



Washington Township School District



The mission of the Washington Township Public Schools is to provide a safe, positive, and progressive educational environment that provides opportunity for all students to attain the knowledge and skills specified in the NJ Learning Standards at all grade levels, so as to ensure their full participation in an ever-changing world as responsible, self-directed and civic-minded citizens.

Course Title:	Digital Literacy 8					
Grade Level(s):	8th Grade					
Duration:	<i>Full Year:</i>		<i>Semester:</i>		<i>Marking Period:</i>	X
Course Description:	Digital Literacy 8, a marking period course for eighth grade students, will explore how computer and internet systems work. The course will develop skills and strategies for web development through the use of HTML and CSS coding, and the course will provide further opportunities to advance programming skills through the use of the text-based programming language, Python.					
Grading Procedures:	Examples of grading procedures include scoring rubrics for projects and assignments, summative assessments, formative assessments, self-assessments, and teacher observation. Summative Grading Category - 70% and Supportive Grading Category - 30%					
Primary Resources:	Examples of primary resources include internet-based programs (such as Code.org, Learning.com, and Nearpod.com), text-based coding programs, Office 365 Apps, and teacher-created resources.					

Washington Township Principles for Effective Teaching and Learning

- Implementing a standards-based curriculum
- Facilitating a learner-centered environment
- Using academic target language and providing comprehensible instruction
- Adapting and using age-appropriate authentic materials
- Providing performance-based assessment experiences
- Infusing 21st century skills for College and Career Readiness in a global society

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Under the Direction of:	Dr. Steve Gregor

Written: _____ July 2019
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BOE Approval: _____

Unit Title: 1 – Computing and Internet Systems	
Unit Description: Students will understand how the components of a computer system process data. Students will work with an internet simulator to learn how information travels the internet, the role of IP addresses, how digital data moves in packets, and how security measures should be taken.	
Unit Duration: 2.5 weeks	
Desired Results	
Standard(s): 8.1.8.CS - Computing Systems 8.1.8.NI - Networks and the Internet 8.1.8.IC - Impacts of Computing 8.1.8.DA - Data & Analysis 9.4.8.TL - Technology Literacy	
Indicators: 8.1.8.CS.1 - Recommend improvements to computing devices in order to improve the ways users interact with the devices. 8.1.8.CS.2 - Design a system that combines hardware and software components to process data. 8.1.8.CS.3 - Justify design decisions and explain potential system trade-offs. 8.1.8.CS.4 - Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems. 8.1.8.NI.1 - Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the Internet, and reassembled at the destination. 8.1.8.NI.2 - Model the role of protocols in transmitting data across networks and the Internet and how they enable secure and errorless communication. 8.1.8.NI.3 - Explain how network security depends on a combination of hardware, software, and practices that control access to data and systems. 8.1.8.NI.4 - Explain how new security measures have been created in response to key malware events. 8.1.8.IC.1 - Compare the trade-offs associated with computing technologies that affect an individual's everyday activities and career options. 8.1.8.IC.2 - Describe issues of bias and accessibility in the design of existing technologies. 8.1.8.DA.1 - Organize and transform data collected using computational tools to make it usable for a specific purpose. 8.1.8.DA.2 - Explain the difference between how the computer stores data as bits and how the data is displayed. 8.1.8.DA.3 - Identify the appropriate tool to access data based on its file format. 8.1.8.DA.4 - Transform data to remove errors and improve the accuracy of the data for analysis. 8.1.8.DA.5 - Test, analyze, and refine computational models. 8.1.8.DA.6 - Analyze environmental computational models and propose refinements. 9.4.8.TL.2 - Gather data and digitally represent information to communicate a real-world problem. 9.4.8.TL.3 - Select appropriate tools to organize and present information digitally.	
Essential Questions: <ul style="list-style-type: none"> What are the components of a computer system and how does this knowledge contribute to a person's ability to interact with computing devices? How is information sent over the internet? 	Understandings: <ul style="list-style-type: none"> Students will understand that the input, output, memory, and processing components of a computing system work to store data, use software programs, and deliver data to the users. Understanding how the components of a computer system work equips one to be able to make decisions regarding how to select a computer for one's needs, how to improve the way one interacts with devices, and how to apply troubleshooting strategies.

<ul style="list-style-type: none"> How can computer and internet systems be used securely? 	<ul style="list-style-type: none"> Students will understand how information travels the internet via networks and how digital data moves in packets. Students will understand that a combination of software products and wise user practices can contribute to computer and internet systems being used in a secure manner.
Assessment Evidence	
Performance Tasks: Student completion of lessons and projects	Other Evidence: Scoring Rubrics; Formative Assessment Checks; Teacher Observation; Student Self-Assessments
Benchmarks: Final project evaluated via a scoring rubric	
Learning Plan	
Learning Activities: <ul style="list-style-type: none"> NearPod Lessons - "Understanding and Evaluating Computers" and "Hardware and Software" Code.org Course - CS (Computer Science) Principles; Unit 2 - "The Internet" <ul style="list-style-type: none"> Lesson 1 - "Welcome to the Internet" Lesson 2 - "Building a Network" Lesson 3 - "The Need for Addressing" Lesson 4 - "Routers and Redundancy" Lesson 5 - "Packets" Lesson 6 - "HTTP and DNS" Lesson 7 - "Project Internet Dilemmas Part 1" Lesson 8 - "Project Internet Dilemmas Part 2" Additional learning activities can include lessons from the NearPod Library and/or teacher created lessons and activities. 	
Resources: <ul style="list-style-type: none"> Code.org Lessons NearPod Lessons Schoology Office 365 Apps Laptops Projector 	

Unit Modifications for Special Population Students	
Advanced Learners	Additional activities/resources related to the course will be available to students in order for them to explore the content further and expand their knowledge of the unit topics.
Struggling Learners	Consideration is given to various learning styles. Lessons tap into the learning styles of both visual and auditory learners. The teacher uses resources and programs (such as NearPod), which allow the content to be displayed directly on all students' devices while also providing verbal instruction. Many of the instructional programs have an Immersive Reader feature, which is an audio feature that reads aloud the text to the student.
English Language Learners	For English Language Learners, options are available, such as providing the students with screencast videos that show how projects are completed. In

	addition, many of the instructional programs have an Immersive Reader feature, which is an audio feature that reads aloud the text to the student.
Learners with an IEP	<p>Each special education student has an Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include:</p> <ul style="list-style-type: none"> • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product <p>Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here.</p> <p>Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org</p>
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

The Computing and Internet Systems Unit aligns with some of the NJ Student Learning Standards for English Language Arts as the students will explore an Internet Dilemma and create a project relating to the topic.

New Jersey Student Learning Standards for English Language Arts - Speaking and Listening Comprehension and Collaboration

NJSLSA.SL2 - Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Presentation of Knowledge and Ideas

NJSLSA.SL5 - Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

The Computing and Internet Systems Unit also aligns with some of the NJ Student Learning Standards for Mathematics as the students will be working with an Internet Simulator that will require them to make sense of and reason through various challenges.

New Jersey Student Learning Standards for Mathematics Standards for Mathematical Practice

1 – Make sense of problems and persevere in solving them.

2 – Reason abstractly and quantitatively.

5 – Use appropriate tools strategically.

Integration of 21st Century Skills

Indicators:

For **Unit One, Computing and Internet Systems**, the following practices can be integrated into the classroom to prepare students for 21st century careers.

Critical Thinking & Problem Solving: As students work with an Internet Simulator to learn how information travels the internet, how IP addresses are used, and how digital data moves in packets, students will be required to make inferences and reflect on what they have learned.

Communication: Students will be able to consider what they have learned regarding the components of computer systems and communicate which type of computing device would best meet their needs.

Collaboration: Students will be collaborating with classmates via an Internet Simulator. In addition, students can contribute to both group and class discussions as well as collaborate on ideas pertaining to the content of the unit.

Creativity & Innovation: Students will explore an Internet Dilemma and create a project that presents the findings.

Unit Title: 2 – Programming with Python

Unit Description:

The unit provides students the opportunity to expand on their programming skills by using the text-based programming language, Python. The unit will also bring awareness to how programming is used in our technology-driven society.

Unit Duration: 2.5 weeks

Desired Results

Standard(s):

8.1.8.AP - Algorithms & Programming

Indicators:

8.1.8.AP.1 - Design and illustrate algorithms that solve complex problems using flowcharts and/or pseudocode.

8.1.8.AP.2 - Create clearly named variables that represent different data types and perform operations on their values.

8.1.8.AP.3 - Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.

8.1.8.AP.4 - Decompose problems and sub-problems into parts to facilitate the design, implementation, and review of programs.

8.1.8.AP.5 - Create procedures with parameters to organize code and make it easier to reuse.

Essential Questions:

- What is text-based coding?
- What is Python?
- How can coding skills lead to career opportunities in the future?

Understandings:

- Students will understand that text-based coding involves using commands that are made up of text to create programs.
- Students will understand that Python is a programming language that uses text-based commands to develop programs. Python can be used for a variety of purposes from developing software programs to creating business applications.
- Students will understand that in our technology-driven society, many organizations rely heavily on technology to run their organizations. As a result, there are many career opportunities related to the field of computer science, some of which are directly related to programming.

Assessment Evidence	
Performance Tasks: Student completion of lessons and projects	Other Evidence: Scoring Rubrics; Formative Assessment Checks; Teacher Observation; Student Self-Assessments
Benchmarks: Final project evaluated via a scoring rubric	
Learning Plan	
Learning Activities: <ul style="list-style-type: none"> NearPod Lessons - "Algorithms" and "Programming Languages" Students will have opportunities to work with algorithms related to programming. Python Programming Activities from the Learning.com Easy Code Pillars Python Suite <ul style="list-style-type: none"> Easy Code Pillars: Intro to Python 2 Easy Code Pillars: Intro to Python 3 Additional learning activities can include lessons from the NearPod Library and/or teacher created lessons and activities. Resources: <ul style="list-style-type: none"> Learning.com NearPod Lessons Schoology Office 365 Apps Laptops Projector 	
Unit Modifications for Special Population Students	
Advanced Learners	Additional activities/resources related to the course will be available to students in order for them to explore the content further and expand their knowledge of the unit topics.
Struggling Learners	Consideration is given to various learning styles. Lessons tap into the learning styles of both visual and auditory learners. The teacher uses resources and programs (such as NearPod), which allow the content to be displayed directly on all students' devices while also providing verbal instruction. Many of the instructional programs have an Immersive Reader feature, which is an audio feature that reads aloud the text to the student.
English Language Learners	For English Language Learners, options are available, such as providing the students with screencast videos that show how projects are completed. In addition, many of the instructional programs have an Immersive Reader feature, which is an audio feature that reads aloud the text to the student.
Learners with an IEP	Each special education student has an Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: <ul style="list-style-type: none"> Variation of time: adapting the time allotted for learning, task completion, or testing Variation of input: adapting the way instruction is delivered Variation of output: adapting how a student can respond to instruction Variation of size: adapting the number of items the student is expected to complete Modifying the content, process or product

	<p>Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here.</p> <p>Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org</p>
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

The Programming with Python Unit aligns with some of the NJ Student Learning Standards for English Language Arts as the students will be required to read and interpret the code they will be working with. Students will also use the Python programming language to create programs.

New Jersey Student Learning Standards for English Language Arts – Reading Craft and Structure

NJSLSA.R4 - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

New Jersey Student Learning Standards for English Language Arts – Speaking and Listening Presentation of Knowledge and Ideas

NJSLSA.SL5 - Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

The Programming with Python Unit also aligns with some of the NJ Student Learning Standards for Mathematics as the students will be working with algorithms. Students will also be working with concepts, such as x and y coordinates, when programming.

New Jersey Student Learning Standards for Mathematics Standards for Mathematical Practice

- 1 – Make sense of problems and persevere in solving them.
- 4 – Model with mathematics.
- 5 – Use appropriate tools strategically.
- 7 – Look for and make use of structure.

Integration of 21st Century Skills

Indicators:

For **Unit Two, Programming with Python**, the following practices can be integrated into the classroom to prepare students for 21st century careers.

Critical Thinking & Problem Solving: Students will need to interpret the code they are using when programming. When completing the Python coding activities, students will also be presented with situations that require them to debug the program.

Communication: Through the lessons and activities that are conducted throughout the unit, students will communicate their interpretation of the code they are working with.

Collaboration: Students can contribute to both group and class discussions as well as collaborate on ideas pertaining to the content of the unit.

Creativity & Innovation: The Python coding activities in the Learning.com Program include extension activities which allow the students to take the skills that they have learned during a particular lesson and apply those skills by programming their own creation.

Unit Title: 3 – Web Development with HTML and CSS Coding	
Unit Description: Students will use HTML and CSS coding to develop web pages. The unit will cover the process of planning, structuring, and styling web pages in order to develop a cohesive website.	
Unit Duration: 4 weeks	
Desired Results	
Standard(s): 8.1.8.AP - Algorithms & Programming 9.4.8.TL - Technology Literacy	
Indicators: 8.1.8.AP.6 - Refine a solution that meets users' needs by incorporating feedback from team members and users. 8.1.8.AP.7 - Design programs, incorporating existing code, media, and libraries, and give attribution. 8.1.8.AP.8 - Systematically test and refine programs using a range of test cases and users. 8.1.8.AP.9 - Document programs in order to make them easier to follow, test, and debug. 9.4.8.TL.2 - Gather data and digitally represent information to communicate a real-world problem. 9.4.8.TL.3 - Select appropriate tools to organize and present information digitally.	
Essential Questions: <ul style="list-style-type: none"> What considerations need to be made when planning the development of web pages? How are HTML (Hypertext Markup Language) documents used for web development? How are CSS (Cascading Style Sheets) files used to apply style rules to the HTML documents? How can skills pertaining to web design lead to career opportunities in the future? 	Understandings: <ul style="list-style-type: none"> Students will understand that while planning web pages, consideration needs to be given to what information needs to be communicated as well as how the content will be organized and styled so that it is readable and draws the interest of the intended audience. Students will understand that HTML documents are used to input the HTML elements needed to structure the content on web pages. Specific HTML tags are used to structure the headings, paragraphs, lists, images, and links on the HTML documents. Students will understand that style rules consist of selectors, properties, and values, and the style rules are inputted on the CSS files to apply style to the content on the HTML documents. Some examples include style rules for background colors, borders, margins, and text & image alignment. Students will understand that corporate companies, financial institutions, educational institutions, and government agencies often use websites to communicate to the public. Web designers are needed to create and maintain such websites.
Assessment Evidence	
Performance Tasks: Student completion of lessons and projects	Other Evidence: Scoring Rubrics; Formative Assessment Checks; Teacher Observation; Student Self-Assessments
Benchmarks: Final project evaluated via a scoring rubric	
Learning Plan	

Learning Activities:

- HTML/CSS Coding Activities from the Code.org Course, CS (Computer Science) Discoveries
- **Unit on Web Development: Chapter One – Creating Web Pages**
- **Unit on Web Development: Chapter Two – Multi-page Websites**
- Additional learning activities can include lessons from the NearPod Library and/or teacher created lessons and activities.

Resources:

- Code.org Lessons
- NearPod Lessons
- Schoology
- Office 365 Apps
- Laptops
- Projector

Unit Modifications for Special Population Students

Advanced Learners	Additional activities/resources related to the course will be available to students in order for them to explore the content further and expand their knowledge of the unit topics.
Struggling Learners	Consideration is given to various learning styles. Lessons tap into the learning styles of both visual and auditory learners. The teacher uses resources and programs (such as NearPod), which allow the content to be displayed directly on all students' devices while also providing verbal instruction. Many of the instructional programs have an Immersive Reader feature, which is an audio feature that reads aloud the text to the student.
English Language Learners	For English Language Learners, options are available, such as providing the students with screencast videos that show how projects are completed. In addition, many of the instructional programs have an Immersive Reader feature, which is an audio feature that reads aloud the text to the student.
Learners with an IEP	<p>Each special education student has an Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include:</p> <ul style="list-style-type: none">• Variation of time: adapting the time allotted for learning, task completion, or testing• Variation of input: adapting the way instruction is delivered• Variation of output: adapting how a student can respond to instruction• Variation of size: adapting the number of items the student is expected to complete• Modifying the content, process or product <p>Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here.</p> <p>Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org</p>
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

The Web Development with HTML and CSS Coding Unit aligns with some of the NJ Student Learning Standards for English Language Arts as the students will be researching topics for their website projects, compiling information for their website projects, and communicating the information via their website projects.

New Jersey Student Learning Standards for English Language Arts – Reading

Key Ideas and Details

NJSLSA.R1 - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

New Jersey Student Learning Standards for English Language Arts – Writing

Production and Distribution of Writing

NJSLSA.W4 - Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

NJSLSA.W6 - Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

NJSLSA.W7 - Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.

Integration of 21st Century Skills

Indicators:

For **Unit Three, Web Development with HTML and CSS Coding**, the following practices can be integrated into the classroom to prepare students for 21st century careers.

Critical Thinking & Problem Solving: Throughout the HTML and CSS coding projects, students will be presented with debugging activities, and the students will need to apply the skills they have learned to complete these activities.

Communication: Students will communicate information on topics via the web pages they create and design.

Collaboration: Some of the HTML and CSS coding activities involve pair programming, which gives students the opportunities to work on activities collaboratively. In addition, students can contribute to both group and class discussions as well as collaborate on ideas pertaining to the content of the unit.

Creativity & Innovation: As students select which style rules they will input on the CSS files, they will need to consider how their selections will add visual interest to the web pages.