Secaucus Board of Education

Educational Technology

Grades 6-8

Technology Curriculum

Born August 2016
Aligned to the New Jersey Core Curriculum Standards for Technology (2014)
Adopted by the Secaucus Board of Education August 25, 2016

District Equity Statement

It is the policy of Secaucus Public School District not to discriminate on the basis of race, color, creed, religion, sex, ancestry, national origin, social or economic status, pregnancy, or physical handicap in its educational programs or activities. Furthermore, the District strives to maintain a learning environment that is free from sexual harassment.

Courses of study and curricula shall be designed, and instructional materials shall be selected to promote understanding, equity, and mutual respect among people. No course offering in any school, grade or subject shall be limited on the basis of race, color, creed, religion, sex, ancestry, national origin, social or economic status, pregnancy, or physical handicap.

Furthermore, there shall be no discrimination against students as to any educational activity or program due of pregnancy, childbirth, pregnancy-related disabilities, actual or potential parenthood, or family or marital status. If a student requests to be excluded or a physician certifies that such is necessary for her physical, mental, or emotional well-being, she must be provided with adequate and timely opportunity for instruction to continue or make up her schoolwork without prejudice or penalty.

Potential Course Modifications (ELLs, Special Education, Gifted and Talented)

The teacher will determine, with the assistance of guidance counselors, teacher assistant/aides, educational specialists and/or special education teachers, what modifications will be made for his/her students. Such examples of modifications can include, but not be limited to:

- Extended time as needed
- Modification of tests and quizzes
- Preferential seating
- Alternative/Formative assessment (projects)
- Effective teacher questioning (ranging from simple recall to higher order critical thinking questions)
- Supplemental materials
- Cooperative learning
- Teacher tutoring
- Peer tutoring
- Differentiated Instruction

Content Area	**Technology**				
Standard	**8.1 Educational Technology: 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.**				
Strand	**A. Technology Operations and Concepts:** *Students demonstrate a sound understanding of technology concepts, systems and operations.*				
Grade Level bands	**Essential Questions**	**Indicator**	**Indicator**	**Targeted Course(s)**	**Classroom Application(s)**
6-8	How do I understand and use technology systems in a real world setting?	8.1.8.A.1	Demonstrate knowledge of a real world problem using digital tools.	Science, Social Studies, English/LA Health	Create a presentation on Global Warming. Gather and synthesize facts and explain what global warming is and what society can do to help slow the global warming process down. Resources: Google Slides, Prezi, Haiku Deck, Animoto, GlogsterEdu
	How do I select and use applications effectively and productively?	8.1.8.A.2	Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.	Math, English/LA	Given a vacation budget, students will plan and present a dream vacation that a family would enjoy. Create an expense report and a flyer with vacation landmarks to present to local travel agent guest visitor who will critique their work. They will use the advice to perfect their project. Resources: Google Sheets, Google Docs

		8.1.8.A.3	Use and/or develop a simulation that provides an environment to solve a real world problem or theory.	Science, Social Studies	Participate in NASA Quest simulations and lessons. Weather and Climate Simulations
		8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results	Science, Social Studies, English, World Language, Math	Choose a topic and create a survey using Google Forms and distribute via email. Collect results into Google Sheets. Analyze, explain and display results in a Google Slide presentation or published web page/blog. Resources: Kidblog
		8.1.8.A.5	Create a database query, sort and create a report and describe the process, and explain the report results.	Social Studies	Create a collaborative database with classmates who each enter their data for a survey completed on a relevant content area topic that addresses a problem and increases community awareness. Critically analyze the data by querying, sorting, and developing a graphical display. Use the analysis to validate any conclusions or hypothesize to persevere in solving the problems. Write an explanatory text to support the development of a public service document conveying ideas and concepts. (presentation, podcast using Audacity, Video, etc.)
Content Area	**Technology**				

Standard	**8.1 Educational Technology: 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.**				
Strand	**B. Creativity and Innovation:** *Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.*				
Grade Level bands	**Essential Questions**	Indicator	Indicator	**Targeted Course(s)**	**Classroom Application(s)**
6-8	How do I apply existing knowledge to generate new ideas, products, or processes? How do I create original works as a means of personal or group expression?	8.1.8.B.1	Synthesize and publish information about a local or global issue or event (ex. telecollaborative project, blog, school web).	Science English/LA	Students will interview a district or local community member about a local or district issue and research and collect information about this issue. They will create a blog post synthesizing the information they learned with possible solutions to the issue. Resources: Kidblog, Google Blogger. Differentiated Instruction: Use Text to Speech Tool in Google Product
Content Area	**Technology**				
Standard	**8.1 Educational Technology: 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.**				
Strand	**C. Communication and Collaboration:** *Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.*				
Grade Level bands	**Essential Questions**	**Indicator**	**Indicator**	**Targeted Course(s)**	**Classroom Application(s)**

6-8	How can I interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media? How can I communicate information and ideas to multiple audiences using a variety of media and formats? How can I develop cultural understanding and global awareness by engaging with learners of other cultures? How can I Contribute to project teams to produce original works or solve problems?	8.1.8.C.1	Collaborate to develop and publish work that provides perspectives on a global problem for discussions with learners from other countries.	Social Studies English/LA	Participate in the EPals community by finding a class project that explores a global issue. Collaborate and communicate with your partner school from another country using Skype or another form of video conferencing. Create a digital story about what you learned throughout this process. Resources: Slidestory, Voicethread, Generator
Content Area	**Technology**				
Standard	**8.1 Educational Technology: 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.**				
Strand	**D. Digital Citizenship:** *Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.*				

Grade Level bands	Essential Questions	Indicator	Indicator	Targeted Course(s)	Classroom Application(s)
6-8	How do I advocate and practice safe, legal, and responsible use of information and technology?	8.1.8.D.1	Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media.	English/LA Social Studies STEM	Watch the videos on the resources link to spark discussion on cyberbullying. Answer the discussion questions in Google Classroom. Create a blog post persuading the public against cyberbullying by offering research, information, and solutions. Cyberbullying Module Four Syllabus and resources.
	How do I advocate and practice safe, legal, and responsible use of information and technology?	8.1.8.D.2	Demonstrate the application of appropriate citations to digital content.	English/LA	Students will complete the Plagiarism Scavenger Hunt and write a report using appropriate citations for digital content. EasyBib is a great resource, Read Write Think Citation Scavenger Hunt
		8.1.8.D.3	Demonstrate an understanding of fair use and Creative Commons to intellectual property.	English/LA	Create a digital story using digital photos found on the Internet licensed for use . Resources: Educator's Guide to Copyright, Fair Use, and Creative Commons, Campaigning for Fair Use: Public Service Announcements on Copyright Awareness

	How do I demonstrate personal responsibility for lifelong learning?	8.1.8.D.4	Assess the credibility and accuracy of digital content.	English/LA	Students will gather various digital works and assess its credibility. Tutorial: Using Google Scholar and other google Resources in Education, Google: Believe it or not lesson plans
		8.1.8.D.5	Understand appropriate uses for social media and the negative consequences of misuse.	English/LA Social Studies STEM	Introduce the term "Digital Citizenship" using Digital Citizenship Module Two Syllabus. Hold the online discussion in Google Classroom. Watch the CommonSense: Digital Footprint Video and participate in a discussion about your digital footprint in Google Classrooms. Create a timeline of your digital footprint. Digital Footprint Module Three Syllabus, Video and resources
Content Area	**Technology**				
Standard	**8.1 Educational Technology: 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.**				
Strand	**E: Research and Information Fluency:** *Students apply digital tools to gather, evaluate, and use information.*				
Grade Level bands	**Essential Questions**	**Indicator**	**Indicator**	**Targeted Course(s)**	**Classroom Application(s)**

6-8	How do I use the internet to answer questions? How do I locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media? How can I evaluate and select information sources and digital tools based on the appropriateness for specific tasks? How can I use technology to process data and report results?	8.1.8.E.1	Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.	Science English/LA	Students use critical thinking skills to formulate searches and identify the specifics of a search topic. Create a report/blog/presentation on what schools have done to "go green" and how we can enhance our school's involvement. Resource: Google: The Keys to Search City lesson plans, Kidblog
Content Area	**Technology**				
Standard	**8.1 Educational Technology: 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.**				
Strand	**F: Critical thinking, problem solving, and decision making:** *Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.*				
Grade Level bands	**Essential Questions**	**Indicator**	**Indicator**	**Targeted Course(s)**	**Classroom Application(s)**

6-8	How can I identify and define authentic problems and significant questions for investigation? How do I plan and manage activities to develop a solution or complete a project? How can I use technology to help me collect and analyze data to identify solutions and/or make informed decisions? How to I use technology to explore alternative solutions?	8.1.8.F.1	Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.	English/LA	Apply various filters and sorting strategies to determine a solution to a current event problem. Write a speech and present your solution to this local, national, or global issue. Resources: Google Lesson Plans: Slicing and Dicing

Content Area		**Technology**			
Standard		**8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:** **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.**			
Strand		**A. The Nature of Technology: Creativity and Innovation** *Technology systems impact every aspect of the world in which we live.*			
Grade Level bands	**Essential Questions**	**Indicator**	**Indicator**	**Targeted Course(s)**	**Classroom Application(s)**
6-8	What are the characteristics and scope of technology?	**8.2.8.A.1**	Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication - smartphone for mobility needs).	STEM	Create a timeline of a technological advance over the years. Prepare a report on how this technology has changed due new demands. Present to the class. Read Write Think Timeline Creator, Dipity Timeline Creator
	What are the core concepts of technology?	**8.2.8.A.2**	Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.	STEM	How can you improve the technological advance you chose in the above lesson?
		8.2.8.A.3	Investigate a malfunction in any part of a system and identify its impacts.		Same as above
	What are the relationships among technologies and the connections between	**8.2.8.A.4**	Redesign an existing product that impacts the environment to lessen its impact(s) on the environment.		Same as above
		8.2.8.A.5	Describe how resources such as material, energy, information, time, tools, people, and capital contribute to a technological product or system.		Same as above

	technology and other fields of study?				Prepare a podcast of your research Resource: Audacity
Content Area	**Technology**				
Standard	**8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: 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.**				
Strand	**B. Technology and Society:** *Knowledge and understanding of human, cultural and societal values are fundamental when designing technological systems and products in the global society.*				
Grade Level bands	**Essential Questions**	**Indicator**	**Indicator**	**Targeted Course(s)**	**Classroom Application(s)**
6-8	How does our culture, society, economy and politics effects of technology? What are the effects of technology on the environment?	**8.2.8.B.1**	Evaluate the history and impact of sustainability on the development of a designed product or system over time and present results to peers.	Science Social Studies	Create a timeline of technological advances over the past 100 years. Prepare a report on how technology has changed due to human needs and economics, political and/or cultural influences. Present to the class. Read Write Think Timeline Creator, Dipity Timeline Creator
		8.2.8.B.2	Identify the desired and undesired consequences from the use of a product or system.	English/LA Social Studies Science	Research a particular system or product used by society that has undesired consequences from its use, examine any ethical issues

					reported by peers and/or experts, and give examples of how we developed other technologies to reduce negative consequences. Example: Global Warming issues Create a video report (vlog) of your findings. Relate findings to concepts of positive and negative externalities
	What is the role of society in the development and use of technology?	**8.2.8.B.3**	Research and analyze the ethical issues of a product or system on the environment and report findings for review by peers and /or experts.	\	Same as above
		8.2.8.B.4	Research examples of how humans can devise technologies to reduce the negative consequences of other technologies and present your findings.		Same as above
	How does our culture, society, economy and politics effects of technology? What are the effects of technology on the environment?	**8.2.8.B.5**	Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries and societies.		Same as above
		8.2.8.B.6	Compare and contrast the different types of intellectual property including copyrights, patents and trademarks.	Social Studies, Science, Math	Design an invention idea that would help society. Create a PowerPoint presentation describing the steps taken to create, patent, and trademark your invention. Resources: Icrea invention lesson plans

	What is the role of society in the development and use of technology?	**8.2.8.B.7**	Analyze the historical impact of waste and demonstrate how a product is recycled, reused or remanufactured into a new product.	Science English/LA	View the Video Trailer, Garbage Dreams. Play the Garbage Dream Game Create a public service announcement in teams to promote recycling in Secaucus. Host the videos on the school website. Resource: Garbage Dream Lesson Plans
Content Area	**Technology**				
Standard	**8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: 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.**				
Strand	**C. Design:** *The design process is a systematic approach to solving problems.*				
Grade Level bands	**Essential Questions**	**Indicator**	**Indicator**	**Targeted Course(s)**	**Classroom Application(s)**
6-8	What are the attributes of design?	**8.2.8.C.1**	Explain how different teams/groups can contribute to the overall design of a product.	Science Math STEM	Design a product with a team that can help in your everyday life. Use TinkerCad to design your product and 3D print your results.
		8.2.8.C.2	Explain the need for optimization in a design process.	STEM Social Studies	Complete the Design Squad challenge within a team. Redesign your project until you achieve the desired results.
		8.2.8.C.3	Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer.	Science, Social Studies,	Robotics Jigsaw Activity which serves as an introduction to robotics.

				English/LA STEM	Teams present their expertise through a student led collaborative project.
	How do I apply engineering design principles?	**8.2.8.C.4**	Identify the steps in the design process that would be used to solve a designated problem.	STEM	Students design a satellite using the design process. NASA Design Process Lesson: Satellite Challenge
		8.2.8.C.5	Explain the interdependence of a subsystem that operates as part of a system.		Same as above
		8.2.8.C.5.a	Create a technical sketch of a product with materials and measurements labeled.	STEM	Use SketchUp to create a 3D model of a product used in society or the satellite from the above activity.. Label measurements and materials.
	What are the attributes of design?	**8.2.8.C.6**	Collaborate to examine a malfunctioning system and identify the step-by-step process used to troubleshoot, evaluate and test options to repair the product, presenting the better solution.	STEM	Students design a satellite using the design process. NASA Design Process Lesson: Satellite Challenge
		8.2.8.C.7	Collaborate with peers and experts in the field to research and develop a product using the design process, data analysis and trends, and maintain a design log with annotated sketches to record the developmental cycle.	STEM	Same as above Invite an engineer to discuss the student designs.
		8.2.8.C.8	Develop a proposal for a chosen solution that include models (physical, graphical or mathematical) to communicate the solution to peers.		Same as above
Content Area	**Technology**				
Standard	**8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:** **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.				
Strand	**D. Abilities for a Technological World:** *The designed world is the product of a design process that provides the means to convert resources into products and systems.*				
Grade Level bands	**Essential Questions**	**Indicator**	**Indicator**	**Targeted Course(s)**	**Classroom Application(s)**
6-8	How can I apply the design process?	**8.2.8.D.1**	Design and create a product that addresses a real world problem using a design process under specific constraints.	STEM	Design a product that addresses a real world problem using the design process under specific constraints. Keep an engineering notebook by collaborating on a Google Doc with your team. Build the prototype. Prepare a multimedia presentation of your choice to publish the steps taken and the impact your design will have and how you modified your design to perfect its positive outcome.
		8.2.8.D.2	Identify the design constraints and tradeoffs involved in designing a prototype (e.g., how the prototype might fail and how it might be improved) by completing a design problem and reporting results in a multimedia presentation, design portfolio or engineering notebook.		Same as above
		8.2.8.D.3	Build a prototype that meets a STEM-based design challenge using science, engineering, and math principles that validate a solution.		Same as above 3D Printing
	How do I use and maintain	**8.2.8.D.4**	Research and publish the steps for using and maintaining a product or system and incorporate		Same as above

	technological products and systems?		diagrams or images throughout to enhance user comprehension.		
	How can I apply the design process?	**8.2.8.D.5**	Explain the impact of resource selection and the production process in the development of a common or technological product or system.		Same as above
		8.2.8.D.6	Identify and explain how the resources and processes used in the production of a current technological product can be modified to have a more positive impact on the environment.		Same as above
Content Area	**Technology**				
Standard	**8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:** **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.**				
Strand	**E. Computational Thinking: Programming:** *Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.*				
Grade Level bands	**Essential Questions**	**Indicator**	**Indicator**	**Targeted Course(s)**	**Classroom Application(s)**
6-8	How are computational thinking and computer programming used as tools during	**8.2.8.E.1**	Identify ways computers are used that have had an impact across the range of human activity and within different careers where they are used.	STEM English/LA	Students will view STEM careers videos and research a career they would be interested in. Write a report describing the career, your interest, and

	design and engineering?				what education is needed for the career. Extension: Video Conference with various STEM professionals, Write a letter to a professional in your chosen career
		8.2.8.E.2	Demonstrate an understanding of the relationship between hardware and software.	STEM	Students complete the Hardware/Software tutorial. Each student makes one Google Slide (teacher shares a started Google Slide Presentation with the class) defining a term from the tutorial list. Resource: Hardware/Software Tutorial
		8.2.8.E.3	Develop an algorithm to solve an assigned problem using a specified set of commands and use peer review to critique the solution.	STEM	Create a game using Scratch. Have your peers review the game and redesign as needed. Scratch, Scratch Tutorials Computer progamming for science and math (middle school) at Code.org
		8.2.8.E.4	Use appropriate terms in conversation (e.g., programming, language, data, RAM, ROM, Boolean logic terms).	STEM	Students complete Code Academy Tutorials at their own speed. Code.org, Differentiated learning: Lightbot for iPad