

Seymour Public Schools Curriculum

Grade:8 Subject: Computer Science

Unit 1: Digital Citizenship

The students will learn to be responsible and active in online communities while becoming thoughtful and empathetic digital citizens.

Unit 2: Applied Digital Skills

The students will use a variety of Google Productivity tools to create exciting and practical digital products for work and life.

Unit 3: CS Animations

Students will learn to program animations, interactive art, and games using the programming language JavaScript.

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UNIT 1- Digital Citizenship

Subject: Grade: Time Frame:	Computer Science Grade 8 3 Weeks
Overarching Standards	<p>ISTE: Digital Citizen</p> <p><i>Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.</i></p> <p>CSTA: Impacts of Computing</p> <p><i>Culture, Social Interactions, Safety, Ethics, Law</i></p> <p>CCSS</p> <p><u>CCSS.ELA-LITERACY.RI.6.7</u> <i>Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</i></p> <p><u>CCSS.ELA-LITERACY.SL.6.4</u> <i>Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.</i></p> <p><u>CCSS.ELA-LITERACY.SL.6.1</u> <i>Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.</i></p>
Enduring Understanding	Students Understand That...

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	<ul style="list-style-type: none"> ● It is their responsibility to manage their personal data to maintain digital privacy. ● Information that may contain partiality towards a specific stance.
Essential Questions	<ul style="list-style-type: none"> ● How can personal/private data be collected without our knowledge? ● What is bias? ● How can I make an accurate representation of information despite the existence of bias?
Priority Standards	<p>ISTE:</p> <p><i>2d. Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.</i></p> <p>CSTA:</p> <p><i>2-IC-21 Discuss issues of bias and accessibility in the design of existing technologies.</i></p> <p><i>3A-IC-29 Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users</i></p> <p><i>3A-IC-30 Evaluate the social and economic implications of privacy in the context of safety, law, or ethics.</i></p>
Performance Expectations	<ul style="list-style-type: none"> ● Create a plan to increase their personal digital privacy ● Understand and exercise their rights in terms of privacy protections ● Recognize the variety of ways in which their information can be compromised ● Define bias ● Compare and contrast instances of bias ● Accurately discern information despite the occurrence of bias

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Strategies (examples)	Materials/Resources (examples)	Assessments (examples)
<ul style="list-style-type: none">• Collaborative Learning• Flexible Grouping• Authentic Audiences• Student-Choice• Real-World Application	<ul style="list-style-type: none">• Applied Digital Skills	<ul style="list-style-type: none">• Create a Responsible Blog with Google Sites: Lessons – Applied Digital Skills

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UNIT 2- Applied Digital Skills

Subject: Grade: Time Frame:	Computer Science Grade 8 3 Weeks
Overarching Standards	<p>ISTE</p> <p>Standard 5: Computational Thinker <i>Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.</i></p> <p>Standard 6: Creative Communicator <i>Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.</i></p> <p>CSTA: Impacts of Computing <i>Culture, Social Interactions, Safety, Ethics, Law</i></p>
Enduring Understanding	<p>Students Will Understand That...</p> <ul style="list-style-type: none"> ● A word processor is a versatile program which can be used to convey information for many purposes ● Digital polling allows information to be obtained from a wide audience.
Essential Questions	<ul style="list-style-type: none"> ● What advantages do word processors have over alternative forms of digital representation? ● How can a Google Document be customized to best suit the purpose of the user? ● How have digital polling programs enabled us to obtain information and feedback to a wide audience? ● How can polling data be represented visually? ● What advantages does visually represented data have over numerically represented data?

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<p>Priority Standards</p>	<p>ISTE</p> <p><i>5b. Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.</i></p> <p><i>6c. Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.</i></p> <p><i>6d. Students publish or present content that customizes the message and medium for their intended audiences.</i></p> <p>CSTA</p> <p><i>2-IC-22 Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.</i></p>		
<p>Performance Expectations</p>	<ul style="list-style-type: none"> ● Create and use Google Document templates to showcase relevant work. ● Create and administer digital polls through Google Forms ● Analyze data collected through a digital poll ● Create appropriate visual representations of data 		
<p style="text-align: center;">Strategies (examples)</p> <ul style="list-style-type: none"> ● Collaborative Learning ● Flexible Grouping ● Authentic Audiences ● Student-Choice ● Real-World Application 	<p style="text-align: center;">Materials/Resources (examples)</p> <ul style="list-style-type: none"> ● <u>Applied Digital Skills</u> 	<p style="text-align: center;">Assessments (examples)</p> <ul style="list-style-type: none"> ● G-Suite Certification Assessment ● <u>Create Quizzes in Google Forms: Lessons – Applied Digital Skills</u> ● <u>Create a Resume in Google Docs: Lessons – Applied Digital Skills</u> ● <u>G Suite Certification: Docs - Part 1: Lessons – Applied Digital Skills</u> ● <u>G Suite Certification: Docs - Part 2: Lessons – Applied Digital Skills</u> ● 	

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UNIT 3- Animations

Subject:	Personal Finance
Grade:	Grade 8
Time Frame:	6 Weeks
Overarching Standards	CSTA: <i>Impacts of Computing</i>

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	<p><i>Algorithms and Programming</i></p> <p>ISTE:</p> <p>Standard 5: Computational Thinker <i>Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.</i></p> <p>Standard 6: Creative Communicator <i>Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.</i></p>
<p>Enduring Understanding</p>	<ul style="list-style-type: none"> ● Students should be able to collaborate with peers to develop a piece of software ● Students should be able to break down complex problems into their component parts, both to increase readability and organization of code and to allow them to reuse portions of code many times. ● Students should be able to use basic programming constructs to create a wide range of behaviors in their programs. ● Students should use the coordinate plane to place and move screen elements.
<p>Essential Questions</p>	<ul style="list-style-type: none"> ● What is a computer program? ● What are the core features of most programming languages? ● How does programming enable creativity and individual expression? ● What practices and strategies will help me as I write programs? ● How do software developers manage complexity and scale? ● How can programs be organized so that common problems only need to be solved once? ● How can I build on previous solutions to create even more complex behavior?
<p>Priority Standards</p>	<p>CSTA</p> <p><i>2-IC-21 - Discuss issues of bias and accessibility in the design of existing technologies.</i></p> <p><i>2-AP-10 - Use flowcharts and/or pseudocode to address complex problems as algorithms.</i></p> <p><i>2-AP-11 - Create clearly named variables that represent different data types and perform operations on their values.</i></p>

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	<p><i>2-AP-12 - Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.</i></p> <p><i>2-AP-13 - Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.</i></p> <p><i>2-AP-14 - Create procedures with parameters to organize code and make it easier to reuse.</i></p> <p><i>2-AP-15 - Seek and incorporate feedback from team members and users to refine a solution that meets user needs.</i></p> <p><i>2-AP-16 - Incorporate existing code, media, and libraries into original programs, and give attribution.</i></p> <p><i>2-AP-17 - Systematically test and refine programs using a range of test cases.</i></p> <p><i>2-AP-18 - Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.</i></p> <p><i>2-AP-19 - Document programs in order to make them easier to follow, test, and debug.</i></p>
<p>Performance Expectations</p>	<ul style="list-style-type: none"> ● Give feedback to peers using a structured process that points out strengths and areas for growth in a project, and incorporate given feedback for their own programs into their revisions. ● Organize code such that it is readable and make comments where appropriate to help readers understand the purpose of specific sections. Use reasonable variable and function names. ● Use a structured process to describe a program's behavior, identify the core programming constructs necessary to complete the project, then use them as a guide to complete the program. ● Break up tasks so that each team member can make a meaningful contribution. Ensure that the code will work together once it is finished. ● Create and modify objects (sprites) to represent on screen elements and their associated properties. Use dot notation to get and set sprite properties. ● Use abstraction to reason about a program at different levels of complexity. Describe the benefits of abstraction, including simplifying code to more easily program complex behavior. ● Create and use functions to organize reuse code within the same program. Modify and use functions created by others, ● Use arguments to change the way a method runs, distinguishing between the roles of multiple arguments passed to a method ● Use input from the keyboard and mouse to change the behavior of a program while it is running. ● Use loops to repeat behavior in a program, combining repetition with other control structures to produce ongoing complex behaviors.

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	<ul style="list-style-type: none"> ● Use conditional statements to control the flow of a program based on user input, variable values, or properties of objects (sprites). ● Use random numbers to introduce variation in how a program is run. ● Use a coordinate system to place elements on a screen, accounting for object size and overlay. ● Manipulate the x and y coordinates of an object on a screen to create the illusion of smooth motion. ● Combine different types of movement to create more complex behaviors such as acceleration, jumping, and bouncing. ● Create and assign values to variables as a program is run to store and update changing information 	
<p style="text-align: center;">Strategies (examples)</p> <ul style="list-style-type: none"> ● Project-Based Learning ● Digital Simulations ● Collaborative Learning ● Modeling ● Guided Practice 	<p style="text-align: center;">Materials/Resources (examples)</p> <ul style="list-style-type: none"> ● Code.org 	<p style="text-align: center;">Assessments (examples)</p> <ul style="list-style-type: none"> ● Frequent informal check ins <ul style="list-style-type: none"> ○ Reflection questions ○ Activities in Code.org ○ Group discussions ● Journal Checks ● Unit-Specific Projects ● Post-Project Tests

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