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 6**
Grade Level(s):	6

Duration:	*Full Year:*		*Semester:*		*Marking Period:*	**x**
Course Description:	Digital Literacy 6, a marking period course for sixth grade students, will develop skills and strategies that promotes digital citizenship, analyzes impacts of computing, investigates computing systems, explores networks and the internet, and introduces algorithms and programming through the use of block-based coding.					
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, Microsoft Office programs, block-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

Revised:	July 2022
BOE Approval:	

Unit Title: 1- Intro to Programming and Algorithms

Unit Description: Students will understand the role that programming has in our technological world. Students will learn to use block-based coding. Students will create and develop algorithms to achieve goals and solve problems. These coding skills provide the foundation for learning more advanced programming languages in the future.

Unit Duration: 3 weeks

Desired Results

Standard(s):Computer Science: 8.1.8.AP.1-9
Algorithms and 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.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

Understandings:
Students will understand that…

- Students will understand that almost all industries need software developers to create software programs using programming languages. In addition to potentially leading to careers in the field of technology, learning programming languages also builds problem-solving skills.
- Students will understand that block-based coding is a visual programming language that involves stacking command blocks that contain scripts in order to create programs.
- Coding programs are used to solve problems to meet the needs of users and the community.
- Algorithms are the rules or commands that execute code.
- Algorithms can be altered or combined to change the behavior of code.
- Algorithms are reusable and can be used in many situations.

Essential Questions:

- What role does programming have in our technological world?
- How can learning block-based coding serve as a foundation prior to learning more advanced programming languages, such as Python and HTML?
- How do variables control code?
- How can algorithms be adapted to change the behavior of code?
- How can you develop new algorithms to solve problems or achieve goals?

Assessment Evidence

Performance Tasks:
Student completion of block-based coding lessons inside of the Scratch platform. Mini projects that execute code evaluated against standards and performance-based rubrics.

Other Evidence:
Teacher Observation; Student Self-Assessments; Rubrics, Formative Assessment responses

Benchmarks:
Block based coding/ algorithm student-based choice project, assessed via rubric.

Learning Plan

Learning Activities:

The student learning activities will consist of a series of projects that require students to use block-based coding to create programs, such as stories, games, animations, and presentations. As projects are introduced, students will participate in interactive instruction activities using web-based tools that utilize video and formative assessment features. Students will be given goals or problems to solve, whereas they will develop algorithms to execute block-based coding programs. The projects and activities will start with simple commands, then will expand to involve nested commands, loops, and variables. Students will experiment with algorithms to test their processes and adapt them as needed. Teachers will provide feedback and suggestions.

The projects will be supplemented with a variety of activities that include:

- Interactive instruction provided by the teacher
- Classroom discussion
- Classroom games/ review activities

Resources:

- Scratch Program (primary resource for block-based coding)
- Code.org projects
- CS First with Google projects
- Nearpod lessons focusing on algorithms
- Computers/Laptops/Projector
- BrainPOP Lessons: Loops, Functions, Variables
- Flocabulary Lessons: Coding Algorithms, Coding for Loops
- Learning.com Lessons- Code Monkey

Unit Modifications for Special Population Students	
Advanced Learners	Students will be asked to solve additional problems or meet additional conditions in their code. Additional activities/projects will be made available to students to further their exploration. Students who move quickly through Scratch projects will move onto Code Monkey projects.
Struggling Learners	Consideration is given to various learning styles. Lessons tap into the learning styles of both visual and auditory learners by providing visual and auditory directions. Projects will be chunked into smaller units to ensure that they can focus on one type of algorithm at a time. Teachers will provide small group instruction and frequent feedback as needed. Teachers will break down algorithms to show how different elements work together.
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 place of the use of written directions. An emphasis can be placed on the use of videos and illustrations to teach topics. Written directions are provided digitally so they can be translated as needed.
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: • 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 Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. 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
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 unit "***Introduction to Algorithms and Programming***" connects to English Language Arts and Mathematics subject areas. The course aligns with NJSLA.L standards on Conventions, Effective Use and Vocabulary as well as NJSLSA.SL standards on Speaking and Listening. NJSLSA.SL1. , NJSLSA.SL2. , NJSLSA.SL5. , NJSLSA.SL6. NJSLSA.L4., NJSLSA.L5. NJSLSA.L6. The course aligns with NJSLS for Mathematics under the umbrella of Mathematical Practices and Expressions and Equations.

Mathematical Practices:
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning
Expressions and Equations:
6.EE.C

Integration of 21st Century Skills

Indicators:

Introduction to Programming, the following practices can be integrated into the classroom in order to prepare students for 21st Century Skills.

Critical Thinking & Problem Solving: Students can exhibit problem-solving skills by developing programs by using block-based coding. Students will design their own solutions through algorithms they create.

Communication: Students can convey their ideas through the programs they create by using a visual programming language. Students will flowchart and explain their code.

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

Creativity & Innovation: Students can derive creative and unique ideas for developing games, animations, etc. by using block-based coding

Unit Title: 2- Digital Citizenship and Information Literacy

Unit Description:
Students will be asked to apply appropriate strategies for research and publishing by utilizing effective searching strategies, evaluating sources for bias, and using proper citations all while researching and publishing findings on real world issues. Students then will be asked to clearly and effectively share their findings. As part of publishing their information through an online medium, students will also be asked to explain how to manage their digital footprint and identity and the dangers of sharing information online.

Unit Duration: 3 weeks

Desired Results

Standard(s): 9.4.8.DC, 9.4.8.IML, 8.1.8.DA.

Indicators:
9.4.8.DC.1: Analyze the resource citations in online materials for proper use.
9.4.8.DC.2: Provide appropriate citation and attribution elements when creating media products
9.4.8.DC.3: Describe tradeoffs between allowing information to be public (e.g., within online games) versus keeping information private and secure
9.4.8.DC.4: Explain how information shared digitally is public and can be searched, copied, and potentially seen by public audiences.
9.4.8.DC.5: Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure.
9.4.8.DC.6: Analyze online information to distinguish whether it is helpful or harmful to reputation.
9.4.8.DC.7: Collaborate within a digital community to create a digital artifact using strategies such as crowdsourcing or digital surveys.
9.4.8.DC.8: Explain how communities use data and technology to develop measures to support the environment.
9.4.8.IML.1: Critically curate multiple resources to assess the credibility of sources when searching for information.
9.4.8.IML.2: Identify specific examples of distortion, exaggeration, or misrepresentation of information.
9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).
9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations. •
9.4.8.IML.5: Analyze and interpret local or public data sets to summarize and effectively communicate the data
9.4.8.IML.6: Identify subtle and overt messages based on the method of communication.
9.4.8.IML.7: Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose
• 9.4.8.IML.8: Apply deliberate and thoughtful search strategies to access high-quality information•
9.4.8.IML.9: Distinguish between ethical and unethical uses of information and media
• 9.4.8.IML.10: Examine the consequences of the uses of media
• 9.4.8.IML.11: Predict the personal and community impact of online and social media activities
8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

Understandings:
Students will understand that…

- One must follow guidelines for respecting copyright laws when using digital tools.
- There are a variety factors to consider when determining whether digital content contains trustworthy/credible information.
- How data is formatted can help the consumer process the information
- Data can be misrepresented or skewed
- Information should be vetted from multiple sources when researching
- When information is shared online, you lose control of that information.

Essential Questions:

- How does one respect copyright laws and intellectual property when using digital tools?
- How does one determine whether digital content is reliable and credible?
- What are some positive and negative consequences of media?
- How can social media and online posts impact a community?
- How can data be skewed to persuade or misinform an audience?
- How can data be organized best convey meaning?
- How can one protect their own identity online?

• Misinformation can be found while researching	

Assessment Evidence

Performance Tasks: Individual pieces of research project- The Environment: Curate resources, read and evaluate resources, create and publish an infographic with proper citations.	**Other Evidence:** Formative assessment checks Learning.com activity results

Benchmarks:
Summative Unit Assessment
Final project assessed against rubric.
Learning.com Skill Checks

Learning Plan

Learning Activities:
Interactive lessons- searching strategies, citations, validity and sourcing
Project embedded activities- searching for resources on real world problem thematic unit
Participate in live and asynchronous discussions about searching, citation, and ethical uses of the internet
Curate and evaluate links against checklist or rubric
Create Infographic to represent data found
Publish and present infographic

Resources:

- **Learning.com Lessons:**
- Online Safety: Digital Citizenship
- Internet Usage: Ethical Use of Digital Resources
- Internet Usage: Navigating the World Wide Web
- Internet Usage: Web Searches
- Internet Usage: Validity and Sourcing

- **Nearpod lessons:**
- Sourcing your Information
- Evaluating Evidence

- **Flocabulary lessons:**
- Source evaluation
- Source evaluation: videos

- **BrainPOP:**
- Research
- Online Sources
- Social Media

- **Infographic Makers**
- Canva
- PowerPoint
- Publisher

- **Curation devices:**
- Wakelet
- Office 365
- Excel
- Word
- PowerPoint

- **Schoology: Discussions, Assignment submission areas**
- **Teacher created activities**

Unit Modifications for Special Population Students	
Advanced Learners	Advanced learners will be tasked with adding elements to research that include manipulating data, building connections to other subjects, and to developing additional products to their infographic such as audio, video, and or written statements.
Struggling Learners	Struggling learners will receive guided lessons, suggested research articles leveled for their reading level, chunked project steps, daily check-ins, and infographic templates that allow them to focus on the information.
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 place of the use of written directions. An emphasis can be placed on the use of videos and illustrations to teach topics. Written directions and articles are provided digitally so they can be translated as needed. Help students find articles in a language of their choosing.
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: • 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 Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. 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
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:

Unit Two, Digital Citizenship and Informational Literacy, relates to the content areas for Science and English Language Arts. The indicators for these standards are specified below:

NJSLS for English Language Arts: NJSLSA.R7, R8, NJSLSA.W1, W4, W6-9

ISTE: 2a; 2b; 2c; 2d

Science Standards: MS.WeatherandClimate, LS2.Interactions, Energy, Dynamics

Integration of 21st Century Skills

Indicators:

For ***Unit Two Digital Citizenship and Information Literacy,*** the following practices can be integrated into the classroom in order to prepare students for 21st Century Skills.

Critical Thinking & Problem Solving: Students can analyze digital content to determine the level of credibility.

Communication: Students can communicate ideas regarding digital citizenship during interactive online lessons.

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: Students can show open-mindedness for learning new ideas and concepts.

Unit Title: 3- Intro to Computing and Internet Systems

Unit Description:
This unit focuses on the inter-related computing systems including cloud-based systems, networks, and hardware/software components. Students will explore the ideas of network security and malware. In addition, this unit focuses on analyzing these systems in terms of how data is stored and accessed.

Unit Duration: 3.5 weeks

Desired Results

Standard(s):
8.1.8. CS Computing Systems
8.1.8.NI Networks and 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.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.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.CS.4: Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems
9.4.8.TL.3: Select appropriate tools to organize and present information digitally.
9.4.8.TL.4: Synthesize and publish information about a local or global issue or event

Understandings:
Students will understand that…

- Computing devices are designed to meet the needs of the users and can be adapted if needed.
- Computer components work together to access and process data.
- Information is sent as small pieces of data that can be easily transmitted through networks and reassembled at the destination.
- Internet protocols transmit and secure data.
- Network security components ensure secure and accurate data.
- Different types of data are accessible in different ways based on their file format.
- Data is not stored the same way that it is displayed.

Essential Questions:

- How can computing systems be adapted to create more accessible and less biased systems?
- How is data transmitted between networks and servers?
- What kinds of security protocols can be put in place to ensure data safety?
- How is data stored?
- What steps or strategies can be taken to troubleshoot hardware and software problems?
- How do you access different file types?

Assessment Evidence

Performance Tasks:	**Other Evidence:**
Computer redesign project File Types PowerPoint project Flowchart Network Design	Formative assessment checks Learning.com activity results Interactive lesson responses

Benchmarks:
Unit Assessment

Learning Plan

Learning Activities:
In addition to the performance task projects: Computer Redesign Project, File Type Presentation, and Flowchart Network Design; students will participate in live and asynchronous discussions, access interactive videos, and participate in interactive lessons (as listed below in resources).

Resources:

Flocabulary lessons:
What is the Internet?

Learning.com Lessons
Hardware and Software Fundamentals: Networking
Hardware and Software Fundamentals: Computing in the Cloud

BrainPOP Lessons:
Binary
Malware

Nearpod Lesson:
How computers talk
File Types Drag and Drop

Code.org: CS Discoveries:
Chapter 2, Lessons 1-6
Computers and Problem Solving

Schoology discussions
Office 365 Suite
PowerPoint
Publisher
3D Paint
Canva
Word

Unit Modifications for Special Population Students	
Advanced Learners	Advanced learners will be pushed to extend projects to include 3D designs in addition to text and image-based descriptions. Students who are advanced learners will start their projects from scratch using formats of their choosing.
Struggling Learners	Struggling learners will receive templates to assist with their projects, as well as guided directions and chunked project steps. Additionally, they will see sample computer adaptations. Struggling learners will also have opportunities for small group reteaching as needed.
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 place of the use of written directions. An emphasis can be placed on the use of videos and illustrations to teach topics. Written directions and articles are provided digitally so they can be translated as needed. Students can represent redesigns graphically instead of using text.
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: • 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 Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. 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
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:

For ***Unit Three Intro to Computing and Internet Systems,*** relates to the content areas for English Language Arts. The indicators for these standards are specified below:

NJSLS for English Language Arts: NJSLSA.R7, R8, NJSLSA.W1, W4, W6-9

Integration of 21st Century Skills

Indicators:

For ***Unit Three Intro to Computing and Internet Systems,*** the following practices can be integrated into the classroom in order to prepare students for 21st Century Skills.

Critical Thinking & Problem Solving: Students will redesign computers to meet unique needs.

Communication: Students will share their designs and presentations with others.

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: Students will develop presentations that illustrate their redesigns and flow charts.