

Sixth Grade Technology: Computer Science and Design Thinking Curriculum 2022

<b>Pacing Guide</b>	<b>Standard Code &amp; Indicator</b>	<b>Learning Activities</b>	<b>Assessment</b>	<b>Additional Standards</b>
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<p>August-September</p> <p>Networks and the Internet</p>	<p>8.1.8.NI.3: Explain how network security depends on a combination of hardware, software, and practices that control access to data and systems.</p> <p>8.1.8.NI.4: Explain how new security measures have been created in response to key malware events.</p> <p>8.1.8.NI.2: Model the role of protocols in transmitting data across networks and the Internet and how they enable secure and errorless communication.</p> <p>9.4.8.DC.3: Describe tradeoffs between allowing information to be public (e.g., within online games) versus keeping information private and secure.</p> <p>9.4.8.DC.4: Explain how information shared digitally is public and can be searched, copied, and potentially seen by public audiences.</p> <p>9.4.8.DC.5: Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure.</p> <p>9.4.8.DC.6: Analyze online information to distinguish whether it is helpful or harmful to reputation.</p>	<p>-Discuss: cyber bullying and ways to seek help.</p> <p>-Explain the difference between private and secure sharing vs public sharing online.</p> <p>-Review online safe behaviors.</p> <p>-Create a document (newsletter, brochure etc.) for current fifth graders about UTMS</p> <p>-Explore credibility of digital content</p> <p>-Determine the credibility and accuracy of digital content</p> <p><b>Instructional Resources:</b> Gsuite Grow with Google Teacher Created Resources Cyberbullying: <a href="https://cyberbullying.org/">https://cyberbullying.org/</a> <a href="https://cyberbullying.org/bullying-laws/new-jersey">https://cyberbullying.org/bullying-laws/new-jersey</a></p> <p>Reliable Resources: <a href="https://uknowit.uwgb.edu/page.php?id=30276">https://uknowit.uwgb.edu/page.php?id=30276</a> Fake News:</p>	<p><b>Formative Assessments:</b> Classwork Student Participation Teacher Observation Google Doc Writing</p> <p><b>Summative Assessments:</b> Complete document</p> <p><b>Benchmark Assessment:</b> BOY Benchmark</p> <p><a href="#">Accommodations and Modifications</a></p>	<p><b>Interdisciplinary Standard: W 6.2</b> Students will write informative paragraphs on a document (style of their choosing) to be provided to fifth grade students.</p>
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<p>October/November</p> <p>Effects of Technology on the Natural World</p>	<p>8.2.8.ETW.1: Illustrate how a product is upcycled into a new product and analyze the short- and long-term benefits and costs.</p> <p>8.2.8.ETW.2: Analyze the impact of modifying resources in a product or system (e.g., materials, energy, information, time, tools, people, capital).</p> <p>8.2.8.ETW.3: Analyze the design of a product that negatively impacts the environment or society and develop possible solutions to lessen its impact.</p> <p>8.2.8.ETW.4: Compare the environmental effects of two alternative technologies devised to address climate change issues and use data to justify which choice is best.</p>	<p>-Understand how products are made using different materials</p> <p>-Model a product that can be remade using different materials. Compare and contrast benefits and downfalls of materials based and their relation to our environment.</p> <p>-Recognize the impact resources have with product creation and the future</p> <p>-Analyze product design and its impacts on the environment</p> <p>-Research environmental effects on different technologies (climate change)</p> <p><b>Instructional Resources:</b>  Gsuite  Easy Bib  BrainPop  Teacher Created Resources  Study.com:  <a href="https://study.com/member/my-dashboard.html#/dashboard">https://study.com/member/my-dashboard.html#/dashboard</a></p>	<p><b>Formative Assessments:</b>  Classwork  Student Participation  Teacher Observation</p> <p><b>Summative Assessments:</b>  Product Project  Design Assignment</p> <p><a href="#">Accommodations and Modifications</a></p>	<p><b>Interdisciplinary Standard:</b>  RST.6.8.1: Cite specific textual evidence to support analysis of science.</p>
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<p>December/January</p> <p>Data and Analysis</p>	<p>8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.</p> <p>9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision making.</p> <p>9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivivsPR.4).</p> <p>9.4.8.TL.3: Select appropriate tools to organize and present information digitally</p> <p>9.4.8.TL.4: Synthesize and publish information about a local or global issue or event (e.g., MS-LS4-5, 6.1.8.CivicsPI.3).</p>	<p>-Examine a local issue using a digital tool i.e. impact of climate change, how weather affects society namely earthquakes</p> <p>-Collect data regarding the issue</p> <p>-Plan and manage a set of solutions for a problem</p> <p>-Analyze data in a spreadsheet to support a solution</p> <p>-Develop a solution for the Local/National issue along with an alternative (i.e. building bridges/houses/buildings that can without severe weather/earthquakes)</p> <p>-Consider alternative solutions and differing perspectives</p> <p><b>Instructional Resources:</b> Teacher Created Resources <a href="https://study.com/">https://study.com/</a></p> <p><b>Teacher Technology:</b> Computer Activ Panel Acitiv View</p>	<p><b>Formative Assessments:</b> Classwork Student Participation Teacher Observation</p> <p><b>Summative Assessments:</b> Presentation of local/national issue</p> <p><a href="#">Accommodations and Modifications</a></p>	<p><b>Interdisciplinary Standard Math NS B.3.</b> Students will use the standard algorithm to add/subtract/multiply/divide as needed when gathering data.</p>
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<p>February- March</p> <p>Algorithms and Programming</p>	<p>8.1.8.AP.1: Design and illustrate algorithms that solve complex problems using flowcharts and/or pseudocode.</p> <p>8.1.8.AP.3: Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.</p> <p>8.1.8.AP.4: Decompose problems and sub-problems into parts to facilitate the design, implementation, and review of programs.</p> <p>8.1.8.AP.5: Create procedures with parameters to organize code and make it easier to reuse.</p>	<p>-Students will use code.org Computer Science Discoveries- Web development /animation and games to learn application and development of codes</p> <p>-Development an algorithm to solve a problem</p> <p>-Apply a set of commands to a project</p> <p>-Gather peer feedback on designed solution and make changes accordingly</p> <p><b>Instructional Resources:</b> Code.org Tynker familycodenight.org Snap Scratch Teacher Created Resources</p> <p><b>Teacher Technology:</b> Computer Activ Panel Acitiv View YouTube Videos GSuite</p> <p><b>Student Technology:</b></p>	<p><b>Formative Assessments:</b> Classwork Student Participation Teacher Observation</p> <p><b>Summative Assessments:</b> Course progression Personal webpage</p> <p><a href="#">Accommodations and Modifications</a></p>	<p><b>Interdisciplinary Standard: SL 6.1 and SL 6.2</b> Students will participate in discussions and provide classmates targeted feedback on their designed solutions.</p>
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<p>April-June Robots</p>	<ul style="list-style-type: none"> <li>• 8.1.8.AP.7: Design programs, incorporating existing code, media, and libraries, and give attribution.</li> <li>• 8.1.8.AP.8: Systematically test and refine programs using a range of test cases and users.</li> <li>• 8.1.8.AP.9: Document programs in order to make them easier to follow, test, and debug.</li> </ul> <p>8.1.8.AP.4: Decompose problems and sub-problems into parts to facilitate the design, implementation, and review of programs.</p> <p>8.1.8.AP.5: Create procedures with parameters to organize code and make it easier to reuse.</p>	<p>-Develop an understanding of how robots work through coding</p> <p>-Students will do use sphero to accomplish tasks using Java script or block coding</p> <p><b>Instructional Resources:</b> <a href="#">Sphero</a> Sphero Supplemental material-</p> <p><b>Teacher Technology:</b> Computer Activ Panel Acitiv View YouTube Videos GSuite</p> <p><b>Student Technology:</b> Computer; iPads Google Classroom</p>	<p><b>Formative Assessments:</b> Classwork Student Participation Teacher Observation</p> <p><b>Summative Assessments:</b> Student selected Sphero activities</p> <p><b>Benchmark Assessment:</b> EOY Benchmark</p> <p><a href="#">Accommodations and Modifications</a></p>	<p><b>Interdisciplinary Standard: Math 5.MD.A.1</b> In using Robots students will have to work concepts like angle and distance. Many times, Conversion is needed to get the desired outcome of the device.</p>
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**Alternate Assessments:** Coding Game; “Welcome to UTMS” document, Coding Activities, Worksheets

**21st Century Standards:** 9.1.8.A.3 and 9.1.8.E.2, 9.2.8.B.7

**21st Century Skills:** Communication, Leadership, Innovation, Creativity

**Career Ready Practices: CRP 1, CRP 2, CRP 3, CRP 10**