Califon Public School
Curriculum

Subject: Technology	Grade: 2nd	Unit #: 1	Pacing: Integrated Throughout
Unit Title: Computer Science - Systems, Networks, & the Internet			

OVERVIEW OF UNIT:

Computer Science outlines a comprehensive set of concepts and skills, such as data and analysis, algorithms and programming, and computing systems.

Unit References	
Big Ideas	Essential Questions
• Individuals use computing devices to perform a variety of tasks accurately and quickly. Computing devices interpret and follow the instructions they are given literally. • A computing system is composed of software and hardware. • Describing a problem is the first step toward finding a solution when computing systems do not work as expected. • Computer networks can be used to connect individuals to other individuals, places, information, and ideas. The Internet enables individuals to connect with others worldwide. • Connecting devices to a network or the Internet provides great benefits, but care must be taken to use authentication measures, such as strong passwords, to protect devices and information from unauthorized access. • Computing technology has positively and negatively changed the way individuals live and work (e.g., entertainment, communication, productivity tools).	• What are software and hardware? • How do computing devices interpret information? • What is the first step when a computing system does not work as expected? • How are computer networks and the internet used to connect individuals differently? • Why are authentication measures important? • How has computing technology positively and negatively changed the way individuals live and work?
Objectives	
• Students will be able to define software and hardware.	

- Students will be able to describe how computing devices interpret information.
- Students will be able to describe a problem when the computing system does not work as expected.
- Students will be able to use a computer network and the internet to connect to other individuals.
- Students will be able to create a strong password.
- Students will be able to analyze how computing technology is positive and negative.

Assessment

Formative Assessment:

- observation
- self-reflections
- teacher-student conferences

Summative Assessment:

- online quizzes & tests
- projects

Benchmark:

- Unit Pre-Test

Alternative:

- performance tasks
- projects

Key Vocabulary

- computing device
- components
- software
- hardware
- system
- troubleshooting
- transmit
- wired/wireless
- physical/digital security measures
- accessibility
- usability
- password
- authentication
- technology
- problem
- solution
- information

Resources & Materials

• GAFE - Chromebooks • SMARTBoard • Teacher Created Resources • Brain Pop Internet Safety Video • Storyline Online • ABCya.com	

Technology Infusion

Teacher Technology:

- Chromebook
- Google Classroom
- SmartBoard

Student Technology:

- Google Classroom
- Chromebooks
- Internet Sources

Activities:

- Students will use Internet resources to research various computing technologies and create a visual or presentation that explains how these forms of technology have impacted our lives and what factors influenced these changes.

Standard	Standard Description
8.1.2.IC.1	Compare how individuals live and work before and after the implementation of new computing technology.

Interdisciplinary Integration

Activities:

- Students will research various computing technologies and create a visual or presentation that explains how these forms of technology have impacted our lives and what factors influenced these changes.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html

- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
NJSLSA.R7	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

21st Century Life Skills

Activities:

- Research and discuss what an author does

Standard	Standard Description
9.4.2.IML.1	Evaluate digital sources for accuracy, perspective, credibility and relevance.

Careers

Activities:

- Research author
- Create publication

Standard	Standard Description
CRP2	Apply appropriate academic and technical skills.
CRP6	Demonstrate creativity and innovation.
CRP7	Employ valid and reliable research strategies.

Standards	
Standard	**Performance Expectations**
8.1.2.CS.1	Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
8.1.2.CS.2	Explain the functions of common software and hardware components of computing systems.
8.1.2.CS.3	Describe basic hardware and software problems using accurate terminology.
8.1.2.NI.1	Model and describe how individuals use computers to connect to other individuals, places, information, and ideas through a network.
8.1.2.NI.2	Describe how the Internet enables individuals to connect with others worldwide.
8.1.2.NI.3	Create a password that secures access to a device. Explain why it is important to create unique passwords that are not shared with others.
8.1.2.NI.4	Explain why access to devices need to be secured.
8.1.2.IC.1	Compare how individuals live and work before and after the implementation of new computing technology.

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students -	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences,

• Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/	http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Interventional Central - http://www.interventioncentral.org/	deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

Califon Public School
Curriculum

Subject: Technology	Grade: 2nd	Unit #: 2	Pacing: Integrated Throughout
Unit Title: Computer Science - Data Analysis, Algorithms, & Programming			

OVERVIEW OF UNIT:

Computer Science outlines a comprehensive set of concepts and skills, such as data and analysis, algorithms and programming, and computing systems.

Unit References	
Big Ideas	Essential Questions
• Individuals collect, use, and display data about individuals and the world around them. • Computers store data that can be retrieved later. Data can be copied, stored in multiple locations, and retrieved. • Data can be used to make predictions about the world. • Individuals develop and follow directions as part of daily life. A sequence of steps can be expressed as an algorithm that a computer can process. • Real world information can be stored and manipulated in programs as data (e.g., numbers, words, colors, images). • Computers follow precise sequences of steps that automate tasks. • Complex tasks can be broken down into simpler instructions, some of which can be broken down even further. • People work together to develop programs for a purpose, such as expressing ideas or addressing problems. The development of a program involves identifying a sequence of events, goals, and expected outcomes, and addressing errors (when necessary).	• What is data? • How is data used? • How can real world information be stored and manipulated? • How do computers process information? • How is a program developed?

Objectives
● Students will be able to define data. ● Students will be able to describe how data is used. ● Students will be able to store data. ● Students will be able to manipulate data using a program. ● Students will be able to describe how computers process information. ● Students will be able to identify how a program is developed.

Assessment	
Formative Assessment: ● observation ● self-reflections ● teacher-student conferences **Summative Assessment:** ● online quizzes & tests ● projects	**Benchmark:** ● Unit Pre-Test **Alternative:** ● performance tasks ● projects

Key Vocabulary
● storage space ● data ● program ● process ● information ● climate change ● algorithms ● variables ● sequences ● loops ● conditionals ● sub-problems ● modify, remix, incorporate ● iterative process ● implement

Resources & Materials	

• GAFE - Chromebooks • SMARTBoard • Google Classroom • Teacher Created Resources • Brain Pop Internet Safety Video • Storyline Online • ABCya.com	

Technology Infusion

Teacher Technology:

- Chromebook
- Google Classroom
- SmartBoard

Student Technology:

- Google Classroom
- Chromebooks
- Internet Sources

Activities:

- Students will use Internet resources to research various computing technologies and create a visual or presentation that explains how these forms of technology have impacted our lives and what factors influenced these changes.

Standard	Standard Description
8.1.2.DA.4	Organize and present climate change data visually to highlight relationships or support a claim.

Interdisciplinary Integration

Activities:

- Students will research various computing technologies and create a visual or presentation that explains how these forms of technology have impacted our lives and what factors influenced these changes.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/

- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
NJSLSA.R7	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

21st Century Life Skills

Activities:

- Research and discuss what an author does

Standard	Standard Description
9.4.2.IML.1	Evaluate digital sources for accuracy, perspective, credibility and relevance.

Careers

Activities:

- Research author
- Create publication

Standard	Standard Description
CRP2	Apply appropriate academic and technical skills.
CRP6	Demonstrate creativity and innovation.
CRP7	Employ valid and reliable research strategies.

Standards	
Standard	**Performance Expectations**
8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.2	Store, copy, search, retrieve, modify, and delete data using a computing device.
8.1.2.DA.3	Identify and describe patterns in data visualizations.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
8.1.2.AP.1	Model daily processes by creating and following algorithms to complete tasks.
8.1.2.AP.2	Model the way programs store and manipulate data by using numbers or other symbols to represent information.
8.1.2.AP.3	Create programs with sequences and simple loops to accomplish tasks.
8.1.2.AP.4	Break down a task into a sequence of steps.
8.1.2.AP.5	Describe a program's sequence of events, goals, and expected outcomes.
8.1.2.AP.6	Debug errors in an algorithm or program that includes sequences and simple loops.

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations

different mode of delivery ● Increase one-to-one time ● Prioritize tasks ● Use graphic organizers ● Use online resources for skill building ● Provide teacher notes ● Use collaborative grouping strategies such as small groups ● NJDOE resources - http://www.state.nj.us/education/specialed/		● Interventional Central - http://www.interventioncentral.org/	● Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied ● NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

Califon Public School
Curriculum

Subject: Technology	Grade: 2nd	Unit #: 3	Pacing: Integrated Throughout
Unit Title: Design Thinking - Engineering Design & Nature of Technology			

OVERVIEW OF UNIT:

Design thinking outlines the technological design concepts and skills essential for technological and engineering literacy.

Unit References	
Big Ideas	Essential Questions
• Engineering design is a creative process for meeting human needs or wants that can result in multiple solutions. • Limitations (constraints) must be considered when engineering designs. • Innovation and the improvement of existing technology involves creative thinking.	• What is engineering design? • What are limitations/constraints? • What is creative thinking? • How can technology be improved?
Objectives	
• Students will be able to define engineering design. • Students will be able to identify solutions that engineering design produces. • Students will be able to define constraints. • Students will be able to identify technology innovation and improvement. • Students will be able to describe how technology can be improved.	
Assessment	
Formative Assessment: • observation • self-reflections • teacher-student conferences **Summative Assessment:**	**Benchmark:** • Unit Pre-Test **Alternative:** • performance tasks

• online quizzes & tests • projects	• projects
Key Vocabulary	
• function • limitations • constraints • engineering design • technology • creative thinking • system • subsystem • assemble • product • development • engineering design process • alternative solutions • constraints • tradeoffs • troubleshoot • demands • values • interests	
Resources & Materials	
• GAFE - Chromebooks • SMARTBoard • Google Classroom • Teacher Created Resources • Brain Pop Internet Safety Video • Storyline Online • ABCya.com	

Technology Infusion

Teacher Technology:

- Chromebook
- Google Classroom
- SmartBoard

Student Technology:

- Google Classroom
- Chromebooks
- Internet Sources

Activities:

- Students will use Internet resources to research various computing technologies and create a visual or presentation that explains how these forms of technology have impacted our lives and what factors influenced these changes.

Standard	Standard Description
8.1.2.DA.4	Organize and present climate change data visually to highlight relationships or support a claim.

Interdisciplinary Integration

Activities:

- Students will research various computing technologies and create a visual or presentation that explains how these forms of technology have impacted our lives and what factors influenced these changes.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	**Standard Description**
NJSLSA.R7	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

21st Century Life Skills	
Activities: ● Research and discuss what an author does	
Standard	**Standard Description**
9.4.2.IML.1	Evaluate digital sources for accuracy, perspective, credibility and relevance.

Careers	
Activities: ● Research author ● Create publication	
Standard	**Standard Description**
CRP2	Apply appropriate academic and technical skills.
CRP6	Demonstrate creativity and innovation.
CRP7	Employ valid and reliable research strategies.

Standards	
Standard	**Performance Expectations**
8.2.2.ED.1	Communicate the function of a product or device.
8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.
8.2.2.ED.4	Identify constraints and their role in the engineering design process.

8.2.2.NT.1	Model and explain how a product works after taking it apart, identifying the relationship of each part, and putting it back together.
8.2.2.NT.2	Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem.

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

Califon Public School
Curriculum

Subject: Technology	Grade: 2nd	Unit #: 4	Pacing: Integrated Throughout
Unit Title: Design Thinking - Technology Interaction, Ethics, & Culture			

OVERVIEW OF UNIT:

Design thinking outlines the technological design concepts and skills essential for technological and engineering literacy.

Unit References	
Big Ideas	Essential Questions
• Human needs and desires determine which new tools are developed. • Technology has changed the way people live and work. Various tools can improve daily tasks and quality of life. • The use of technology developed for the human designed world can affect the environment, including land, water, air, plants, and animals. • Technologies that use natural sources can have negative effects on the environment, its quality, and inhabitants. • Reusing and recycling materials can save money while preserving natural resources and avoiding damage to the environment. • The availability of technology for essential tasks varies in different parts of the world.	• Why are new tools developed? • How does technology improve the way people live and work? • How does technology affect the environment? • How can we avoid technology's damage to the environment? • How does the availability of technology vary in different parts of the world?
Objectives	
• Students will be able to describe why new tools are developed. • Students will be able to analyze the ways technology improves daily life and work. • Students will be able to contrast technology's effect on the environment. • Students will be able to identify ways to avoid damaging the environment. • Students will be able to describe how technology varies in different parts of the world.	

Assessment	
Formative Assessment: ● observation ● self-reflections ● teacher-student conferences **Summative Assessment:** ● online quizzes & tests ● projects	**Benchmark:** ● Unit Pre-Test **Alternative:** ● performance tasks ● projects
Key Vocabulary	
● societal needs & wants ● environment ● tasks ● daily life ● function ● shortcomings ● product ● system ● consequences ● resources ● human-designed systems ● impact ● climate change ● inequities	
Resources & Materials	
● GAFE - Chromebooks ● SMARTBoard ● Google Classroom ● Teacher Created Resources ● Brain Pop Internet Safety Video ● Storyline Online ● ABCya.com	

Technology Infusion

Teacher Technology:

- Chromebook
- Google Classroom
- SmartBoard

Student Technology:

- Google Classroom
- Chromebooks
- Internet Sources

Activities:

- Students will use Internet resources to research various computing technologies and create a visual or presentation that explains how these forms of technology have impacted our lives and what factors influenced these changes.

Standard	Standard Description
8.2.2.ITH.1	Explain how societal needs and wants influence the development and function of a product and a system.

Interdisciplinary Integration

Activities:

- Students will research various computing technologies and create a visual or presentation that explains how these forms of technology have impacted our lives and what factors influenced these changes.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
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Standard	**Standard Description**
NJSLSA.R7	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

21st Century Life Skills	
Activities: ● Research and discuss what an author does	
Standard	**Standard Description**
9.4.2.IML.1	Evaluate digital sources for accuracy, perspective, credibility and relevance.

Careers	
Activities: ● Research author ● Create publication	
Standard	**Standard Description**
CRP2	Apply appropriate academic and technical skills.
CRP6	Demonstrate creativity and innovation.
CRP7	Employ valid and reliable research strategies.

Standards	
Standard	**Performance Expectations**
8.2.2.ITH.1	Identify products that are designed to meet human wants or needs.
8.2.2.ITH.2	Explain the purpose of a product and its value.
8.2.2.ITH.3	Identify how technology impacts or improves life.
8.2.2.ITH.4	Identify how various tools reduce work and improve daily tasks.

8.2.2.ITH.5	Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution.
8.2.2.ETW.1	Classify products as resulting from nature or produced as a result of technology.
8.2.2.ETW.2	Identify the natural resources needed to create a product.
8.2.2.ETW.3	Describe or model the system used for recycling technology.
8.2.2.ETW.4	Explain how the disposal of or reusing a product affects the local and global environment.
8.2.2.EC.1	Identify and compare technology used in different schools, communities, regions, and parts of the world.

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

• Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/			