and removing errors	NEW (D) (E) compare multiple algorithms for the same task and determine which algorithm is the most appropriate for that task	NEW (E) (D) analyze different techniques used in debugging and apply them to an algorithm	NEW (E) (D) analyze different techniques used in debugging and apply them to an algorithm	NEW (E) (D) develop, compare, and improve algorithms for a specific task to solve a problem	
						NEW (F) (E) analyze the benefits of using iteration (code and sequence repetition) in algorithms	NEW (F) (E) analyze the benefits of using iteration (code and sequence repetition) in algorithms	NEW (F) (E) analyze the benefits of using iteration (code and sequence repetition) in algorithms	

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Strand: Computational Thinking										
Substrand: Applications										
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale	
Computational thinking--applications. The student, with guidance from an educator, applies the fundamentals of computer science. The student is expected to:			Computational thinking--applications. The student applies the fundamentals of computer science. The student is expected to:							
		NEW (A) identify and explore what a variable is in a sequence of code	NEW (A) use variables within a program to store data	NEW (A) use variables within a program to modify data	NEW (A) use variables within a program to store and modify data.	NEW (A) define and label variables that relate to their programming or algorithm	NEW (A) manipulate and rename variables and describe different data types	NEW (A) construct named variables with multiple data types and perform operations on their values		
NEW (A) identify and create a sequence of code with or without technology such as solving a maze using drag-and-drop programming or creating step-by-step directions for student movement to a specific location	NEW (A) create a sequence of code that solves a simple problem with or without technology	NEW (B) create a sequence of code <u>using a design process</u> that includes loops to solve a simple problem with or without technology	NEW (B) create programs <u>using a design process</u> that include sequences, loops, and conditionals to express ideas or address a problem	NEW (B) create programs <u>using a design process</u> that include sequences, loops, conditionals, and events to express ideas or address a problem	NEW (B) create a <u>block-based</u> programs <u>using a design process</u> that include sequences, loops, conditionals, and events to solve an everyday problem	NEW (B) <u>create block-based and text-based programs using a design process that include sequences, loops, conditionals, and events to solve an everyday problem</u> NEW (B) create programs that address different subproblems within a real-world context	NEW (B) create <u>text-based</u> programs <u>using a software design process</u> with nested loops that address different subproblems within a real-world context	NEW (B) create <u>text-based</u> programs <u>using a software design process</u> and combine control structures, including nested loops, and compound conditionals, that address real-world situations	Work group wanted to ensure there was a differentiation and progression from grades 5-8.	

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Strand: Computational Thinking									
Substrand: Applications									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
					NEW (C) analyze code and how it may be reused to develop new or improved programs.			NEW (C) modify and implement previously written code to develop new and improved programs	

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Strand: Creativity and Innovation									
Substrand: Innovative Design Process									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
Creativity and innovation--innovative design process. The student takes an active role in their learning using a design process to solve authentic problems for a local or global audience using a variety of technologies. The student is expected to:						Creativity and innovation--innovative design process. The student takes an active role in their learning using a design process and creative thinking to develop and evaluate solutions considering a variety of local and global perspectives. The student is expected to:			
<p>NEW (A) <u>practice personal skills, including following directions, needed to successfully implement design processes</u></p> <p>identify beneficial character traits and dispositions to set personal goals through guided discussion to support the design processes</p>	<p>NEW (A) <u>practice personal skills, including following directions and mental agility, needed to implement the design processes successfully</u></p> <p>NEW (A) identify beneficial character traits and dispositions to set personal goals through guided discussion to support the design processes</p>	<p>NEW (A) <u>demonstrate personal skills, including effective communication, following directions, and mental agility, needed to implement the design processes successfully</u></p> <p>NEW (A) connect beneficial character traits and dispositions in order to set personal goals and use guided reflection to analyze their progress through the design processes</p>	<p>NEW (A) <u>explain the importance of and demonstrate personal skills, including metacognition, effective communication, following directions, and mental agility, needed to implement the design processes successfully</u></p> <p>NEW (A) develop personal character goals and use feedback to reflect and make decisions through the design processes</p>	<p>NEW (A) <u>explain the importance of and demonstrate personal skills, including problem solving and questioning, effective communication, following directions, mental agility, metacognition, needed to implement the design processes successfully</u></p> <p>NEW (A) develop personal character and group goals such as demonstrating perseverance and flexibility while receiving feedback and making decisions through the design processes</p>	<p>NEW (A) <u>explain the importance of and demonstrate personal skills, including persistence, effective communication, following directions, mental agility, metacognition, problem solving and questioning, and, needed to implement the design processes successfully</u></p> <p>NEW (A) create personal character and group goals such as demonstrating compassion and tolerance while giving feedback and making decisions through the design processes</p>	NEW (A) utilize goal setting and personal character growth independently such as demonstrating courage and confidence to resolve challenges in design processes	NEW (A) utilize goal setting and personal character growth independently such as demonstrating responsibility and appropriate self-advocacy to resolve challenges in design processes	NEW (A) utilize goal setting and personal character growth, <u>including independently such as</u> demonstrating calculated risk-taking and tolerance to innovate using design processes	Clarified language by adding personal skills

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Strand: Creativity and Innovation									
Substrand: Innovative Design Process									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
NEW (B) use a guided design process to identify and solve authentic problems with components such as asking questions, brainstorming, or storyboarding to generate ideas and develop original products using digital tools resources	NEW (B) use a guided design process to identify and solve authentic problems with components such as asking questions, brainstorming, or storyboarding to generate ideas and develop original products using digital tools and resources	NEW (B) apply a design process to identify and solve for authentic problems with components such as testing and reflecting to create new and useful solutions and develop original products using digital tools and resources	NEW (B) apply an appropriate design process using components such as peer and teacher feedback to create new and useful solutions for authentic problems and develop original products using digital tools and resources	NEW (B) apply an appropriate design process using components such as utilizing feedback to improve and refine processes and original products for authentic problems using digital tools and resources	NEW (B) apply an appropriate design process including components to generate multiple solutions for an authentic problem and develop original products using digital tools and resources	NEW (B) discuss and implement a design process using digital tools to compare, contrast, and evaluate student-generated outcomes	NEW (B) discuss and implement a design process to plan and select digital tools to develop and refine a prototype or model through trial and error	NEW (B) discuss and implement a design process to plan and select digital tools to develop, test, evaluate design limitations, and refine a prototype or model and how the design process is used in various industries	The group feels that they want to emphasize the design process but not the practical application because that is covered in the practical technology concepts strand.
						<u>NEW (C) identify how the design process is used in various industries</u>	<u>NEW (C) identify how the design process is used in various industries</u>	<u>NEW (C) identify how the design process is used in various industries</u>	The work group would like to add this student expectation to align to college and career readiness. Allows students to explore different pathways and gives students exposure to different real world career pathways.

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Strand: Creativity and Innovation									
Substrand: Emerging Technologies									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
	<u>Creativity and innovation--emerging technologies. The student demonstrates an understanding that technology is dynamic and impacts different communities. The student is expected to:</u>					Creativity and innovation--emerging technologies. The student demonstrates a thorough understanding of the role of technology throughout history and its impact on <u>societies</u> the evolution of technology . The student is expected to:			Impacts of computing aligns to ideas in computer science principles and is connected the CSTA standards.
						(A) discuss how changes in technology throughout history have impacted various areas of study;	(A) explain how changes in technology throughout history have impacted various areas of study;	(A) evaluate how changes in technology throughout history have impacted various areas of study;	
	<u>NEW (A) identify examples of how technology has impacted different communities</u>	<u>NEW (A) identify and analyze how technology impacts different communities</u>	<u>NEW (A) define emerging technologies</u>	<u>NEW (A) identify examples of emerging technologies</u>	<u>NEW (A) predict how emerging technologies may impact different communities</u>	NEW (B) discuss how global trends impact the development of technology	NEW (B) explain how global trends impact the development of technology	NEW (B) evaluate and predict how global trends impact the development of technology	The work group discussed the social studies TEKS and would like to ensure that emerging technologies is included in technology applications TEKS for grades 1–5.
						(C) transfer current knowledge to the learning of newly encountered technologies.	(C) transfer current knowledge to the learning of newly encountered technologies.	(C) transfer current knowledge to the learning of newly encountered technologies.	

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Strand: Data Literacy, Management, and Representation									
Substrand: Collect Data									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
Data literacy, management, and representation--collect data. The student defines data and explains how it can be found and collected. The student is expected to:			Data literacy, management, and representation--collect data. The student uses digital strategies to collect and identify data. The student is expected to:			Data literacy, management, and representation--collect data. The student uses advanced digital strategies to collect and represent data. The student is expected to:			
NEW (A) identify that data is information collected about people, events, or objects, such as computer searches and weather patterns	NEW (A) explore and collect many types of data, such as preferences or daily routines of people, events, or objects	NEW (A) identify and collect and identify non-numerical data, such as weather patterns, preferred reading genres, and holidays	NEW (A) identify and collect and identify numerical data <u>such as the price of goods or temperature.</u>	NEW (A) classify numerical and non-numerical data	NEW (A) identify and collect quantitative and qualitative data with digital tools	NEW (A) demonstrate how data can be represented in a binary system and Boolean expression	NEW (A) <u>demonstrate how data can be represented in a binary number systems</u> compare and contrast binary and Boolean data	NEW (A) <u>compare and contrast data types including binary, integers, real numbers, and Boolean data, and text-based representations</u> explain how devices manipulate and transfer data types and files from collected data, such as integers, real numbers, Boolean and text in a binary system	The work group felt it was important to specify the data types that a student should know by the end of Grade 8.

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Strand: Data Literacy, Management, and Representation									
Substrand: Collect Data									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
NEW (B) communicate the idea with guidance that digital devices can search for and retrieve information	NEW (B) conduct a basic search <u>with assistance</u> independently or collaboratively using provided keywords and digital sources	NEW (B) conduct a basic search independently using provided keywords and digital sources	NEW (B) use various search strategies with guidance	NEW (B) use various search strategies with two or more keywords within specific parameters	New (B) <u>identify keyword(s), Boolean operators, and limiters within provided search strategies</u> select various search strategies within specific parameters	NEW (B) discuss and use advanced search strategies, including keyword(s), Boolean operators, and limiters	NEW (B) evaluate advanced search strategies, including keyword(s), Boolean operators, and limiters	NEW (B) apply appropriate search strategies, including keyword(s), Boolean operators, and limiters to achieve a specified outcome that includes a variety of file formats	Grade 1: the work group wanted to delete “independently” and changed the wording Grade 5: rewritten to create a better transition between grades 4 and 6

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Strand: Data Literacy, Management, and Representation									
Substrand: Organize, Manage, and Analyze Data									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
			Data literacy, management, and representation--organize, manage, and analyze data. The student uses data to answer questions. The student is expected to:			New: Data Literacy, Management, and Representation-- Organize, manage, and analyze data. The student uses <u>digital tools</u> technology to transform data, make inferences, and predictions. The student is expected to:			
			NEW (A) analyze data through graphs to identify and discuss trends and inferences	NEW (A) use <u>digital tools</u> technology to analyze , transform, and make inferences about the data to answer a question	NEW (A) use <u>digital tools</u> technology to <u>analyze and</u> transform data to select and create the appropriate graph, such as a dot plot, scatter plot, and bar graph , and make inferences to answer a question	NEW (A) use <u>digital tools</u> technology to transform data in order to select the appropriate graph , identify and discuss trends, and make inferences	NEW (A) use <u>digital tools</u> technology to transform data to select the appropriate graph , analyze trends, and make inferences and predictions	NEW (A) use <u>digital tools</u> technology to transform data, analyze trends, and predict possibilities developing steps for the creation of an innovative process or product	Work group felt that “digital tools” was more specific language; took out the graphic language because that would be covered sufficiently in the publishing substrand as well as practical technology concepts

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Strand: Data Literacy, Management, and Representation									
Substrand: Communicate and Publish Results									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
		Data literacy, management, and representation--communicate and publish results. The student communicates data through the use of digital tools. The student is expected to:	Data literacy, management, and representation--communicate and publish results. The student communicates data through the use of digital tools to <u>inform</u> an audience. The student is expected to:			Data literacy, management, and representation--communicate and publish results. The student creates digital products to communicate data to an audience for an intended purpose. The student is expected to:			Added “inform” as it was in all three grade level SEs
		NEW (A) use a digital tool to individually or collaboratively create and communicate data visualizations, such as pictographs and bar graphs	NEW (A) <u>use digital tools to communicate and publish results to inform an intended audience</u> use digital tools technology to communicate and display data trends and inferences to inform an intended audience	NEW (A) use <u>digital tools technology</u> to communicate <u>results of an inquiry and display data, to answer a question</u> to inform an intended audience	NEW (A) use <u>digital tools technology</u> to communicate and display data using the appropriate visualization to inform an intended audience	NEW (A) use <u>digital tools technology</u> to communicate and display the data of a product or process to inform an intended audience	NEW (A) use <u>digital tools technology</u> to communicate and display the data of a product or process to inform or persuade an intended audience	NEW (A) use <u>digital tools technology</u> to communicate and publish the data of a product or process to persuade an intended audience	Work group felt that “digital tools” was more specific language; Grade 3 and 4, redirect focus of SE to the communication of results

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Strand: Digital Citizenship									
Substrand: Social Interactions									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
Digital citizenship--social interactions. The student identifies <u>appropriate</u> ways to communicate in various digital environments. The student is expected to:			Digital citizenship--social interactions. The student understands different styles of digital communication and that a student's actions online can have a long-term impact. The student is expected to:						
NEW (A) identify and demonstrate responsible behavior within a digital environment	NEW (A) describe and demonstrate respectful behavior within a digital environment	<p><u>NEW (A) participate in digital environments to develop responsible and respectful interactions</u></p> <p>(A) participate in digital environments to develop cultural understanding by interacting with learners of multiple cultures</p>							New Grade 2 (A) for better vertical alignment; appropriate digital etiquette also includes respecting different cultures
			NEW (A) define digital footprint	NEW (A) describe how created information retained <u>s online</u> <u>creates</u> a permanent digital footprint	NEW (A) identify the components of a digital footprint such as online activity using gaming or social media platforms	NEW (A) identify the impact of a digital footprint	NEW (A) classify actions as having a positive or negative effect on a digital footprint	NEW (A) analyze the importance of managing a digital footprint and how it can affect the future	

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Strand: Digital Citizenship									
Substrand: Social Interactions									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
			NEW (B) define digital etiquette	NEW (B) describe appropriate digital etiquette for various forms of digital communication such as text, email, online chat, and other platforms	NEW (B) describe appropriate digital etiquette for addressing different audiences such as peers, teachers, and other adults	NEW (B) <i>create formal and informal digital communications using appropriate digital etiquette</i> NEW (B) differentiate between formal and informal digital communications that contain proper digital etiquette	NEW (B) <i>create and revise formal and informal communications using a feedback process and appropriate digital etiquette</i> <i>create a formal and informal digital communication using appropriate digital etiquette</i>	NEW (B) create and publish a formal digital communication using appropriate digital etiquette for a global audience	Work group moved grade 7 down to grade 6 and rewrote grade 7 to include a revision process.
			<u>NEW (C): define digital collaboration</u>	<u>NEW (C): demonstrate appropriate digital etiquette for various forms of digital collaboration such as shared documents, video conferencing, and other platforms</u>	<u>NEW (C): demonstrate appropriate digital etiquette for collaborating with different audiences such as peers, teachers, and other adults</u>	<u>NEW (C): collaborate on digital platforms such as recording a video conference presentation using appropriate formal and informal digital etiquette</u>	<u>NEW (C): collaborate on digital platforms such as recording a video conference presentation using appropriate formal and informal digital etiquette</u>	<u>NEW (C): collaborate and publish for a global audience on digital platforms such as recording and editing videos using appropriate formal and informal digital etiquette</u>	Pulled from communication and collaboration strand.

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Strand: Digital Citizenship									
Substrand: Ethics and Laws									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
Digital citizenship--ethics and laws. The student recognizes and practices responsible, legal, and ethical behavior while using digital tools and resources. The student is expected to:									
NEW (A) demonstrate acceptable use of digital resources and devices as outlined in <u>local</u> district policies or Acceptable Use Policy (AUP)	NEW (A) explain and demonstrate the importance of acceptable use of digital resources and devices as outlined in <u>local</u> district policies or Acceptable Use Policy (AUP)	NEW (A) explain and demonstrate the importance of acceptable use of digital resources and devices as outlined in <u>local</u> district policies or Acceptable Use Policy (AUP)	NEW (A) demonstrate adherence to <u>local</u> Acceptable Use Policy (AUP) that reflects ing positive social behavior in the digital environment;	NEW (A) demonstrate adherence to <u>local</u> Acceptable Use Policy (AUP) and explain the importance of responsible and ethical technology use	NEW (A) demonstrate adherence to <u>local</u> Acceptable Use Policy (AUP) and explain the importance of responsible and ethical technology use	NEW (A) demonstrate adherence to <u>local</u> Acceptable Use Policy (AUP) and practice safe, ethical, and positive online behaviors;	NEW (A) demonstrate adherence to <u>local</u> Acceptable Use Policy (AUP) and practice model safe, ethical, and positive online behaviors;	NEW (A) demonstrate adherence to <u>local</u> Acceptable Use Policy (AUP) and advocate for safe, ethical, and positive online behaviors;	adding “local” to clarify and limit scope

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Strand: Digital Citizenship									
Substrand: Ethics and Laws									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
NEW (B) communicate an understanding that all digital content has owners.	NEW (B) communicate an understanding that all digital content has owners and explain the importance of respecting others' belongings as they apply to digital content and information	NEW (B) communicate an understanding that all digital content has owners and explain the importance of respecting others' belongings as they apply to digital content and information	NEW (B) <u>communicate the purpose of copyright law and identify appropriate and inappropriate use of digital content and information</u> demonstrate an understanding of copyright law associated with digital content	NEW (B) describe the rights and responsibilities of a creator, define copyright law, and explain how it applies to creative work	NEW (B) describe the purpose of copyright law and the possible consequences for inappropriate use of digital content	NEW (B) <u>discuss and define intellectual property and associated terms, including copyright law, permission, fair use, creative commons, open source, and public domain</u>	NEW (B) explain the importance of intellectual property laws, including the benefits of protection for content owners and the consequences of violating these laws	NEW (B) <u>apply appropriate intellectual property law when creating digital products</u> create a digital product that demonstrates an understanding of intellectual property law	Grade 6: added discuss to this grade level to clarify Grade 8: Clarifying the student expectation by placing focus on intellectual property law.
			<u>NEW (C) identify the required elements of a citation for digital forms of media</u>	<u>NEW (C) create a citation for digital forms of media with assistance</u>	<u>NEW (C) create a citation for digital forms of media with assistance</u>	<u>NEW (C) create citations and cite sources for a variety of digital forms of intellectual property</u>	<u>NEW (C) create citations and cite sources for a variety of digital forms of intellectual property</u>	<u>NEW (C) create citations and cite sources for a variety of digital forms of intellectual property</u>	Wanted to focus on citations on digital forms of media. The ELA TEKS focus on text formatting, so the tech applications work group wanted to reinforce that digital forms of media should be cited. TEKS guide: define intellectual property

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Digital Citizenship									
Substrand: Ethics and Laws									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
						New (D) (E) describe how information can be exaggerated or misrepresented online	New (D) (E) evaluate how various types of media, including social media, and technology can be used to exaggerate and misrepresent information	New (D) (E) evaluate the bias of digital information sources, including websites	

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Technology Applications TEKS Review Work Group E Draft Recommendations

Digital Citizenship									
Privacy, Safety, and Security									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
Digital citizenship--privacy, safety, and security. The student practices safe, legal, and ethical digital behaviors to become a socially responsible digital citizen. The student is expected to:									
NEW (A) identify ways to keep a user account safe, including <u>not sharing log in information</u> using a strong password and logging off of accounts and devices	NEW (A) identify ways to keep a user account safe, including <u>not sharing log in information</u> using a strong password and logging off of accounts and devices	NEW (A) demonstrate account safety, including creating a strong password and logging off of accounts and devices	NEW (A) demonstrate account safety, including creating a strong password and logging off of accounts and devices	NEW (A) demonstrate account safety, including creating a strong password and logging off of devices, and explain the importance of these practices	NEW (A) discuss cybersecurity <u>strategies to protect and ways</u> digital information can be protected <u>such as using a secured internet connection</u>	NEW (A) identify real-world cybersecurity problems such as phishing, malware, password attacks, identity theft, and hacking	NEW (A) describe <u>and model</u> ways to protect <u>oneself</u> themselves from real-world cybersecurity attacks	NEW (A) analyze real-world scenarios to identify cybersecurity threats and propose ways to prevent harm from them	K-1 students don't have the ability to use and create their own passwords, so the including phrase was changed to not sharing log in information. Additionally, creating a password is different from using a password.
NEW (B) identify <u>and discuss</u> what information is safe to share online such as hobbies and likes and dislikes and unsafe such as identifying information	NEW (B) identify <u>and discuss</u> explain what information is safe to share online such as hobbies and likes and dislikes and unsafe such as identifying information	NEW (B) <u>compare and contrast</u> discuss private information and <u>and versus</u> public information and <u>discuss</u> which is safe to be shared online and with whom	NEW (B) describe ways to employ safe practices such as protecting digital identity and discuss ways to avoid online dangers such as accessing unsafe websites or clicking on suspicious links	NEW (B) identify and discuss types of data collection tools such as cookies, pop-ups, smart devices, and unsecured networks and why it is important to maintain digital privacy	NEW (B) identify strategies to maintain digital privacy and security and discuss how data collection technology is used to track online navigation				Collaboration is a more effective method for K and 1 students to introduce the topic and it's a good scaffold to grade 2.

Technology Applications TEKS Review Work Group E Draft Recommendations

Digital Citizenship									
Privacy, Safety, and Security									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
	NEW (C) discuss and define cyberbullying with teacher support and guidance	NEW (C) discuss cyberbullying and identify examples	NEW (C) discuss and explain how to respond to cyberbullying	NEW (C) discuss and explain how to respond to cyberbullying, including advocating for self and others	NEW (C) discuss and identify how interactions can escalate online and explain ways to stand up to cyberbullying, including advocating for self and others	NEW (B) identify various methods of cyberbullying such as harassment, impersonation, and cyberstalking	NEW (B) analyze the negative impacts of cyberbullying on the victim and the bully	NEW (B) evaluate scenarios <u>or case studies</u> to identify warning signs of a cyberbullying victim such as withdrawal or lack of sleep and predict the outcomes for both the victim and the bully	Clarified language

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Processes									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
			Practical technology concepts—processes. The student engages with technology systems, concepts, and operations. The student is expected to:			Practical technology concepts—processes. The student evaluates and selects appropriate methods or techniques for an independent project and identifies and solves common hardware and software problems using troubleshooting strategies.			
			NEW (A) compare and contrast applications for relevance to the assigned task such as word processor, spreadsheet, presentation tools	NEW (A) evaluate and choose applications for relevance to the assigned task	NEW (A) identify file types for text, graphics, and multimedia files;	NEW (A) create and design files in various formats such as text, graphics, video, and audio files;	NEW (A) choose a variety of digital tools to create, share, and communicate digital artifacts	NEW (A) combine various file formats for a specific project or audience.	

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Processes									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
			NEW (B) perform software applications functions such as inserting or deleting text, inserting images, and formatting page layout and margins.	NEW (B) perform software applications functions such as outline options, bulleting, and numbering lists, and editing functions such as finding and replacing.	NEW (B) perform software applications functions including inserting or deleting text and images, and formatting tools or options.			NEW (B) share and seek feedback files in various formats, including text, raster and vector graphics, video, and audio files;	

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Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Skills and Tools									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
Practical technology concepts—skills and tools. The student demonstrates knowledge and appropriate use of technology systems, concepts, and operations. The student is expected to:			Practical technology concepts—skills and tools. The student selects appropriate methods or techniques for an assigned task and identifies and solves simple hardware and software problems using common troubleshooting strategies. The student is expected to:			Practical technology concepts—skills and tools. The student leverages technology systems, concepts, and operations to produce digital artifacts. The student is expected to:			
NEW (A) use a variety of applications, devices, and online learning experiences or environments to engage with content	NEW (A) choose <u>select</u> and use a variety of applications, devices, and online learning experiences or environments to create an original product	NEW (A) <u>select and</u> use a variety of applications, devices, and online learning environments to create and share content							Clarified language

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Skills and Tools									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
NEW (B) identify basic computer hardware, including a variety of input and output devices, and software using accurate terminology	NEW (B) describe basic computer hardware, <u>including a variety of input and output devices</u> , and software using accurate terminology	NEW (B) <u>identify, compare, and describe the function</u> the purpose of basic computer hardware, <u>including a variety of input and output devices</u> , and software <u>applications</u> using accurate terminology	NEW (A) demonstrate an understanding of the terminology related to operating systems, network systems such as internet, intranet, wifi, and short-range wireless technology, and learning management systems	NEW (A) demonstrate an understanding of the terminology related to virtual systems such as video conferencing, <u>reality</u> , and virtual reality environments	NEW (A) describe and evaluate operating systems, network systems such as internet, intranet, wifi, and short-range wireless technology , learning management systems, <u>and</u> virtual systems and their applications, and network systems such as internet, intranet, wifi, and short-range wireless technology	NEW (A) apply appropriate technology terminology such as <u>cloud applications</u> , input, output, <u>and</u> basic programming; and cloud concepts .	NEW (A) demonstrate proficiency in the use of technology terminology in projects through team collaboration and communication	NEW (A) integrate use of appropriate technology terminology in scholarly inquiry and dialogue such as classroom discussion and written samples	Wanted to better vertically align from grade 1 to grade 3. Added "variety of input and output devices" to ensure students are aware of devices that can and cannot be seen.

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Skills and Tools									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
NEW (C) operate a variety of developmentally appropriate digital tools and resources to perform software application functions such as opening an application and modifying, printing, and saving digital artifacts	NEW (C) operate a variety of developmentally appropriate digital tools and resources to perform software application functions such as file management, collaboration, and the creation and revision of digital artifacts	NEW (C) operate a variety of developmentally appropriate digital tools and resources to perform software application functions such as reviewing digital artifacts, and creating designing solutions to problems	NEW (B) identify where and how to save files such as using appropriate naming conventions and file management	NEW (B) evaluate where and how to save including the use of appropriate naming conventions, file management, and folder structures	NEW (B) organize files using appropriate naming conventions including folder structures	<p>NEW (B) NEW (E) identify effective file management strategies such as file naming conventions, local and remote locations, backup, hierarchy, folder structure, file conversion, tags, and emerging digital organizational strategies;</p> <p>NEW (B) identify where and how to save files such as using appropriate naming conventions and file management</p>	<p>NEW (B) NEW (E) demonstrate with assistance effective file management strategies such as file naming conventions, local and remote locations, backup, hierarchy, folder structure, file conversion, tags, and emerging digital organizational strategies;</p> <p>NEW (B) evaluate where and how to save including the use of appropriate naming conventions, file management, and folder structures</p>	<p>NEW (B) NEW (E) implement independently effective file management strategies including file naming conventions, local and remote locations, backup, hierarchy, folder structure, file conversion, tags, and emerging digital organizational strategies</p> <p>NEW (B) organize files using appropriate naming conventions including folder structures</p>	Moved from E for VA

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Skills and Tools									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
						NEW (C) select and use the appropriate platform and tools to complete a specific task or project	NEW (C) select and use the appropriate platform and tools, including selecting and using software or hardware for a defined task;	NEW (C) select and use the appropriate platform and tools, including selecting and using software or hardware <u>to transfer data for a self-identified task</u> ;	Added clarifying wording

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Skills and Tools									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
NEW (D) practice ergonomically correct keyboarding techniques and developmentally appropriate hand and body positions	NEW (D) practice ergonomically correct keyboarding techniques and developmentally appropriate hand and body positions	NEW (D) practice ergonomically correct keyboarding techniques and developmentally appropriate hand and body positions	NEW (C) demonstrate proper touch keyboarding techniques with accuracy and ergonomic strategies such as correct hand and body positions	NEW (C) demonstrate proper touch keyboarding techniques with speed and accuracy and ergonomic strategies such as correct hand and body positions	NEW (C) demonstrate proper touch keyboarding techniques with increasing speed and accuracy and ergonomic strategies such as correct hand and body positions	NEW (D) NEW (G) <u>demonstrate improvement in speed and accuracy as measured by words per minute when applying correct keyboarding techniques</u>	NEW (D) NEW (G) <u>demonstrate improvement in speed and accuracy as measured by words per minute when applying correct keyboarding techniques</u>	NEW (D) NEW (G) <u>demonstrate improvement in speed and accuracy as measured by words per minute when applying correct keyboarding techniques</u>	Added for vertical alignment; in theory students should be improving as they progress grade levels. Moved from (G) because these student expectations are vertically aligned.
NEW (E) identify, locate, and practice using keys on the keyboard, including letters, numbers, and special keys such as space bar, shift, and <u>backspace delete</u>	NEW (E) identify, locate, and practice using keys on the keyboard, including <u>upper- and lower-case</u> letters, numbers, and special keys such as space bar, shift, and <u>backspace delete</u>	NEW (E) identify, locate, and practice using keys on the keyboard, including <u>secondary actions of different keys such as @, #, \$, and ? special function keys, punctuation, and escape, and basic keyboard shortcuts</u>	NEW (D) identify and practice using additional keyboard or other input device shortcuts for actions such as copy, paste, undo, or closing windows	NEW (D) identify and practice using <u>cross-curricular symbols on a keyboard and additional</u> keyboard or other input device shortcuts for various digital tools	NEW (D) demonstrate keyboard or other input device shortcuts with fluency for various digital tools	<u>NEW (E) select and use appropriate shortcuts within applications</u>	<u>NEW (E) select and use appropriate shortcuts within applications</u>	<u>NEW (E) select and use appropriate shortcuts within applications</u>	Kindergarten and Grade 1: some concern that not all devices have a "delete" key. Grades 4 and 5: concern about students having access to "various digital tools." Grades 6–8: The work group wanted to add new student expectations for middle school. Now that students know how to use shortcuts, they can select relevant shortcuts for the appropriate application.

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Skills and Tools									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
			<p>NEW (E) <u>identify minor technical problems with hardware and software and solve the issue with assistance using available resources such as the help feature</u></p> <p>identify and locate the help feature in applications</p>	<p>NEW (E) <u>use troubleshooting strategies to solve troubleshoot minor technical problems with hardware and software such as restarting software or rebooting hardware using available resources such as the help feature</u></p> <p>use the help feature in applications</p>	<p>NEW (E) <u>use help sources to research application features and solve software issues</u></p> <p>identify minor technical problems with hardware and software using available resources such as the help feature</p>	<p>NEW (F) <u>use help sources to research application features and solve software issues</u></p> <p>NEW (D) troubleshoot minor technical problems with hardware and software using available resources such as the help feature</p>	<p>NEW (F) <u>NEW (D) research and test determine potential solutions to solve hardware and software problems using common troubleshooting strategies such as restarting digital tools or transferring work from one device to another</u></p>	<p>NEW (F) <u>apply appropriate common troubleshooting techniques independently and seek seeking technical assistance as needed</u></p>	<p>Moved Grade 5 and 6 SEs to Grade 3 and 4 to introduce grade-appropriate troubleshooting earlier; clarified appropriate use of the help feature (Massachusetts)</p> <p>Moved the introduction of help sources to Grades 5 and 6.</p> <p>Increased rigor at Grades 7 and 8.</p>

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Skills and Tools									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
						<i>NEW (E) identify effective file management strategies such as file naming conventions, local and remote locations, backup, hierarchy, folder structure, file conversion, tags, and emerging digital organizational strategies;</i>	<i>NEW (E) demonstrate with assistance effective file management strategies such as file naming conventions, local and remote locations, backup, hierarchy, folder structure, file conversion, tags, and emerging digital organizational strategies;</i>	<i>NEW (E) implement independently effective file management strategies including file naming conventions, local and remote locations, backup, hierarchy, folder structure, file conversion, tags, and emerging digital organizational strategies</i>	
						<u>NEW (G)</u> NEW (F) identify <u>types of a variety of</u> local and remote <u>data storage input sources</u> such as cloud architecture or local server	<u>NEW (G)</u> NEW (F) use <u>with assistance</u> a variety of <u>types of data storage input sources</u> such as cloud architecture or local server to <u>store or share collect and exchange</u> data;	<u>NEW (G)</u> NEW (F) <u>compare types of use independently a variety of</u> local and remote <u>data storage input sources</u> such as cloud architecture or local server <u>and select the appropriate type to store and share collect and exchange</u> data;	Clarified the SEs by providing more precise language on the use of file storage versus input sources.

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Skills and Tools									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
						<i>NEW (G) demonstrate improvement in speed and accuracy as measured by words per minute when applying correct keyboarding techniques</i>	<i>NEW (G) demonstrate improvement in speed and accuracy as measured by words per minute when applying correct keyboarding techniques</i>	<i>NEW (G) demonstrate improvement in speed and accuracy as measured by words per minute when applying correct keyboarding techniques</i>	
						NEW (H) use productivity tools found in spread sheet, word processing, and publication applications to create digital artifacts such as reports, graphs, and charts	NEW (H) use <u>and select</u> productivity tools found in spread sheet, word processing, and publication applications to create digital artifacts such as reports, graphs, and charts with increasing complexity	NEW (H) use <u>and select</u> productivity tools found in spread sheet, word processing, and publication applications to create digital artifacts, <u>including such as</u> reports, graphs, and charts, with increasing complexity	Revised to differentiate across Grades 6-8

Technology Applications TEKS Review Work Group E Draft Recommendations

Strand: Practical Technology Concepts									
Substrand: Skills and Tools									
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Rationale
						NEW (I) use multiple technology tools with support to design and create digital projects such as digital portfolios, multimedia, a blog, or a webpage	NEW (I) use collaboratively multiple technology tools with support to design and create, revise, or responsibly remix digital projects such as digital portfolios, multimedia, a blog, or a webpage	NEW (I) use multiple technology tools to design, and create, revise or responsibly remix, and publish digital projects such as digital portfolios, multimedia, a blog, or a webpage	Concern that the thread in this strand is also repeated in the creativity and innovation strand.