

# Clinton-Glen Gardner School District



## Curriculum Management System

### Computer Technology

### Grade 6

**August 2015**

For adoption by all regular education programs  
as specified and for adoption or adaptation by  
all Special Education Programs in accordance  
with Board of Education Policy #2200

BOE APPROVED August 25, 2015

# **CLINTON-GLEN GARDNER SCHOOL DISTRICT**

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## Acknowledgments

The following individuals are acknowledged for their assistance in the preparation of this Curriculum Management System:

Writers' Names: Kyle Rehrig

21<sup>st</sup> Century Life and Careers Integration: Jessica Latanzio Crespo  
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# Clinton-Glen Gardner School District

## **Mission**

The mission of the Clinton-Glen Gardner School District is to inspire our students to become contributing members of society who are independent, innovative, life-time learners equipped with the necessary skills to meet the demands of our ever-changing world.

## **Philosophy**

New technologies are evolving at a rapid rate with both frequent advancements of existing technologies and the creation of new ones. It is important that all students understand and develop familiarity with these ever-emerging technologies and have the ability to execute basic computer skills to choose, operate, and troubleshoot applications in school, at home, and later in the workplace. Technology is uniquely positioned to transform learning, to foster critical thinking, creativity, and innovation, and to prepare students to thrive in a global society. As digital learners, students are able to acquire and apply content knowledge and skills through active exploration, interaction, and collaboration with others. Doing so will enable students to function in our evolving society as informed, productive members of while broadening their understanding, use and application of state of the art technology. Technology enables students to solve real world problems, enhance life, and extend human capability as they meet the challenges of a dynamic global society. The curriculum assists students in accomplishing the following goals:

- Applying information-literacy skills to access, manage, and communicate information using a range of technological tools
- Integrating technology with content area learning
- Obtaining, comprehending, and manipulating information to attain goals
- Exploring and experiencing existing technology
- Demonstrating competency in using technology as a tool for learning

# New Jersey State Department of Education

## Core Curriculum Content Standards

### **A note about Technology Standards and Cumulative Progress Indicators:**

In October of 2014, the NJDOE adopted the following technology standards:

8.1 Educational Technology ([Word](#) | [PDF](#)): All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate, and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming ([Word](#) | [PDF](#)): All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

According to the International Society for Technology Education, "advances in technology have drastically changed the way we interact with the world and each other. The digital age requires that we understand and are able to harness the power of technology to live and learn". To this end, our current curriculum is undergoing a year long process of reflection and revision to ensure that the design process builds in our students the recognition that success is not merely identifying a problem but working through a process--- and that failure is not an end but rather a point for reevaluation. Computational thinking provides an organizational means of approaching life and its tasks. It develops an understanding of technologies and their operations and provides students with the abilities to build and create knowledge and new technologies. Not all students will be programmers, but they should have an understanding of how computational thinking can build knowledge and control technology. For example, in grade 8, we are supplementing our current curriculum with Lego EV3 Design Engineering Projects that let students work with open-ended problem solving activities, in a context which makes it fun and engaging to learn using Science, Technology, Engineering and Mathematics.

The projects combine science and mathematics concepts with soft skills, such as creative thinking, problem solving, teamwork and communication skills, boosting 21st century learning skills. All projects follow a design engineering process as used by engineers in various industries. The design engineering process provides a structured flow through the activities. Students are guided through the process starting with a design brief which explains the challenge, using videos of robots in action to make real life connections, and includes a final project which can be shared and presented. It is our goal to adapt these learning activities for grades K-7 after our initial implementation in grade 8.

Grade 6  
Computer Technology  
Scope and Sequence

Quarter I	
<p><b>Topic: Internet Research</b></p> <p>I. Locating relevant and correct information on the Internet</p> <ol style="list-style-type: none"> <li>a. Locating reliable sites</li> <li>b. Finding relevant information</li> </ol>	<p><b>Topic: Cyber Safety and Multimedia</b></p> <p>I. Using technology responsibly</p> <ol style="list-style-type: none"> <li>a. Internet safety/Cell phone safety</li> <li>b. Multimedia presentation skills</li> </ol>
<p><b>Topic: 3-Dimensional Drawing</b></p> <p>I. Navigating software</p> <ol style="list-style-type: none"> <li>a. Draw and navigation tools</li> <li>b. Change flat surface into 3 dimensions</li> </ol>	<p><b>Topic: Digital Photography</b></p> <p>I. Use of camera and taking photos</p> <ol style="list-style-type: none"> <li>a. Importing photos</li> <li>b. Editing and use of photo effects</li> </ol>
<p><b>21<sup>st</sup> Century Skills (The ones that apply for this unit are in bold)</b></p> <ul style="list-style-type: none"> <li>· <b>Creativity &amp; Innovation</b></li> <li>· Critical Thinking &amp; Problem Solving</li> <li>· Communication &amp; Collaboration</li> <li>· Media Literacy</li> <li>· <b>Information Literacy</b></li> <li>· <b>Information, Communication &amp; Technology</b></li> </ul>	
<p><b>21<sup>st</sup> Century Themes (The ones that apply for this unit are in bold)</b></p> <ul style="list-style-type: none"> <li>· Global Awareness</li> <li>· <b>Financial, Economic, Business and Entrepreneurial Literacy</b></li> <li>· Civic Literacy</li> <li>· Health Literacy</li> <li>· Environmental Literacy</li> </ul>	
<p><b>Assessment</b></p> <p>District Benchmark</p>	
<p style="text-align: center;"><b>Differentiation</b></p> <p>The technology classroom offers a one-to-one environment in which each student has access to a computer; therefore, students have their own “differentiation in a box.” While each student has the same tools, those tools can be manipulated in ways that serve individual needs. Also, a one-to-one environment simplifies other aspects of differentiation, because students have ready access to differentiated content, tools for differentiated learning processes, and resources for creating differentiated products. The instructor will also use the following guidelines to inform the nature of differentiation:</p> <ul style="list-style-type: none"> <li>● Choosing learning goals</li> <li>● Making practical pedagogical decisions about the nature of the learning experience</li> <li>● Selecting and sequencing activity types to combine to form the learning experience</li> <li>● Selecting formative and summative assessment strategies that will reveal what and how well students are learning</li> <li>● Selecting tools and resources that will best help students to benefit from the learning experience being planned.</li> </ul> <p>This framework emphasizes that the selection of tools and resources should follow naturally from the specific needs of the student. This model increases the likelihood of seamless, successful technology instruction that meets the needs of all learners. For specific examples, <a href="http://www.learnnc.org/lp/editions/every-learner/67">http://www.learnnc.org/lp/editions/every-learner/67</a>.</p>	

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 6 Computer Technology	Topic: Internet Research	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
10 Class session	<p>1.1. Students will be able to locate an information site on the Internet and establish the source for relevance. (8.1.8.D.2)</p> <p>1.2. Students will be able to read through text on a site to locate relevant information. (8.1.8.D.3)</p> <p>1.3. Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions. (9.1.8.B.2)</p> <p>1.4. Compare and contrast nuances in verbal and nonverbal communication in different cultures that may result in misinterpretation and misunderstanding. (9.1.8.D.4)</p>	<p><b>Essential Questions:</b> How do we navigate from one site to another on the Internet? How do we determine the source of the information and discern the source's reliability?</p> <p><b>Conceptual Understandings:</b> Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.</p>	<p><b>Learning Activities:</b> Students will navigate to a URL on the Internet using links provided from the teacher. Here they will find the source of the information and discuss the reliability. Students will do a search on a topic using an Internet Browser (FireFox) to find information. Once there students will find the source of that information and determine the reliability.</p> <p><b>Assessment Models:</b> Students will document the location of all information and graphics located from the Internet.</p> <p>The lesson is a precursor to a research project.</p>

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 6 Computer Technology	Topic: Cyber safety	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
5 Class Sessions	<p>2.1. Discuss the terms cyber safety as it relates to Internet and call phone use. (8.1.8.D.1)</p> <p>2.2. Discuss the need for the ethical use of technologies (8.1.8.D.1)</p> <p>2.3. Convey ideas to others in a media rich presentation. (8.1.8.A.3, 8.1.8.A.5)</p> <p>2.4. Design and implement a project management plan using one or more problem-solving strategies. (9.1.8.A.4)</p> <p>2.5. Use multiple points of view to create alternative solutions. (9.1.8.B.1)</p> <p>2.6. Determine an individual's</p>	<p><b>Essential Questions:</b> What is Cyber safety? How does Cyber Safety relate to cell phone use? How does Cyber Safety relate to Internet use?</p> <p><b>Conceptual Understandings:</b> Technological advancements create societal concerns regarding the practice of safe, legal, and ethical behaviors.</p> <p>The use of digital tools and media-rich resources enhances creativity and the construction of knowledge.</p>	<p><b>Learning Activities:</b> Students will write a text script conveying a cyber safe concept. They will use digital images from:</p> <ul style="list-style-type: none"> <li>- Internet images</li> <li>- Digital cameras</li> <li>- Internal computer camera</li> </ul> <p><b>Assessment Models:</b> Students will construct a presentation using a multimedia tool (Comic Life, Powerpoint, Keynote) to combine images and text to effectively convey their safety message. This will be used as a resource in the lower grades.</p>



	<p>responsibility for personal actions and contributions to group activities. (9.1.8.C.1)</p> <p>2.7. Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects. (9.1.8.C.2)</p> <p>2.8. Model leadership skills during classroom and extra-curricular activities. (9.1.8.C.3)</p> <p>2.9. Employ appropriate conflict resolution strategies. (9.1.8.D.1)</p> <p>2.10. Use effective communications skills in face-to-face and online interactions with peers and adults from home and from diverse cultures. (9.1.8.D.3)</p> <p>2.11. Explain technology has strengthened the role of digital media in the global society.</p>		
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	<p>(9.1.8.E.1)</p> <p>2.12. Differentiate between explicit and implicit digital media messages, and discuss the impact on individuals, groups, and society as a whole. (9.1.8.E.3)</p> <p>2.13. Determine the undesired consequences of unethical uses of media. (9.1.8.E.4)</p> <p>2.14. Demonstrate how productivity and accountability contribute to realizing individual or group work goals within or outside the classroom. (9.1.8.F.1)</p> <p>2.15. Relate the use of new technologies at home, in the workplace, and in other settings to incidences of ethical and/or unethical behavior. (9.1.8.F.3)</p>		
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Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 6 Computer Technology	Topic: 3 Dimensional Drawing	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
5	<p>3.1. Students will be able to create a simple picture using three-dimensional drawing. (8.1.8.B.1)</p> <p>3.2. Students will be able to navigate around an object viewing it from a 360 degree perspective.</p> <p>3.3. Students will be able to create a multi-facetted three-dimensional drawing.</p> <p>3.4. Demonstrate how productivity and accountability contribute to realizing individual or group work goals within or outside the classroom. (9.1.8.F.1)</p>	<p><b>Essential Questions:</b> How can you create something in three dimensions in a 2 dimensional workspace?</p> <p><b>Conceptual Understandings:</b> The use of digital tools and media-rich resources enhances creativity and the construction of knowledge.</p>	<p><b>Learning Activities:</b> Using a 3-D drawing program (Sketch up) Session One: Introduce the basis tools: - rectangles - circles Demonstrate how to use tools to make a flat surface 3 D - "Push" tool - "Move" tool Demonstrate navigating around in 360 degree perspectives using zooming and orditing. Session Two: Have students create a simple shape Example: chair Once complete introduce more tools, colors, textures and text. Session Three- Five Students should have time to explore and create in the 3-D world. Using the teacher for guidance as necessary.</p> <p><b>Assessment Models:</b> Simple shapes can be assessed by showing the teacher on the screen what was created.</p> <p>More complex creations will contain a variety of</p>

			<p>shapes, colors and textures. They should appear more detailed and should be easy to interpret.</p> <p>Outstanding designs may be downloaded on website libraries (Sketch It Library)</p>
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Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 6 Computer Technology	Topic: Digital Photography	
		Goal 4: The student will be able to use digital tools to make others aware of a school or local issue.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
5	<p>4.1. Synthesize and publish information about a local or global issue or event on a collaborative, web-based service. (8.1.8.B.1)</p> <p>4.2. Uploading and editing digital images.</p> <p>4.3. Editing and adding effects to the images.</p> <p>4.4. Develop strategies to reinforce</p>	<p><b>Essential Questions:</b> How can digital tools be used for creating original and innovative works, ideas and solutions?</p> <p><b>Conceptual Understandings:</b> The use of digital tools and media-rich resources enhances creativity and the construction of knowledge.</p> <p>Digital tools provide opportunities for people to</p>	<p><b>Learning Activities:</b> Taking and editing of digital photos.</p> <p><b>Assessment Models:</b> Choose a local or school issue. Use photos to create a professional document relaying this concern. Upload to school website.</p> <p><b>Additional Resources:</b></p>

	<p>positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1)</p> <p>4.5. Implement problem-solving strategies to solve a problem in school or the community. (9.1.8.A.2)</p> <p>4.6. Summarize strategies used by various organizations and agencies to solve problems that impact communities, and compare them with strategies used by similar organizations in another state or country. (9.1.8.A.3)</p> <p>4.7. Design and implement a project management plan using one or more problem-solving strategies. (9.1.8.A.4)</p> <p>4.8. Determine an individual's responsibility for personal actions and contributions to group activities. (9.1.8.C.1)</p> <p>4.9. Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and</p>	<p>have new experiences, recognize problems, design solutions and express their ideas.</p>	
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	<p>projects. (9.1.8.C.2)</p> <p>4.10. Model leadership skills during classroom and extra-curricular activities. (9.1.8.C.3)</p>		
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Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 5 Computer Technology	Topic: Scratch Programming	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 5: Students will focus on the fundamentals of programming by designing and programming their own games and projects.	
10	<p>5.1 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system. <b>8.2.8.A.2</b></p> <p>5.2 Investigate a malfunction in any part of a system and identify its impacts. <b>8.2.8.A.3</b></p> <p>5.3 Explain how different teams/groups can contribute to the overall design of a product <b>8.2.8.C.1</b></p> <p>5.4 Collaborate to examine a malfunctioning system and identify the step-by-step process</p>	<p><b>Essential Questions:</b></p> <p>What is Scratch? How can I use technology to create my own programs and games? How do I use the Scratch interface to develop my own ideas? How do you upload and share ideas using technology? How can I work collaboratively with a group to improve my ideas and designs? What games and programs can I create with this program?</p> <p><b>Conceptual Understandings</b></p> <p>Identify the basic tools of the Scratch program.</p>	<p><b>Learning Activities:</b></p> <p>Using Scratch computer programming language, students will create interactive stories, animations, games and art.</p> <p><b>Assessment Models:</b></p> <p>Project evaluation Small benchmark tasks to serve as informal and formal assessments.</p> <p><b>Additional Resources:</b></p> <p>Computers Scratch software Internet connectivity</p>

<p>used to troubleshoot, evaluate and test options to repair the product, presenting the better solution.</p> <p><b>8.2.8.C.6</b> 5.5 Build a prototype that meets a STEM-based design challenge using science, engineering, and math principles that validate a solution.</p> <p><b>8.2.8.D.3</b> 5.6 Demonstrate an understanding of the relationship between hardware and software.</p> <p><b>8.2.8.E.2</b> 5.7 Develop an algorithm to solve an assigned problem using a specified set of commands and use peer review to critique the solution.</p> <p><b>8.2.8.E.3</b> 5.8 Use appropriate terms in conversation (e.g., programming, language, data, RAM, ROM, Boolean logic terms).</p> <p><b>8.2.8.E.4</b></p>	<p>Create movement and sound with a sprite. Control the initiation of animation. Program to change color and costume during animation. Change background and move between stages Coordinate movement of multiple sprites Use the hide, show, wait and sensing buttons.</p>	
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