

Technology Applications, Grade 4

Subject: Technology Applications

Grade: 04

Expectations: 29

Breakouts: 74

(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 Texas Essential Knowledge and Skills (TEKS) consist of five strands that 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: decomposition, pattern recognition, abstraction, and algorithms.

- b. Creativity and innovation. Students use innovative design processes to develop solutions to problems. Students plan a solution, create the solution, test the solution, iterate, and debug the solution as needed, and implement a completely new and innovative product.

- e. Practical technology concepts. Students build their knowledge of s keyboarding and use of applications and tools. Students also build including integrating the use of multiple applications.

3. The technology applications TEKS can be integrated into all content areas a have the flexibility of offering technology applications in a variety of setting integrating the technology applications standards in the essential knowledg areas.

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- (A) decompose story problems into smaller, manageable subproblems and discuss and document various solutions to the problems;
 - (i) decompose story problems into smaller, manageable subproblems
 - (ii) discuss various solutions to the problems
 - (iii) document various solutions to the problems
 - (B) identify patterns in story problems and make predictions based on the pattern;
 - (i) identify patterns in story problems
 - (ii) make predictions based on the [story problem's] pattern
 - (C) communicate design plans and solutions using a variety of options; and
 - (i) communicate design plans using a variety of options
 - (ii) communicate design solutions using a variety of options
 - (D) debug algorithms (set of procedures) by identifying and removing errors.
 - (i) debug algorithms (set of procedures) by identifying errors
 - (ii) debug algorithms (set of procedures) by removing errors
- (2) Computational thinking--applications. The student applies the fundamentals of computer science. The student is expected to:
- (A) use variables within a program to modify data; and
 - (i) use variables within a program to modify data
 - (B) use a design process to create programs that include sequences, loops, and conditionals to express ideas or address a problem.
 - (i) use a design process to create programs that include sequences to express ideas or address a problem
 - (ii) use a design process to create programs that include loops to express ideas or address a problem
 - (iii) use a design process to create programs that include conditionals to express ideas or address a problem
- (3) Creativity and innovation--innovative design process. The student takes an active role in learning by using a design process to solve authentic problems for a local or global audience, using a variety of technologies. The student is expected to:
- (A) explain the importance of and demonstrate personal skills and behaviors, including problem solving and questioning, effective communication, following directions, mental agility, and metacognition, that are needed to implement a design process successfully; and
 - (i) explain the importance of personal skills and behaviors, including problem solving, that are needed to implement a design process successfully
 - (ii) explain the importance of personal skills and behaviors, including questioning, that are needed to implement a design process successfully
 - (iii) explain the importance of personal skills and behaviors, including effective communication, that are needed to implement a design process successfully
 - (iv) explain the importance of personal skills and behaviors, including following directions, that are needed to implement a design process successfully

- (A) demonstrate account safety, including creating a strong password and logging off devices, and explain the importance of these practices;
 - (i) demonstrate account safety, including creating a strong password
 - (ii) demonstrate account safety, including logging off devices
 - (iii) explain the importance of [account safety] practices
- (B) identify and discuss types of data collection tools such as cookies, pop-ups, smart devices, and unsecured networks and explain why it is important to maintain digital privacy; and
 - (i) identify types of data collection tools
 - (ii) discuss types of data collection tools
 - (iii) explain why it is important to maintain digital privacy
- (C) discuss and explain how to respond to cyberbullying, including advocating for self and others.
 - (i) discuss how to respond to cyberbullying, including advocating for self
 - (ii) discuss how to respond to cyberbullying, including advocating for others
 - (iii) explain how to respond to cyberbullying, including advocating for self
 - (iv) explain how to respond to cyberbullying, including advocating for others

(11) Practical technology concepts--processes. The student engages with technology systems, concepts, and operations. The student is expected to:

- (A) evaluate and choose applications for relevance to an assigned task; and
 - (i) evaluate applications for relevance to an assigned task
 - (ii) choose applications for relevance to an assigned task
- (B) perform software application functions such as outline options, bulleting, and numbering lists, and perform editing functions such as finding and replacing.
 - (i) perform software application functions
 - (ii) perform [software application] editing functions

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- (iv) evaluate how to save, including the use of appropriate naming conventions
 - (v) evaluate how to save, including effective file management strategies
 - (vi) evaluate how to save, including effective folder structures
- (C) demonstrate proper touch keyboarding techniques with speed and accuracy and ergonomic strategies such as correct hand and body positions;
- (i) demonstrate proper touch keyboarding techniques with speed
 - (ii) demonstrate proper touch keyboarding techniques with accuracy
 - (iii) demonstrate ergonomic strategies
- (D) identify and practice using cross-curricular symbols or other input device shortcuts on a keyboard; and
- (i) iden)