



West Windsor-Plainsboro Regional School District

Unit 1: Intro to Computer Cycle	
Content Area: Technology	
Course & Grade Level: Computer Cycle 6th Grade	
Summary and Rationale	
<ul style="list-style-type: none"> Students will understand the 35 day progression of the 6th grade computer cycle class by way of general introduction to the course, computer lab procedures, and curriculum related software Students will be able to effectively navigate Google Drive and Network environments by understanding and utilizing Google Classroom as a document sharing resource for storing, accessing, retrieving and submitting pertinent computer cycle related documents. Students will understand the use of technology tools to broaden and reinforce learning, increase productivity, and foster creativity not only in the computer cycle class but across all content areas Students will engage in interpersonal activities to gain a sense of comfort and an familiarity with all classroom members 	
Recommended Pacing	
3 days	
New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills	
Standard: Standards for Career Readiness, Life Literacies and Key Skills	
CPI #	Cumulative Progress Indicator (CPI)
9.4.8.TL.3	Select appropriate tools to organize and present information digitally
New Jersey Student Learning Standards for Computer Science and Design Thinking	
Standard: Standards for Computing Systems and Data & Analysis	
CPI #	Cumulative Progress Indicator (CPI)
8.1.8.CS.4	Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.
8.1.8.DA.3	Identify the appropriate tool to access data based on its file format
ISTE (International Society for Technology in Education) Student Standards	
ISTE Standard: 1.7 Global Collaborator	
ISTE 1.7a	Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> Building intrapersonal/interpersonal and collaborative skills Importance of relationships in getting to know your peers and your teacher and class expectations Creating and navigating in Google Drive 	
Unit Essential Questions	
<ul style="list-style-type: none"> Why is collaboration important in working productively with others? How do we independently communicate our interests, skills, and goals? Why is it important to understand and use technology tools appropriately? 	
Objectives	
Students will know: <ul style="list-style-type: none"> Expectations of the class Students will be able to: <ul style="list-style-type: none"> Use technology to gather and communicate information in an effective, efficient, and appropriate manner Become collaborative and effective communicators Understand and implement classroom and school rules, procedures, and expectations Allow opportunity for independent exploration to enhance skills through software and online resources 	

Evidence of Learning
Assessment
Students will introduce themselves using a digital product
Resources
Google Drive (Slides, Drawings, Docs, Gmail) Flipgrid

Unit 2: Intro to Graphic Design	
Content Area: Technology	
Course & Grade Level: Computer Cycle 6th Grade	
Summary and Rationale	
<ul style="list-style-type: none"> Students will understand how to communicate information using digital media Students will understand image layering and basic image manipulation Students will be able to demonstrate creativity and innovation using graphic design concepts 	
Recommended Pacing	
6 days	
ISTE (International Society for Technology in Education) Student Standards	
ISTE Standard: 1.6 Creative Communicator	
CPI #	Cumulative Progress Indicator (CPI)
ISTE 1.6.a	Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
ISTE 1.6.d	Students publish or present content that customizes the message and medium for their intended audiences.
New Jersey Student Learning Standards for 9.4 Life Literacies and Key Skills	
Standard: Standards for Information and Media Literacy	
9.4.8.IML.6	Identify subtle and overt messages based on the method of communication.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> Images are often a more effective communicator than words and can elicit personal meaning and emotional responses. Appropriating or repurposing images can transform the familiar into the unfamiliar and create a new experience for the viewer. 	
Unit Essential Questions	
<ul style="list-style-type: none"> What makes a design aesthetically and non-aesthetically pleasing? What makes a design resonate with viewers? 	
Objectives	
Students will know: <ul style="list-style-type: none"> How to choose from a variety of digital options to create their expressions How to rearrange layers, resize, and rotate images Elements of Design / Principles of Design / Principles of Animation Students will be able to: <ul style="list-style-type: none"> Intentionally incorporate Design Elements and Principles to convey a message 	
Evidence of Learning	
Assessment	
Students will create unique multimedia graphics to communicate their messages and ideas	
Resources	
Photo Editing: Photoshop, Google Drawings, Remove.bg Animation: Flipaclip, Pivot Animator, Google Slides	

Unit 3: Intro to 2D/3D Design	
Content Area: Technology	
Course & Grade Level: Computer Cycle 6th Grade	
Summary and Rationale	
<ul style="list-style-type: none"> Students will be able to build upon existing spatial reasoning skills using 2D to 3D design software Students will understand the basics of navigating through the 3D dimension 	
Recommended Pacing	
4 days	
New Jersey Student Learning Standards for Computer Science and Design Thinking	
Standard: Standards for Computer Science and Design Thinking	
CPI #	Cumulative Progress Indicator (CPI)
8.2.8.ED.3	Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).
ISTE (International Society for Technology in Education) Student Standards	
ISTE Standards: 1.4 Innovative Designer	
CPI #	Cumulative Progress Indicator (CPI)
ISTE 1.4c	Students develop, test and refine prototypes as part of a cyclical design process.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> 3D Design brings us one step closer to designing in a setting similar to our physical environment 3D Design provides opportunities to build solutions to complex problems 	
Unit Essential Questions	
<ul style="list-style-type: none"> Why is it important to have spatial visualization skills? What does it mean to be a 'visual learner'? How has 3D printing and design impacted the modern world? What can be gained/lost from 2D design? 3D design? 	
Objectives	
Students will know: <ul style="list-style-type: none"> how to navigate in the 3D environment using necessary tools and the x, y, and z axes how Isometric and Orthographic views -2D - translate over to Computer Aided Design (CAD) - 3D Students will be able to: <ul style="list-style-type: none"> Reposition, Resize and Rearrange 3D shapes/items Design a floor or structure plan using a 2D/3D tool 	
Evidence of Learning	
Assessment	
Students will use 2D sketches or planners to make 3D structures or layouts	
Resources	
https://roomstyler.com/ https://www.tinkercad.com/	

Unit 4: Digital Citizenship & Search Literacy	
Content Area: Technology	
Course & Grade Level: Computer Cycle 6th Grade	
Summary and Rationale	
<ul style="list-style-type: none"> ● Build a safe and inclusive learning environment online. ● Differentiate the negative and positive aspects of an online community. ● Explain what a digital footprint is and how it's created. ● Protect digital data from compromise. ● Describe the potential consequences of spending a lot of time online. ● List steps to keep personal information private online. ● Identify potential phishing messages and signs of malware. ● Identify and describe digital rights and restrictions. ● Differentiate between created and curated content. ● Describe how to evaluate content for accuracy and bias. ● Identify methods to differentiate accurate search results from inaccurate or sponsored content. 	
Recommended Pacing	
6 days	
New Jersey Student Learning Standards for Computer Science and Design Thinking	
Standard: Standards for Networks and the Internet	
CPI #	Cumulative Progress Indicator (CPI)
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.
8.1.8.NI.4	Explain how new security measures have been created in response to key malware events.
Standard: Impacts of Computing	
CPI #	Cumulative Progress Indicator (CPI)
8.1.8.IC.1	Compare the trade-offs associated with computing technologies that affect an individual's everyday activities and career options.
8.1.8.IC.2	Describe issues of bias and accessibility in the design of existing technologies.
New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills	
Standard: Digital Citizenship	
CPI #	Cumulative Progress Indicator (CPI)
9.4.8.DC.4	Explain how information shared digitally is public and can be searched, copied, and potentially seen by public audiences.
9.4.8.DC.5	Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure.
ISTE (International Society for Technology in Education) Student Standards	
ISTE Standard: 1.2 Digital Citizen	
ISTE 1.2a	Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.
ISTE 1.2b	Students engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.
ISTE 1.2c	Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

ISTE 1.2d	Students manage their personal data to maintain digital privacy and security and are aware of data collection technology used to track their navigation online.
ISTE Standard: 1.3 Knowledge Constructor	
ISTE 1.3a	Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.
ISTE 1.3b	Students evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.
CASEL Competencies (Collaborative for Academic, Social and Emotional Learning)	
	Relationship Skills
	Responsible Decision-Making
	Social Awareness
7	Employ valid and reliable research strategies
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> Understanding one's online image Managing online relationships Understanding digital footprint Managing personal information (including location tracking) Understanding the benefits and risks of online and offline time Recognizing digital dependency and when to take action Protecting digital data Recognizing digital threats Understanding digital rights, restrictions, and responsibilities Knowing how to evaluate online content 	
Unit Essential Questions	
<ul style="list-style-type: none"> What are the most pressing digital issues facing middle schoolers today? How can you stay safe online? How do you know which sources are reliable and which are not? What precautions can you follow to protect yourself online? How does social comparison and cyberbullying impact you? How can you safely and confidently navigate the online environment? 	
Objectives	
<p>Students will know:</p> <ul style="list-style-type: none"> How to identify methods to engage with others online in a respectful manner and to create a healthy balance between online and offline time. When to seek help from a trusted adult. How to keep personal information private online. How to create a healthy balance between online and offline time. The potential consequences of spending a lot of time online. <p>Students will be able to:</p> <ul style="list-style-type: none"> Differentiate the negative and positive aspects of an online community. Identify methods to engage with others online in a respectful manner. Identify methods to create a healthy balance between online and offline time. List steps to keep personal information private online. Explain what a digital footprint is and how it's created. Identify when to seek help from a trusted adult. List steps to protect digital data from compromise. Describe the potential consequences of spending a lot of time online. 	

- Identify and describe digital rights and restrictions.
- Differentiate between created and curated content.
- Describe how to evaluate content for accuracy and bias.
- Identify methods to differentiate accurate search results from inaccurate or sponsored content.

Evidence of Learning

Assessment

Students will discuss and reflect upon the following topics:

- Connections and Community
- Safety and Privacy
- Screen Time vs. Offline Time
- Technology and Data
- Rights and Literacy
- Evaluating Content

Resources

Safe Online Talk

EverFi Ignition: Digital Safety and Wellness

https://sponsor-logos.s3.amazonaws.com/uploads/teacher_resource/en-US/file_url/35452/ignition-2022-National-Standards-Alignment.pdf

Unit 5: Evolution of Technology & Research	
Content Area: Technology	
Course & Grade Level: Computer Cycle 6th Grade	
Summary and Rationale	
<ul style="list-style-type: none"> History enables students to explore computing beyond hardware and software, and it expands students' views on ways in which computing affects society. Students will research specific topics relating to the history of computers and/or ethical issues in technology 	
Recommended Pacing	
6 days	
New Jersey Student Learning Standards for Computer Science and Design Thinking	
Standard: Impacts of Computing	
CPI #	Cumulative Progress Indicator (CPI)
8.1.8.IC.2	Describe issues of bias and accessibility in the design of existing technologies.
Standard: Standards for Interaction of Technology and Humans	
CPI #	Cumulative Progress Indicator (CPI)
8.2.8.ITH.1	Explain how the development and use of technology influences economic, political, social, and cultural issues.
8.2.8.ITH.2	Compare how technologies have influenced society over time
8.2.8.ITH.3	Evaluate the impact of sustainability on the development of a designed product or system
8.2.8.ITH.4	Identify technologies that have been designed to reduce the negative consequences of other technologies and explain the change in impact.
New Jersey Student Learning Standards for English Language Arts Companion Standards	
Standard: Science & Technical Subjects	
CPI #	Cumulative Progress Indicator (CPI)
RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts
RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills	
Standard: Technology Literacy	
CPI #	Cumulative Progress Indicator (CPI)
9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
ISTE (International Society for Technology in Education) Student Standards	
ISTE Standards: 1.7 Global Collaborator	
CPI #	Cumulative Progress Indicator (CPI)
ISTE 1.7.d	Students explore local and global issues and use collaborative technologies to work with others to investigate solutions
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> Computer technology is a vital part of modern life. Computer technology is continuously improving. 	

<ul style="list-style-type: none"> Learning about the significance of technology in our lives is valuable, as is learning about the ethics and potential issues with technology.
Unit Essential Questions
<ul style="list-style-type: none"> How has technological innovation changed the way we live our lives? How has technology increased human productivity? As technology continually changes and improves, how can we know what skills to learn? If Moore's Law is correct, what will the computers of the future be like?
Objectives
<p>Students will know:</p> <ul style="list-style-type: none"> how to analyze key events in the history of computers the different forms and types of computers that emerged throughout history key topics and people in the history of computers <p>Students will be able to:</p> <ul style="list-style-type: none"> Research and learn specifics about a tech-based ethical issue or specific computer topic Design a graphic with key information, images and videos to share what they have researched Present their group topic to enhance the class understanding and progression of computer technology
Evidence of Learning
Assessments
<ul style="list-style-type: none"> Groups of students will present key points of research (i.e- time period) to the class and how it contributed to the history of computers and/or current ethical issues in technology Students will reflect on the progression of technology and make predictions about what they expect to see in the future.
Resources
<p>Presentation Creation: SlidesCarnival, SlidesMania, SlidesGo</p> <p>Other: Google Slides, Google Docs</p> <p>Study.com</p> <p>https://builtin.com/hardware/moores-law</p>

Unit 6: Computer Programming & Coding	
Content Area: Technology	
Course & Grade Level: Computer Cycle 6th Grade	
Summary and Rationale	
<ul style="list-style-type: none"> Students will learn the concept of “debugging” as it relates to computer programming. Students will build upon existing programming knowledge and concepts to code animations. Students will determine various plans of action to meet given criteria by way of problem solving. Students will think, reason, and collaborate with peers. 	
Recommended Pacing	
6 days	
New Jersey Student Learning Standards for Computer Science and Design Thinking	
Standard: 8.1 Computer Science	
Standards for Algorithms & Programming	
CPI #	Cumulative Progress Indicator (CPI)
8.1.8.AP.2	Create clearly named variables that represent different data types and perform operations on their values.
Standard: 8.2 Design Thinking	
Standards for Engineering Design	
CPI #	Cumulative Progress Indicator (CPI)
8.2.8.ED.4	Investigate a malfunctioning system, identify its impact, and explain the step-by-step process used to troubleshoot, evaluate, and test options to repair the product in a collaborative team.
Standards for Nature of Technology	
CPI #	Cumulative Progress Indicator (CPI)
8.2.8.NT.1	Examine a malfunctioning tool, product, or system and propose solutions to the problem.
New Jersey Student Learning Standards for English Language Arts Companion Standards	
Standard: Science & Technical Subjects	
CPI #	Cumulative Progress Indicator (CPI)
RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. (MS-PS3-3), (MS-PS3-4)
New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills	
Standard: Technology Literacy	
CPI #	Cumulative Progress Indicator (CPI)
9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
ISTE (International Society for Technology in Education) Student Standards	
ISTE Standards: 1.7 Global Collaborator	
CPI #	Cumulative Progress Indicator (CPI)
ISTE 1.7a	Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> There are many ways to solve a problem when coding Knowledge of coding concepts can help you be more efficient and effective when solving problems It helps to know how things work before trying to fix them 	

Unit Essential Questions
<ul style="list-style-type: none"> How can you design the most efficient algorithm to meet desired criteria?
Objectives
Students will know: <ul style="list-style-type: none"> Algorithms have inputs and outputs Algorithms make each set of instructions unique Not everyone will have the same algorithm to meet the debugging criteria Students will be able to: <ul style="list-style-type: none"> Explain that all algorithms are instructions or a set of steps for solving a problem Identify parts of Scratch interface (backdrop, sprites, scripts, etc) Demonstrate they have met the desired criteria for debugging activities
Evidence of Learning
Assessment
Students will design and share a solution algorithm to demonstrate their understanding of the desired criteria
Resources
Scratch.mit.edu Grace Hopper CS EdWeek

Unit 7: STEM	
Content Area: Technology	
Course & Grade Level: Computer Cycle 6th Grade	
Summary and Rationale	
<ul style="list-style-type: none"> Students will study simple electronic circuits using coin cell batteries, surface mounted LEDs, and conductive material to control output. Students will understand the basic engineering design loop process. Students will enhance a desktop publishing project by making it light up. 	
Recommended Pacing	
4 days	
New Jersey Student Learning Standards for Computer Science and Design Thinking	
Standard: 8.2 Design Thinking	
Standards for Engineering Design	
CPI #	Cumulative Progress Indicator (CPI)
8.2.8.ED.2	Identify the steps in the design process that could be used to solve a problem
8.2.8.ED.5	Explain the need for optimization in a design process
Standard: Nature of Technology	
CPI #	Cumulative Progress Indicator (CPI)
8.2.8.NT.1	Examine a malfunctioning tool, product, or system and propose solutions to the problem.
New Jersey Student Learning Standards for English Language Arts Companion Standards	
Standard: Science and Technical Subjects	
CPI #	Cumulative Progress Indicator (CPI)
RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. (MS-PS3-3), (MS-PS3-4)
New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills	
Standard: Technology Literacy	
CPI #	Cumulative Progress Indicator (CPI)
9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> A circuit is a complete path along which electricity flows. The role of troubleshooting and experimentation in problem solving. 	
Unit Essential Questions	
<ul style="list-style-type: none"> What stores electricity? How can we make the light turn on and off? 	
Objectives	
Student will know: <ul style="list-style-type: none"> the parts that make up a simple circuit. the attributes and application of the design process. Students will be able to: <ul style="list-style-type: none"> Identify and utilize electrical components in a simple circuit Construct and complete a battery powered simple circuit with a switch to light an LED Understand the flow of the electrical current and how it can be manipulated by the designer of the circuit 	
Evidence of Learning	

Assessment
Students will demonstrate their ability to create an open and closed simple circuit.
Resources
MS Publisher Simple Circuits materials: Coin Cell Batteries, Foil, Tape, Cardstock https://youtu.be/js7Q-r7G9ug http://www.nissantechicianinfo.mobi/htmlversions/Summer_2011/Electrical_Part_2.html