Unit 2-Web Development

Content Area: **Technology**
Course(s): **Computer Science Discoveries**
Time Period:
Length: **7 weeks Grade 8**
Status: **Published**

Title Section

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Computer Science Discoveries, Grade 8

Web Development

Belleville Board of Education

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Unit Overview

In the Web Development unit, students are empowered to create and share the content on their own web pages. They begin by thinking about the role of the web, and how it can be used as a medium for creative expression before creating their own personal web pages. As students develop their pages and begin to see themselves as programmers, they are encouraged think critically about the impact of sharing information online and how to be more critical content consumers. They are also introduced to problem solving as it relates to programming, as they learn valuable skills such as debugging, using resources, and teamwork. At the conclusion of the unit, students work together to create a website to address a problem.

Enduring Understanding

Students use computing as a form of self expression as they design and develop basic web pages. Focusing on the tags, keywords, and syntax used to communicate instructions to the computer, students use HTML to structure the content of a web page. They also explore the privacy and intellectual property implications of

publishing their work online.
Students expand their ideas of websites beyond personal expression and begin to see them as a way to solve problems. Students build on their collaborative skills and work in teams to create multi-page websites that solve a problem.

Essential Questions

- Why do people create websites?
- How can text communicate content, structure, and style on a web page?
- How do I safely and appropriately make use of the content published on the Internet?
- What strategies can I use when coding to find and fix issues?
- How can websites be used to address problems in the world?
- What strategies can teams use to work better together?
- How do I know what information can be trusted online?

Exit Skills

By the end of Grade 8, CS Discoveries Unit 2, the student should be able to:

- Create their own website following the listed guidelines:
    - Communicate Content, structure and style.
    - Safely and appropriately make use of content published on the Internet.
    - Find and fix issues within their code.
    - Address a world problem on their website.
    - Use strategies to work in teams.
    - Learn what information to trust on the web.

New Jersey Student Learning Standards (NJSLS-S)

TECH.8.1.8	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.
TECH.8.1.8.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.8.A.1	Demonstrate knowledge of a real world problem using digital tools.
TECH.8.1.8.A.3	Use and/or develop a simulation that provides an environment to solve a real world problem or theory.
TECH.8.1.8.A.CS1	Understand and use technology systems.
TECH.8.1.8.A.CS2	Select and use applications effectively and productively.
TECH.8.1.8.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.1.8.B.1	Synthesize and publish information about a local or global issue or event (ex. telecollaborative project, blog, school web).
TECH.8.1.8.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.
TECH.8.1.8.B.CS2	Create original works as a means of personal or group expression.
TECH.8.1.8.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.
TECH.8.1.8.C.CS1	Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media.
TECH.8.1.8.C.CS2	Communicate information and ideas to multiple audiences using a variety of media and formats.
TECH.8.1.8.C.CS3	Develop cultural understanding and global awareness by engaging with learners of other cultures.
TECH.8.1.8.D	Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
TECH.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.
TECH.8.1.8.D.3	Demonstrate an understanding of fair use and Creative Commons to intellectual property.
TECH.8.1.8.D.4	Assess the credibility and accuracy of digital content.
TECH.8.1.8.D.5	Understand appropriate uses for social media and the negative consequences of misuse.
TECH.8.1.8.D.CS1	Advocate and practice safe, legal, and responsible use of information and technology.
TECH.8.1.8.D.CS2	Demonstrate personal responsibility for lifelong learning.
TECH.8.1.8.D.CS3	Exhibit leadership for digital citizenship.
TECH.8.1.8.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.
TECH.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.
TECH.8.1.8.F.CS1	Identify and define authentic problems and significant questions for investigation.

TECH.8.1.8.F.CS2	Plan and manage activities to develop a solution or complete a project.
TECH.8.2.8	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.
TECH.8.2.8.A	The Nature of Technology: Creativity and Innovation: Technology systems impact every aspect of the world in which we live.
TECH.8.2.8.A.CS1	The characteristics and scope of technology.
TECH.8.2.8.A.CS2	The core concepts of technology.
TECH.8.2.8.B	Technology and Society: Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society.
TECH.8.2.8.B.CS1	The cultural, social, economic and political effects of technology.
TECH.8.2.8.B.CS2	The effects of technology on the environment.
TECH.8.2.8.B.CS3	The role of society in the development and use of technology.
TECH.8.2.8.B.CS4	The influence of technology on history.
TECH.8.2.8.C	Design: The design process is a systematic approach to solving problems.
TECH.8.2.8.C.CS1	The attributes of design.
TECH.8.2.8.D.4	Research and publish the steps for using and maintaining a product or system and incorporate diagrams or images throughout to enhance user comprehension.
TECH.8.2.8.D.CS2	Use and maintain technological products and systems.
TECH.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.
TECH.8.2.8.E.2	Demonstrate an understanding of the relationship between hardware and software.
TECH.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.
TECH.8.2.8.E.4	Use appropriate terms in conversation (e.g., programming, language, data, RAM, ROM, Boolean logic terms).
TECH.8.2.8.E.CS1	Computational thinking and computer programming as tools used in design and engineering.

Interdisciplinary Connections

LA.RL.8	Reading Literature
	Craft and Structure
LA.RL.8.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

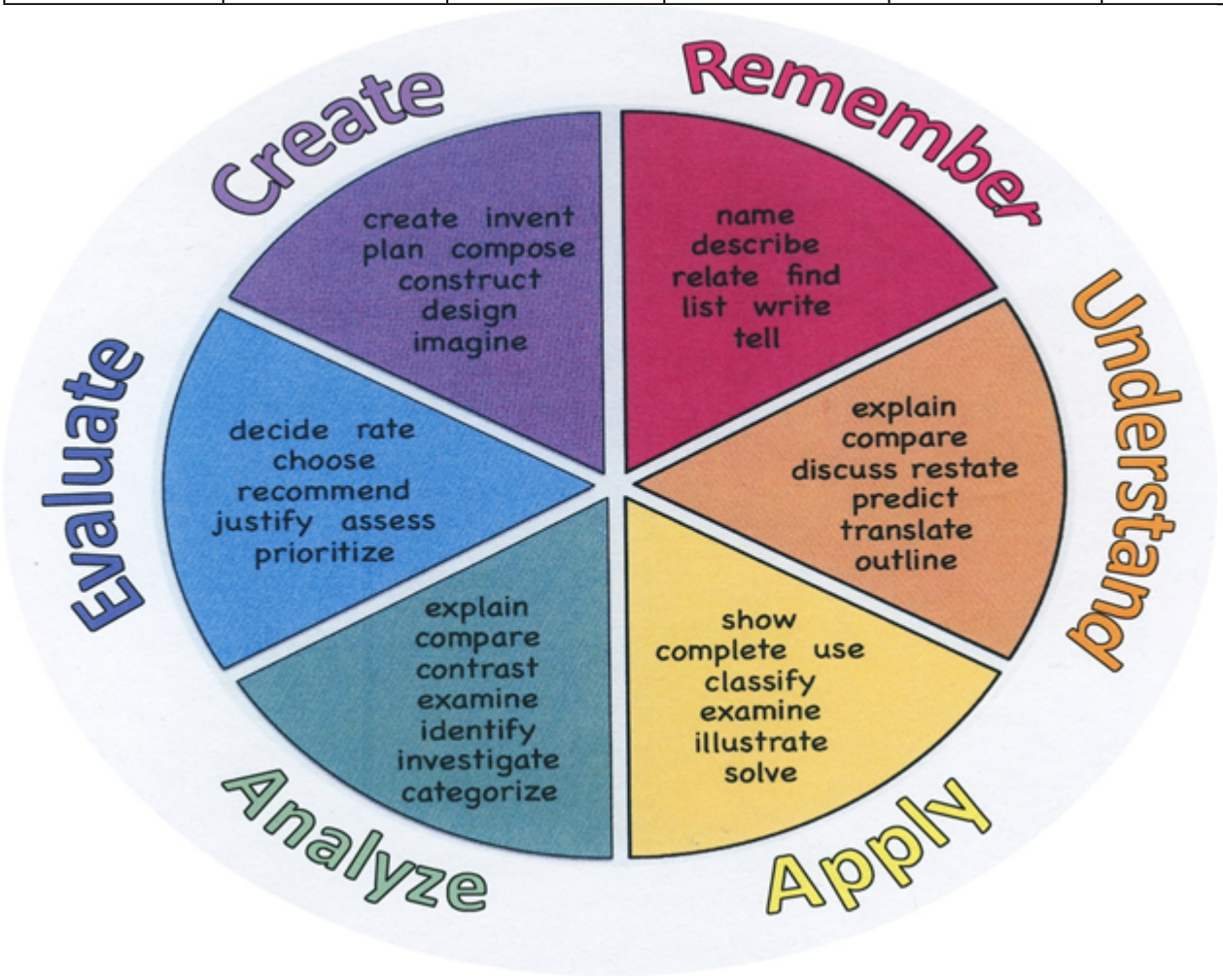
Learning Objectives

- Identify the reasons someone might visit a given website
- Identify the reasons someone might create a given website
- Explain that HTML allows a programmer to communicate the way content should be structured on a web page
- Write a simple HTML document that uses opening and closing tags to structure content
- Understand how to use lesson resources provided in Web Lab
- Use heading tags to change the appearance of text on a web page.
- Structure content into headings, subheadings, and paragraphs.
- Use a structured practice to collaboratively create a digital artifact.
- Understand and explain reasons that it is difficult to control who sees information published online.
- Understand and justify guidelines for safely publishing information online.
- Use CSS selectors to style HTML text elements.
- Link to an external style sheet.
- Explain the differences between HTML and CSS in both use and syntax.
- Explain the purpose of copyright.
- Identify the rights and restrictions granted by various Creative Commons licenses.
- Follow copyright law, accurately attributing others when using their work.
- Add an image to a web page.
- Identify websites as a form of personal expression.
- Use CSS properties to change the size, position, and borders of elements.
- Create a CSS rule-set for the body element that impacts all elements on the page.
- Logically separate the content, structure and formatting of a digital artifact
- Create documentation that explains the design decisions of an artifact
- Create a digital artifact
- Identify the reasons someone might create a given website
- Communicate and collaborate with classmates in order to solve a problem
- Use basic web searching techniques to find relevant information online
- Identify elements that contribute to a website's trustworthiness or untrustworthiness
- Group elements using classes in order to create more specific styles on their website.
- Distribute tasks amongst team members.Seek and incorporate feedback from team members.
- Use HTML to link between web pages.
- Create a digital artifact
- Distribute tasks among team members and maintain a project timeline
- Give and receive feedback

Action Verbs: Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy.

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent

Name Omit Recite Select State Count Draw Outline Point Quote Recall Recognize Repeat Reproduce	Illustrate Indicate Interrelate Interpret Infer Match Paraphrase Represent Restate Rewrite Select Show Summarize Tell Translate Associate Compute Convert Discuss Estimate Extrapolate Generalize Predict	Produce Select Show Sketch Solve Use Add Calculate Change Classify Complete Compute Discover Divide Examine Graph Interpolate Manipulate Modify Operate Subtract	Select Subdivide Survey Arrange Breakdown Combine Detect Diagram Discriminate Illustrate Outline Point out Separate	Critique Determine Grade Justify Measure Rank Rate Support Test	Make Originate Organize Plan Produce Role Play Drive Devise Generate Integrate Prescribe Propose Reconstruct Revise Rewrite Transform



Suggested Activities & Best Practices

The Need for HTML

Prompt: Imagine you wanted to explain to a person over the phone how to draw this web page. Write down clear instructions so that what they draw would perfectly match this image.

Discuss: Once students have written their instructions, have them briefly share their instructions with a neighbor.

Demo: Run a quick demo using the instructions below.

- **Pick one student to verbally share one of their instructions with you.**
- **The teacher should act as the person on the phone trying to draw the web page**
- **Publicly “draw” the website exactly as the student's instructions say. For example, if told to "Write bigger", write the word "bigger" on the page. If they don't indicate where text goes then place text in random locations.**
- **As the student gives you instructions have them tell you if you have drawn it correctly. If you have not drawn it correctly, have them make their directions more specific until you can draw it correctly.**
- **Change students after a couple of instructions to get more students involved.**
- **Keep track of the instructions students give and the improvements they make to the instructions somewhere visible as well.**
- **Repeat this process until you have recreated most of the web page.**

Discuss: Once you have finished drawing the site, quickly create a list of all the different kinds of information they needed to account for in their instructions. For example, location, size, font, etc.

Assessment Evidence - Checking for Understanding (CFU)

By identifying the **Evidence of Student Learning with Checking for Understanding (CFU)** techniques used during the lesson and/or for Closure (Madeline Hunter), please list the variety of means used to access students' learning (e.g. quizzes, tests, academic prompts, observations, homework, journals).

At the end of each lesson, there is a hands on quiz each student will complete before moving on to the next lesson. - Formative

After the completion of each unit there is a test on the unit. The test consists of completing each of the activities taught throughout the unit to work towards building their website or game. - Summative

Students may also have the opportunity of completing tasks one by one instead of building the website or game. This will be graded through completion of the task or observation of their work. - Alternative

- Admit Tickets
- Anticipation Guide
- Common Benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- DBQ's
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Learning Center Activities
- Multimedia Reports
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments
- Socratic Seminar
- Study Guide

- Surveys
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit review/Test prep
- Unit tests
- Web-Based Assessments
- Written Reports

Primary Resources & Materials

Please list all district-provided Primary Resources & Materials and/or those outside that are accessed with district resources.

Code.org

Google Coding

Ancillary Resources

Please list all additional resources that will be used to strengthen this unit's lessons.

Everfi

Typing.com

Technology Infusion

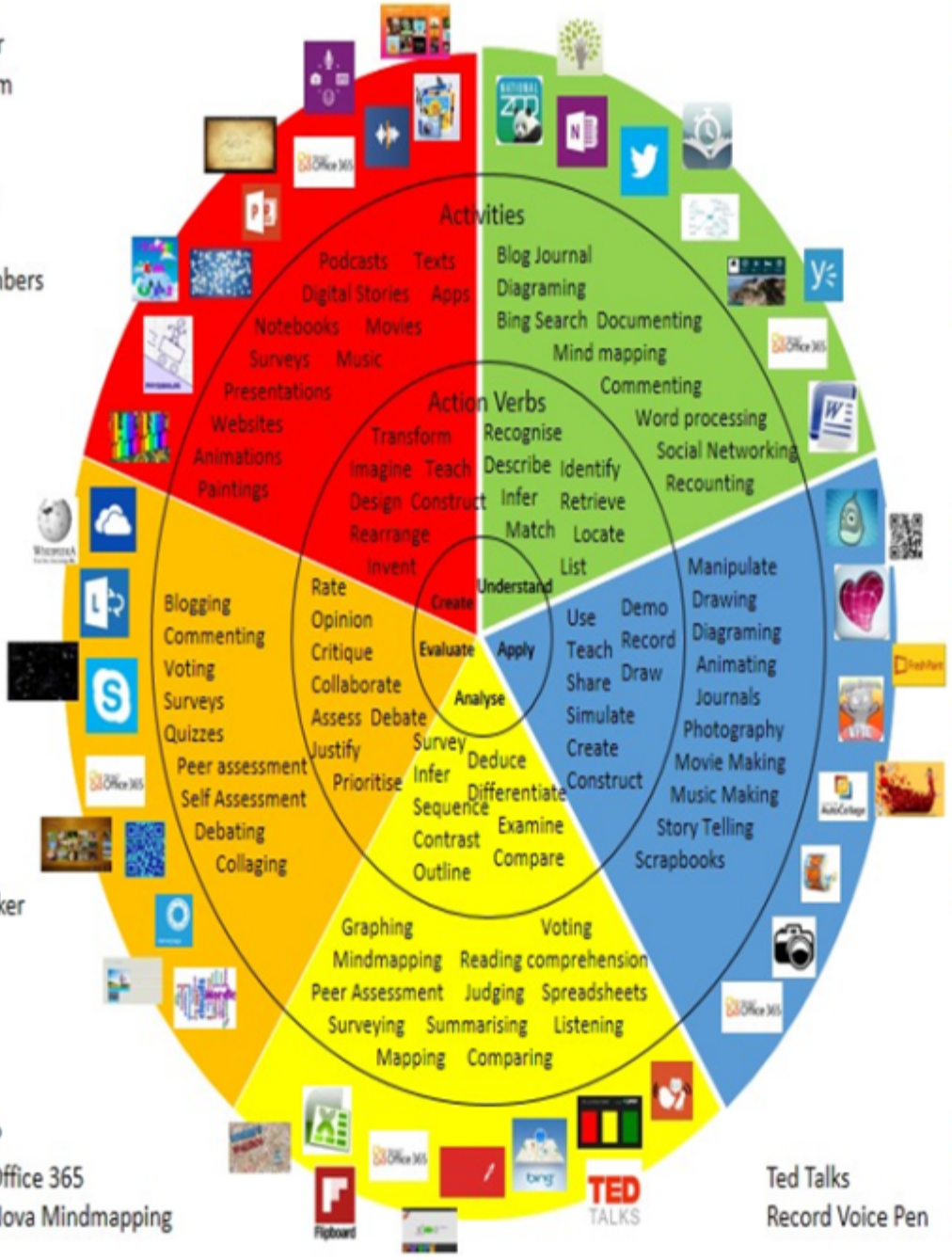
Students will be using their chromebooks to access Code.org, Google coding, Everfi and typing.com.

What **Technology Infusion** and/or strategies are integrated into this unit to enhance learning? Please list all hardware, software and strategies. Please find a technology pedagogy wheel for assistance while completing this section.

Win 8.1 Apps/Tools Pedagogy Wheel

Podcasts
Photostory 3
Kid Story Builder
Music Maker Jam
Paint A Story
Office 365
MS PowerPoint
Stack 'Em Up
NqSquared Numbers
Physamajig
Xylophone 8

Wikipedia
Skydrive
Lync
SkyMap
Skype
Office 365
Puzzle Touch
Easy QR
Memorylage
Life Moments
Word Cloud Maker



Where's Waldo?
MS Excel Office 365
Flipboard Nova Mindmapping

Ted Talks
Record Voice Pen

Originally taken from http://www.coetail.com/vzimmer/files/2013/02/iPadagogy-Wheel.001.jpg
And adapted for Windows 8.1 devices by Charlotte Beckhurst @CharBeckhurst

Alignment to 21st Century Skills & Technology

Mastery and infusion of **21st Century Skills & Technology** and their Alignment to the core content areas is essential to student learning. The core content areas include:

- English Language Arts;
- Mathematics;
- Science and Scientific Inquiry (Next Generation);
- Social Studies, including American History, World History, Geography, Government and Civics, and Economics;
- World languages;
- Technology;
- Visual and Performing Arts.

CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP1.1	Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP6.1	Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand

	how to bring innovation to an organization.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP7.1	Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP11.1	Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
CAEP.9.2.8.B.1	Research careers within the 16 Career Clusters ® and determine attributes of career success.
CAEP.9.2.8.B.2	Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.
CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.
CAEP.9.2.8.B.4	Evaluate how traditional and nontraditional careers have evolved regionally, nationally, and globally.
CAEP.9.2.8.B.7	Evaluate the impact of online activities and social media on employer decisions.

21st Century Skills/Interdisciplinary Themes

Please list only the **21st Century/Interdisciplinary Themes** that will be incorporated into this unit.

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Life and Career Skills
- Media Literacy

21st Century Skills

Please list only the **21st Century Skills** that will be incorporated into this unit.

- Civic Literacy
- Environmental Literacy

- Financial, Economic, Business and Entrepreneurial Literacy
- Global Awareness
- Health Literacy

Differentiation

All items will be used as needed.

Please remember: Effective educational **Differentiation** in a lesson lies within content, process, and/or product.

* Extra time to complete assignements

Differentiations:

- Small group instructionvSmall group meetings to reteach
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives-students will build website using code.org, pages must be drawn and planned
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary-Google Doc will be created and shared listing vocabulary with definitions
- Preview content & concepts
- Story guides
- Behavior management plan-develop as needed to aid in student success
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading

- Independent research and projects-tudents will research information for the web pages
- Interest groups
- Learning contracts
- Leveled rubrics-Developing, proficient, advanced categories
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas-Work with individuals to create daily and weekly agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts-Journal prompts in on line journal
- Varied supplemental materials

Special Education Learning (IEP's & 504's)

* Students work with an assigned partner.

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes

- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multi-sensory presentation
- multiple test sessions
- preferential seating
- preview of content, concepts, and vocabulary
- Provide modifications as dictated in the student's IEP/504 plan
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes

English Language Learning (ELL)

* Students can be assigned a partner for tutoring & assistance in class.

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarif
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

At Risk

* Students may correcty errors on all assignments.

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Talented and Gifted Learning (T&G)

* Utilize project based learning for greater depth of knowledge.

- Above grade level placement option for qualified students
- Advanced problem-solving
- Allow students to work at a faster pace
- Cluster grouping
- Complete activities aligned with above grade level text using Benchmark results
- Create a blog or social media page about their unit
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Flexible skill grouping within a class or across grade level for rigor
- Higher order, critical & creative thinking skills, and discovery

- Multi-disciplinary unit and/or project
- Teacher-selected instructional strategies that are focused to provide challenge, engagement, and growth opportunities
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge

Sample Lesson

Using the template below, please develop a **Sample Lesson** for the first unit only.

Unit Name:

NJSLS:

Interdisciplinary Connection:

Statement of Objective:

Anticipatory Set/Do Now:

Learning Activity:

Student Assessment/CFU's:

Materials:

21st Century Themes and Skills:

Differentiation/Modifications:

Integration of Technology: