TOWNSHIP OF UNION PUBLIC SCHOOLS

AP Computer Science Principles

Adopted: December 19, 2023

Unit 1 - Introduction to App Design

Unit Title: Intro to App Design (code.org Unit 3)

Grade level: 9-12

Timeframe: 12 days

Rationale

This unit is students' first experience with programming. It is designed to maintain the collaborative and inclusive classroom environment developed in the previous two units. The collaborative project, fun, unplugged activities, and the focus on experimenting should help keep your whole class working together and trying out ideas.

Guiding Questions

- How will students adapt to their first programming experience?
- How will students gain an understanding of the creative and collaborative process of programming?
- How can students develop the idea that programming is a means of personal expression that allows them to draw on innate talents and interests?

Standards

Standards (Taught and Assessed):

CRD-1: incorporating multiple perspectives through collaboration improves computing innovations as they are developed.
CRD-2: developers create and innovate using an iterative design process that is user-focused, that incorporates implementation/feedback cycles, and that leaves ample room for experimentation and risk-taking.
AAP-2: The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.
AAP-3: Programmers break down problems into smaller and more manageable pieces. By creating procedures and leveraging parameters, programmers generalize processes that can be reused. Procedures allow programmers to draw upon existing code that has already been tested, allowing them to write programs more quickly and with more confidence.

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.
9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet customer specifications
9.3.IT-PRG.4 Demonstrate the effective use of software development tools to develop software applications.
9.3.IT-PRG.5 Apply an appropriate software development process to design a software application.
9.3.IT-PRG.6 Program a computer application using the appropriate programming language.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.

Social-Emotional Learning Competencies

- Self Awareness
- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess: What are apps? How do we interact with them? What kinds of things do apps do?	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT We are learning to/that	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
• Describe the purpose of a computing innovation. • Identify input(s) to a program.	• Entrance Tickets • Exit Tickets • Project: Designing an app • End of Unit Multiple Choice Test	• Code.org Unit 3 Lesson 1: Introduction to Apps	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect

• Identify output(s) produced by a program.	• AP Classroom Questions Topics 1.1 Collaboration, 1.2 Program Function and Purpose, 1.3 Program Design and Development	• CSP Unit 3 - Intro to App Design - Slides • How Computers Work - What Makes a Computer, a Computer - Video (code.org) • AP Classroom Daily Video	students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Set up the User Interface of an app including buttons, text, and images • Use meaningful names to for element ids		• Code.org Unit 3 Lesson 2: Introduction to Design Mode • CSP Unit 3 - Intro to App Design - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Brainstorm and choose a topic to develop into an app • Design the user interface of an app • Use feedback to help guide the design of an app		• Code.org Unit 3 Lesson 3: Project Designing and App Part 1 • CSP Unit 3 - Intro to App Design - Slides • App Development Planning Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Create a user interface based on a prototype		• Code.org Unit 3 Lesson 4: Project Designing an App Part 2 • CSP Unit 3 - Intro to App Design - Slides • App Development Planning Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain the qualities that differentiate natural languages and programming languages • Justify the existence of programming languages to precisely communicate instructions		• Code.org Unit 3 Lesson 5: The Need for Programming Languages • CSP Unit 3 - Intro to App Design - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Define a program as a sequence of commands that are executed or run by a computer • Define comments as notes or documentation		• Code.org Unit 3 Lesson 6: Intro to Programming • CSP Unit 3 - Intro to App Design - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment

into a program that do not affect how the program executes • Explain the differences between how sequential and event-driven programs execute			activities to expand upon the curriculum.
• Debug simple sequential and event-driven programs • Use the debugging process and Identify specific best practices for debugging programs • Use the speed slider, error messages, and documentation as part of the debugging process		• Code.org Unit 3 Lesson 7: Debugging • CSP Unit 3 - Intro to App Design - Slides • App Development Planning Guide • AP Classroom Daily Video • Class Chats: Olawale Oladehin - Video (code.org) • How To Debug - Video (code.org)	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Create the code and user interface of an app based on a program specification • Effectively use pair programming while designing the features of an app		• Code.org Unit 3 Lesson 8: Project Designing an App Part 3 • CSP Unit 3 - Intro to App Design - Slides • App Development Planning Guide • AP Classroom Daily Video • Pair Programming - Video (code.org)	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Iteratively improve an app based on feedback • Provide effective feedback on the functionality or usability of an app • Test an app's functionality by attempting to use features and behavior described in a program specification		• Code.org Unit 3 Lesson 9: Project Designing an App Part 4 • CSP Unit 3 - Intro to App Design - Slides • App Development Planning Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect on the value of different stages of a development		• Code.org Unit 3 Lesson 10: Project Designing an App Part 5 • CSP Unit 3 - Intro to App Design - Slides	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task.

process in creating an app		• App Development Planning Guide • AP Classroom Daily Video • U3 High Score Sample App - Exemplar • U3 High Score Sample Planning Guide & Rubric - Exemplar • U3 Mid Score Sample App - Exemplar • U3 Mid Score Sample Planning Guide & Rubric - Exemplar	Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect on the value of different stages of a development process in creating an app		• Code.org Unit 3 Lesson 11: Assessment Day	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect upon the first chapter of Blown to Bits	• Written summary of Chapter 1 of Blown to Bits	• Classroom Discussion of Chapter 1 of Blown to Bits • PDF of Blown to Bits: https://www.niema	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task.

		nlab.org/pdfs/blowntobits.pdf	Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
End of Unit Assessment -Multiple Choice code.org	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Big Topic 1.1, 1.2, 1.3 Multiple Choice Assessment - AP Classroom	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections

code.org Unit 3 Project - Designing an App - Students will design their first app using the code.org GUI and IDE.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Students will base their apps on the topic of their choosing thus leading to a natural Interdisciplinary Connection between Computer Science and the interest of the student.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Unit 2 - Variables, Conditionals, and Functions

Unit Title: Variables, Conditionals, and Functions (code.org Unit 4)

Grade level: 9-12 **Timeframe: 16 Days**

Rationale

This unit is students' first experience with the Explore, Investigate, Practice, Make lesson sequence, or EIPM. This structured approach to teaching programming is covered in detail in the curriculum guide. We highly recommend watching the accompanying video series to better understand what EIPM should look like in the classroom. When used effectively, it supports deep learning of content and helps maintain a collaborative classroom culture, even as you move into more complex programming concepts.

Guiding Questions

- Students will be introduced to the EIPM (explore, investigate, practice, make) model of learning, through this model - how will students use the explore and investigate lessons to deepen their understanding of the practice and make lessons?
- In what ways can students become better collaborative developers?
- How will students transition from scaffolded projects to fully independent projects as they prepare for the Create PT?

Standards

Standards (Taught and Assessed):

AAP-1 - To find specific solutions to generalizable problems, programmers represent and organize data in multiple ways.
AAP-2 - The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.
AAP-3 - Programmers break down problems into smaller and more manageable pieces. By creating procedures and leveraging parameters, programmers generalize processes that can be reused. Procedures allow programmers to draw upon existing code that has already been tested, allowing programmers to write programs more quickly and with more confidence.
CRD-2 - Developers create and innovate using an iterative design process that is user-focused, that incorporates implementation/feedback cycles, and that leaves ample room for experimentation and risk-taking.
DAT-1 - The way that the computer represents data is different from the way that the data are interpreted and displayed for the user. Programs are used to translate data into a representation that is more easily understood by people.

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.
9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
9.3.IT-PRG.3 Analyze system and software requirements to ensure maximum operating efficiency.
9.3.IT-PRG.4 Demonstrate the effective use of software development tools to develop software applications.
9.3.IT-PRG.5 Apply an appropriate software development process to design a software application.
9.3.IT-PRG.6 Program a computer application using the appropriate programming language.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.
9.3.IT-PRG.8 Perform quality assurance tasks as part of the software development cycle.
9.3.IT-PRG.9 Perform software maintenance and customer support functions.

Social-Emotional Learning Competencies

- Self Awareness
- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess: What is sequencing and why is it important in computer science? What are conditional statements, and how do they relate to computer science? What is a function and how does it help with abstraction?	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT **We are learning to/that**	**Formative Assessment**	**Activities and Resources**	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
• Evaluate expressions that include numbers, strings, and arithmetic operators. • Trace simple programs that use variables, expressions, and variable assignment. • Use appropriate vocabulary to describe variables, expressions, and variable assignment.	• Entrance Tickets • Exit Tickets • Project: Decision Maker App • End of Unit Multiple Choice Test • AP Classroom Questions Topics 1.4 Identifying and Correcting Errors, 3.1 Variables and Assignment, 3.3 Mathematical Expressions, 3.5 Boolean Expressions, 3.6 Conditionals, 3.7 Nested Conditionals, 3.15 Random Values	• Code.org Unit 4 Lesson 1: Variables Explore • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • EIPM: A Short Introduction - Video (code.org) • Guide to EIPM Lessons - Video • Guide to Explore Lessons - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain the purpose of those programming patterns with variables both in terms of how they work and what they accomplish • Identify common programming patterns when using variables as part of an app • Modify apps that make use of common programming patterns with variables to adjust their functionality		• Code.org Unit 4 Lesson 2: Variables Investigate • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • EIPM: A Short Introduction - Video (code.org) • Guide to EIPM Lessons - Video • Guide to Investigate Lessons - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Debug programs that use variables and expressions • Write programs that use variables and expressions with the support of sample code.		• Code.org Unit 4 Lesson 3: Variables Practice • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • EIPM: A Short Introduction - Video (code.org) • Guide to EIPM Lessons - Video • Guide to Practice Lessons - Video • Debugging Global vs Local Variables - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Implement programming patterns with variables to develop a functioning app • Recognize the need for programming patterns with variables as part of developing a functioning app • Use debugging skills as part of developing an app • Write comments to clearly explain both the purpose and function of different segments of code within an app		• Code.org Unit 4 Lesson 4: Variables Make • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • Guide to EIPM Lessons - Video • Guide to Make Lessons - Video • CSP Variables Make - Photo Liker App - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Evaluate expressions that include Boolean values, comparison operators, and logical operators		• Code.org Unit 4 Lesson 5: Conditionals Explore • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • Guide to EIPM Lessons - Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect

• Trace simple programs that use Boolean expressions and conditional statements • Use appropriate vocabulary to describe Boolean expressions and conditional statements		• Guide to Explore Lessons - Video • CS Principles: Conditionals - Part 1 Boolean Expressions - Video • AP Classroom Daily Video	students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain the purpose of those programming patterns with boolean expressions and conditional statements both in terms of how they work and what they accomplish • Identify common programming patterns using boolean expressions and conditional statements • Modify apps that make use of common programming patterns with boolean expressions and conditional statements to adjust their functionality		• Code.org Unit 4 Lesson 6: Conditionals Investigate • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • Guide to Investigate Lessons - Video • Introduction to Conditionals - Part 2a - Video • Introduction to Conditionals - Part 2b - Video • Introduction to Conditionals - Part 2c - Video • Introduction to Conditionals - Part 3 - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Debug programs that use boolean expressions and conditional statements • Write programs that use boolean expressions and conditional statements with the support of sample code.		• Code.org Unit 4 Lesson 7: Conditionals Practice • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • Guide to Practice Lessons - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Implement programming patterns with boolean expressions and conditionals statements to develop a functioning app • Recognize the need for programming patterns with Boolean expressions and conditional statements as part of developing a functioning app • Use debugging skills as part of developing an app • Write comments to clearly explain both the purpose and function of different segments of code within an app		• Code.org Unit 4 Lesson 8: Conditionals Make • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • CSP Conditionals Make - Museum Ticket Generator App - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Describe the way a function call interrupts the normal flow of execution within a program • Modify programs that declare and call functions to adjust their functionality • Trace the flow of execution in programs that declare and call functions • Use appropriate vocabulary to describe the declaring and calling of functions		• Code.org Unit 4 Lesson 9: Functions Explore/Investigate • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • Guide to EIPM Lessons - Video • Guide to Explore Lessons - Video • Guide to Investigate Lessons - Video • Defining and Calling Functions - Video • Introduction to Functions - Video • Song Lyrics - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Debug programs that use functions • Identify opportunities to use functions to reduce repeated code within a program • Write programs that use functions with the support of sample code		• Code.org Unit 4 Lesson 10: Functions Practice • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • Guide to Practice Lessons - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Implement a function using programming patterns while developing a functional app • Recognize the need for a function to reduce repeated code		• Code.org Unit 4 Lesson 11: Functions Make • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • Guide to Make Lessons - Video • CSP Functions Make - Quote Maker App - Activity Guide	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a

while developing a functional app • Use debugging skills as part of developing an app • Write comments to clearly explain both the purpose and function of different segments of code within an app		• AP Classroom Daily Video	bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Using a Project Planning Guide, students work through the stages of creating an app from scratch. • Students will demonstrate mastery of variables, conditionals, and functions by combining these elements into a useful program designed to solve the problem of making a decision. • See rubric for guidance in measuring student learning		• Code.org Unit 4 Lesson 12, 13, 14: Decision Maker App • CSP Unit 4 - Variables, Conditionals, and Functions - Slides • CSP U4 Practice PT Planning Guide • CSP U4 Practice PT Rubric - Rubric • AP Classroom Daily Video • U4 High Score Sample App - Exemplar • U4 High Score Sample Planning Guide & Rubric - Exemplar • U4 Mid Score Sample App - Exemplar • U4 Mid Score Sample Planning Guide & Rubric - Exemplar	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect upon the main ideas of Unit 4 - Variables, Conditionals, and Functions		• Code.org Unit 4 Lesson 15: Assessment Day	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect

			students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect upon the second chapter of Blown to Bits	• Written summary of Chapter 2 of Blown to Bits	• Classroom Discussion of Chapter 2 of Blown to Bits • PDF of Blown to Bits: https://www.niemanlab.org/pdfs/blowntobits.pdf	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
End of Unit Assessment -Multiple Choice code.org	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Big Topic 1.4, 2.1, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.12, 3.15 Multiple Choice Assessment - AP Classroom	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
code.org Unit 4 Project - Decision Maker App - students are given the opportunity to design and program an app from scratch. Students demonstrate mastery of variables, conditionals, and functions by combining these elements into a useful program designed to solve the problem of making a decision	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Students will base their apps on the topic of their choosing thus leading to a natural Interdisciplinary Connection between Computer Science and the interest of the student.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Unit 3 - Lists, Loops, and Traversals

Unit Title: Lists, Loops, and Traversals (code.org Unit 5)

Grade level: 9-12 **Timeframe: 19 Days**

Rationale

This unit is built around a data analysis process that helps students break down how data is turned into new information about the world. Some lessons are designed around different steps of this process, like cleaning data or building visualizations. Other lessons focus on ways this process is applied in real-world contexts like citizen science or machine learning. The data analysis process helps provide a consistent reference point as students explore the importance of data analysis in computing.

Guiding Questions

- How can students use creativity and problem solving skills to design an application that demonstrates mastery of new programming concepts (lists, loops)?
- How can students best implement the Data Library to manipulate lists of data to increase functionality of the application while reducing complexity of the code?

Standards

Standards (Taught and Assessed):

CRD-2: Developers create and innovate using an iterative design process that is user-focused, incorporating implementation/feedback cycles, which leaves ample room for experimentation and risk-taking.
AAP-1: To find specific solutions to generalizable problems, programmers represent and organize data in multiple ways.
AAP-2: The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.
AAP-3: Programmers break down problems into smaller and more manageable pieces. By creating procedures and leveraging parameters, programmers generalize processes that they can reuse. Procedures allow programmers to draw upon existing code that has already been tested, allowing them to write programs more quickly and more confidently.

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.
9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
9.3.IT-PRG.3 Analyze system and software requirements to ensure maximum operating efficiency.
9.3.IT-PRG.4 Demonstrate the effective use of software development tools to develop software applications.
9.3.IT-PRG.5 Apply an appropriate software development process to design a software application.
9.3.IT-PRG.6 Program a computer application using the appropriate programming language.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.
9.3.IT-PRG.8 Perform quality assurance tasks as part of the software development cycle.
9.3.IT-PRG.9 Perform software maintenance and customer support functions.
9.3.IT-PRG.10 Design, create and maintain a database.

Social-Emotional Learning Competencies

- Self Awareness
- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess the students ability to differentiate between the need for a list to reduce code complexity and using a list to substitute for a number of variables.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT We are learning to/that	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
• Use an index to reference specific elements in a list • Use appropriate vocabulary to describe lists.	• Entrance Tickets • Exit Tickets • Project: Hackathon • End of Unit Multiple Choice Test • AP Classroom Questions Topics 3.2 Data Abstraction, 3.4 Strings, 3.8 Iteration, 3.10 Lists, 3.16 Simulations	• Code.org Unit 5 Lesson 1: Lists Explore • CSP Unit 5 - Lists Loops, and Traversals - Slides • Introduction to Lists - Part 1 - Video • Introduction to Lists - Part 2 - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain the purpose of programming patterns with lists both in terms of how they work and what they accomplish • Identify common programming patterns using lists • Modify apps that make use of common programming patterns with lists to adjust their functionality		• Code.org Unit 5 Lesson 2: Lists Investigate • CSP Unit 5 - Lists Loops, and Traversals - Slides • Introduction to Lists - Assigning and Updating - Video • Introduction to Lists - Getting Length - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Accurately use list operations including accessing, inserting, and removing elements • Correctly set up a list in a program • Debug programs with lists		• Code.org Unit 5 Lesson 3: Lists Practice • CSP Unit 5 - Lists Loops, and Traversals - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Implement programming patterns with lists to develop a functioning app • Recognize the need for programming patterns with lists as part of developing a functioning app • Use debugging skills as part of developing an app • Write comments to clearly explain both the purpose and function of different segments of code within an app		• Code.org Unit 5 Lesson 4: Lists Make • CSP Unit 5 - Lists Loops, and Traversals - Slides • CSP Lists Make - Reminder App - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Identify the exit point of a loop. • Trace a simple program with a loop • Use appropriate vocabulary to describe loops.		• Code.org Unit 5 Lesson 5: Loops Explore • Loops Game Board • Using Loops - Video • CSP Unit 5 - Lists Loops, and Traversals - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Read programs that use for loops • Understand the parts of a for loop • Update the Boolean expression in a for loop to change how many times the loop runs		• Code.org Unit 5 Lesson 6: Loops Explore • Loops Game Board • Using Loops - Video • CSP Unit 5 - Lists Loops, and Traversals - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Debug programs that use loops • Use a for-loop to update multiple screen elements at once • Write programs that use for loops with the support of sample code. •		• Code.org Unit 5 Lesson 7: Loops Practice • CSP Unit 5 - Lists Loops, and Traversals - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon

			the curriculum.
• Implement programming patterns with loops to develop a functioning app • Recognize the need for programming patterns with loops as part of developing a functioning app • Use debugging skills as part of developing an app • Write comments to clearly explain both the purpose and function of different segments of code within an app		• Code.org Unit 5 Lesson 8: Loops Make • CSP Unit 5 - Lists Loops, and Traversals - Slides • CSP Loops Make - Lock Screen Maker - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Trace simple programs with loop traversals • Understand how to use a loop to traverse a list • Use appropriate vocabulary to describe traversals.		• Code.org Unit 5 Lesson 9: Explore • CSP Unit 5 - Lists Loops, and Traversals - Slides • Traversal Machine • Introduction to Traversal - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Explain the purpose of programming patterns with traversals both in terms of how they work and what they accomplish • Identify common programming patterns using traversals • Modify apps that make use of common programming patterns with traversals to adjust their functionality		• Code.org Unit 5 Lesson 10: Traversals Investigate • CSP Unit 5 - Lists Loops, and Traversals - Slides • Traversal Machine • Introduction to Traversal - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Debug programs that use list traversals • Write programs that use list traversals, including the filter and reduce patterns, with the support of sample code		• Code.org Unit 5 Lesson 11: Traversals Practice • CSP Unit 5 - Lists Loops, and Traversals - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Implement programming patterns with traversals to develop a functioning app		• Code.org Unit 5 Lesson 12: Traversals Make • CSP Unit 5 - Lists Loops, and Traversals - Slides • CSP Traversals Make - Random Forecaster App - Activity Guide	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect

• Recognize the need for programming patterns with traversals as part of developing a functioning app • Use debugging skills as part of developing an app • Write comments to clearly explain both the purpose and function of different segments of code within an app		• AP Classroom Daily Video	students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Determine a dataset for project usage • Effectively plan a project using a paper prototype		• Code.org Unit 5 Lesson 13: Project Hackathon Part 1 • CSP Unit 5 - Lists Loops, and Traversals - Slides • CSP Unit 5 - Lists Loops, and Traversals - Slides • U5 Hackathon High Score Sample App - Exemplar • U5 Hackathon High Score Sample Planning Guide & Rubric - Exemplar • U5 Hackathon High Score Sample Written Responses - Exemplar • U5 Hackathon Mid Score Sample App - Exemplar • U5 Hackathon Mid Score Sample Planning Guide & Rubric - Exemplar • U5 Hackathon Mid Score Sample Written Responses - Exemplar • For the students	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

		• CSP U5 Hackathon Project Planning Guide - Activity Guide • CSP U5 Hackathon Project Written Response - Written Response • AP Classroom Daily Video	
• Begin programming an app which uses a database • Translate a paper prototype to screens		• Code.org Unit 5 Lesson 14: Project Hackathon Part 2 • CSP Unit 5 - Lists Loops, and Traversals - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Continue programming an app which uses a database • Translate a paper prototype to screens		• Code.org Unit 5 Lesson 15: Project Hackathon Part 3 • CSP Unit 5 - Lists Loops, and Traversals - Slides • CSP U5 Hackathon Project Planning Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Continue programming an app which uses a database • Translate a paper prototype to screens		• Code.org Unit 5 Lesson 16: Project Hackathon Part 4 • CSP Unit 5 - Lists Loops, and Traversals - Slides • CSP U5 Hackathon Project Planning Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task.

			Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Complete a Written Response modeled after the Create PT • Complete the Hackathon Project app		• Code.org Unit 5 Lesson 17: Project Hackathon Part 5 • CSP Unit 5 - Lists Loops, and Traversals - Slides • CSP U5 Hackathon Submission on AP Classroom - Resource • CSP U5 Hackathon Project Planning Guide - Activity Guide • CSP U5 Hackathon Project Written Response - Written Response • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect upon the main ideas of Unit 5 - Lists, Loops, and Traversals		• Code.org Unit 5 Lesson 18 - Assessment Day	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect upon the third chapter of Blown to Bits	• Written summary of Chapter 3 of Blown to Bits	• Classroom Discussion of Chapter 3 of Blown to Bits • PDF of Blown to Bits: https://www.niemanlab.org/pdfs/blowntobits.pdf	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect

			students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
End of Unit Assessment -Multiple Choice code.org	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Big Topic 3.2, 3.4, 3.8, 3.10, 3.16 Multiple Choice Assessment - AP Classroom	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
code.org Unit 5 Project -Hackathon Project - students are given the opportunity to design and program an app from scratch. Students demonstrate mastery of loops and lists by combining these elements into a useful program designed to utilize data.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Students will base their apps on the topic of their choosing thus leading to a natural Interdisciplinary Connection between Computer Science and the interest of the student.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Unit 4 - Algorithms

Unit Title: Algorithms (code.org Unit 6)

Grade level: 9-12 **Timeframe: 7 Days**

Rationale

This unit introduces lists, loops, and traversals, and explores the way they can be used to build apps that store and process large amounts of information. Learn to program with the data library in App Lab and complete a 5-day hackathon project at the end of the unit where you can design a program about any topic of your choosing.

Guiding Questions

- In what ways can students collaboratively develop algorithms to solve problems increasing in complexity?
- How can students best differentiate between the different types of problems, and their most efficient solutions?

Standards

Standards (Taught and Assessed):

AAP-2: The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.
AAP-4: There exist problems that computers cannot solve, and even when a computer can solve a problem, it may not be able to do so in a reasonable amount of time.
CSN-2: Parallel and distributed computing leverage multiple computers to more quickly solve complex problems or process large data sets.

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.
9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
9.3.IT-PRG.3 Analyze system and software requirements to ensure maximum operating efficiency.
9.3.IT-PRG.4 Demonstrate the effective use of software development tools to develop software

applications.
9.3.IT-PRG.5 Apply an appropriate software development process to design a software application.
9.3.IT-PRG.6 Program a computer application using the appropriate programming language.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.
9.3.IT-PRG.8 Perform quality assurance tasks as part of the software development cycle.
9.3.IT-PRG.9 Perform software maintenance and customer support functions.

Social-Emotional Learning Competencies

- Self Awareness
- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess the students ability to develop an algorithm to solve a specified task.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT **We are learning to/that**	**Formative Assessment**	**Activities and Resources**	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
• Explain that some algorithms may look or operate differently but still solve the same problem. • Explain that some problems may look different but be similar or look similar but be different. • Explain the formal definitions of a problem, an algorithm, sequencing, selection, and iteration.	• Entrance Tickets • Exit Tickets • Project: Hackathon • End of Unit Multiple Choice Test • AP Classroom Questions Topics 3.9 Developing Algorithms, 3.11 Binary Search, 3.17 Algorithmic Efficiency, 3.18 Undecidable Problems, 4.3 Parallel and Distributed Computing	• Code.org Unit 6 Lesson 1 - Algorithms Solve Problems • CSP Unit 6 - Lists Loops, and Traversals - Algorithms • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Compare the efficiency of Linear Search and Binary Search • Use Binary Search to determine if a number is in a list • Use Linear Search to determine if a number is in a list		• Code.org Unit 6 Lesson 2 - Algorithm Efficiency • CSP Unit 6 - Lists Loops, and Traversals - Algorithms • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Explain how both formal mathematical reasoning and informal measurement can be used to determine an algorithms efficiency • Explain the difference between problems that run in a reasonable time and those that do not		• Code.org Unit 6 Lesson 3 - Unreasonable Time • CSP Unit 6 - Lists Loops, and Traversals - Algorithms • KEY - Unreasonable Time • Unreasonable Time - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Determine if an algorithm runs in unreasonable time. • Develop a heuristic to solve a problem. • Distinguish between decision problems and optimization problems. • Explain the existence of undecidable problems		• Code.org Unit 6 Lesson 4: The Limits of Algorithms • CSP Unit 6 - Lists Loops, and Traversals - Algorithms • The Halting Problem: The Unsolvable Problem - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Calculate the speedup of a parallel solution to a problem • Describe the benefits and challenges of parallel and distributed computing. • Explain the difference between sequential, parallel, and distributed computing		• Code.org Unit 6 Lesson 5: Parallel and Distributed Algorithms • CSP Unit 6 - Lists Loops, and Traversals - Algorithms • Folding@home Supercomputing Project - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect upon the main ideas of Unit 6 - Algorithms		• Code.org Unit 6 Lesson 6- Assessment Day	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect upon the fourth chapter of Blown to Bits	• Written summary of Chapter 4 of Blown to Bits	• Classroom Discussion of Chapter 4 of Blown to Bits • PDF of Blown to Bits: https://www.niemanlab.org/pdfs/blowntobits.pdf	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a

			bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

Benchmark Assessment 1

Benchmark Assessment	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
End of Unit Assessment -Multiple Choice code.org	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Benchmark Assessment 2

Benchmark Assessment	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
Big Topic 3.9, 3.11, 3.17, 3.18, 4.3 Multiple Choice Assessment - AP Classroom	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Unit 6 Project - Investigate different topics, and proposals for the Create PT. Students will submit proposals with written descriptions and purposes following the College Board Create PT recommendations.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Students will base their Create PT apps on the topic of their choosing thus leading to a natural Interdisciplinary Connection between Computer Science and the interest of the student.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Unit 5 - Parameters, Return, and Libraries

Unit Title: Parameters, Return, and Libraries (code.org Unit 7)

Grade level: 9-12 **Timeframe: 12 Days**

Rationale

This unit introduces parameters, return, and libraries. Learn how to use these concepts to build new kinds of apps as well as libraries of code that you can share with your classmates. End the unit by designing a library of functions around any topic of your choosing.

Guiding Questions

- How will students adapt to a programming task that requires them to share code with other students?
- In what ways are students progressing in their ideas for the Create PT?
- Can the student demonstrate the basics (input, output, variables, etc) of coding appropriately to solve complex problems?
- How will students make best use of global variables, local variables, parameters, return values, and functions to create applications that solve specific tasks?

Standards

Standards (Taught and Assessed):

CRD-2: Developers create and innovate using an iterative design process that is user-focused, that incorporates implementation/feedback cycles, and that leaves ample room for experimentation and risk-taking.
AAP-2: The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.
AAP-3: Programmers break down problems into smaller and more manageable pieces. By creating procedures and leveraging parameters, programmers generalize processes that can be reused. Procedures allow programmers to draw upon existing code that has already been tested, allowing them to write programs more quickly and with more confidence.

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.

9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
9.3.IT-PRG.3 Analyze system and software requirements to ensure maximum operating efficiency.
9.3.IT-PRG.4 Demonstrate the effective use of software development tools to develop software applications.
9.3.IT-PRG.5 Apply an appropriate software development process to design a software application.
9.3.IT-PRG.6 Program a computer application using the appropriate programming language.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.
9.3.IT-PRG.8 Perform quality assurance tasks as part of the software development cycle.
9.3.IT-PRG.9 Perform software maintenance and customer support functions.
9.3.IT-PRG.10 Design, create and maintain a database.

Social-Emotional Learning Competencies

- Self Awareness
- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess student understanding of functions, their purpose, and their implementation.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT **We are learning to/that**	**Formative Assessment**	**Activities and Resources**	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
• Remove specifics from a function so that it can be used in a variety of situations • Use appropriate vocabulary to describe parameters and return values.	• Entrance Tickets • Exit Tickets • Project: Make a Library • End of Unit Multiple Choice Test • AP Classroom Questions Topics 3.12 Calling Procedures, 3.13 Developing Procedures, 3.14 Libraries	• Code.org Unit 7 Lesson 1: Parameters and Return Explore • CSP Unit 7 - Parameters, Return, and Libraries - Slides • Activity Guide - Function Houses • Make a Copy • Functions with Parameters - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain the benefits of using a function with a parameter or return value in the context of a specific program • Identify situations in which a function with a parameter or return value would be necessary • Modify programs that use functions with parameters and return		• Code.org Unit 7 Lesson 2: Parameters and Return Explore • CSP Unit 7 - Parameters, Return, and Libraries - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Use the modulus operator in a program			
• Correctly set up a parameter in a function • Correctly set up a return value in a function • Write comments to explain the function purpose, parameters, and return values		• Code.org Unit 7 Lesson 3: Parameters and Return Practice • CSP Unit 7 - Parameters, Return, and Libraries - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Debug programs that use functions with parameters and return • Write functions with parameters and return values that meet a set of specified requirements		• Code.org Unit 7 Lesson 4: Parameters and Return Make • CSP Unit 7 - Parameters, Return, and Libraries - Slides • CSP Parameters and Return Make - Rock Paper Scissors App - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Clearly write documentation for functions in a library • Explain the process of preparing a function to be added to a library		• Code.org Unit 7 Lesson 5: Libraries Explore • CSP Unit 7 - Parameters, Return, and Libraries - Slides • Libraries in App Lab - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary.

• Use appropriate vocabulary to describe libraries			**GT**: Provide enrichment activities to expand upon the curriculum.
• Explain the purpose of libraries as a way to simplify programs, allow for code reuse, and enable collaboration. • Identify the use of a library within a program. • Test the functions in libraries in order to understand their behavior		• Code.org Unit 7 Lesson 6: Libraries Investigate • CSP Unit 7 - Parameters, Return, and Libraries - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Debug library code to remove any errors • Read library code documentation in order to select the proper functions in the library to develop an app • Test functions designed to be used in a library using different input values		• Code.org Unit 7 Lesson 7: Libraries Practice • CSP Unit 7 - Parameters, Return, and Libraries - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Design the API for a library of functions, including the function names, purpose, and parameters, and types of values each function will return • Select a theme for a library of functions		• Code.org Unit 7 Lesson 8: Project Make a Library Part 1 • CSP Unit 7 - Parameters, Return, and Libraries - Slides • AP Classroom Daily Video • Project Guide - Make a Library - Project Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Provide feedback to their classmate about a library they designed • Write tests for functions with a library that they designed		• Code.org Unit 7 Lesson 9: Project Make a Library Part 2 • CSP Unit 7 - Parameters, Return, and Libraries - Slides • AP Classroom Daily Video • Project Guide - Make a Library - Project Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Debug a library of functions based on testing and classmate feedback • Explain the purpose and functionality of a function they developed • Explain two different calls to a		• Code.org Unit 7 Lesson 10: Project Make a Library Part 3 • CSP Unit 7 - Parameters, Return, and Libraries - Slides • AP Classroom Daily Video • Project Guide - Make a Library - Project Guide • CSP Unit 7 - Parameters, Return, and Libraries - Slides • U7 High Score Sample App - Exemplar	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon

function they developed		• U7 High Score Sample Planning Guide & Rubric - Exemplar • AP Classroom Daily Video	the curriculum.
• Reflect upon the main ideas of Unit 7 - Parameters, Return, and Libraries		• Code.org Unit 7 Lesson 11: Assessment Day	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect upon the fifth chapter of Blown to Bits	• Written summary of Chapter 5 of Blown to Bits	• Classroom Discussion of Chapter 5 of Blown to Bits • PDF of Blown to Bits: https://www.niemanlab.org/pdfs/blowntobits.pdf	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

Benchmark Assessment 1

Benchmark Assessment	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
End of Unit Assessment -Multiple Choice code.org	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary.

	GT: Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Benchmark Assessment 2

Benchmark Assessment	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
Big Topic 3.12, 3.13, 3.14 *Multiple Choice Assessment - AP Classroom*	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
code.org Unit 7 Project - Students will brainstorm common problems they have encountered while programming this year and begin to design functions that address those common problems.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Students will base their libraries on the topic of their choosing thus leading to a natural Interdisciplinary Connection between Computer Science and the interest of the student.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Unit 6 - Digital Information

Unit Title: Digital Information (code.org Unit 1)

Grade level: 9-12 **Timeframe: 15 Days**

Rationale

This unit explores the technical challenges and questions that arise from the need to represent digital information in computers. Learn how complex information like numbers, text, images, and sound are represented in text, how compression works, and the broader social impacts of digitizing the world's information.

Guiding Questions

- How will students develop an innate understanding of the problems from the digital dilemmas they face as future developers?
- How can students best adapt to becoming a "decider" about the impacts of computing on modern life?
- How can students best balance the ideas in this Unit while producing a first draft of the Create PT?

Standards

Standards (Taught and Assessed):

DAT-1: The way a computer represents data internally is different from the way the data is interpreted and displayed for the user. Programs are used to translate data into a representation more easily understood by people.
IOC-1: while computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.
9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
9.3.IT-PRG.3 Analyze system and software requirements to ensure maximum operating efficiency.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.
9.3.IT-PRG.8 Perform quality assurance tasks as part of the software development cycle.

Social-Emotional Learning Competencies

- Self Awareness
- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess student proposals for the first draft of Create PT. Discuss/Assess student perceptions of algorithmic bias and intellectual property.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT We are learning to/that	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
• Communicate with classmates about computing innovations in their lives.	• Entrance Tickets • Exit Tickets • Project: Digital Information Dilemmas	• Code.org Unit 1 Lesson 1: Welcome to CSP • CSP Unit 1 - Digital Information - Slides • Computer Science is Changing Everything - Video (Download)	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide

• Describe positive and negative effects of computing innovations.	• Project: Create PT First Draft • End of Unit Multiple Choice Test • AP Classroom Questions Topics 2.1 Binary Numbers, 2.2 Data Compression, 5.5 Legal and Ethical Concerns	• How to videos - Video • Personal Innovations - Activity Guide • Personal Innovations - Rubric • AP Classroom Daily Video	Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain how the same piece of information can be represented in a variety of different ways. • Use a device to represent different pieces of information • Use patterns to represent information		• Code.org Unit 1 Lesson 2: Representing Information • CSP Unit 1 - Digital Information - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain the challenges of creating a clear set of rules for ordering patterns • Follow a set of rules for ordering sets of patterns		• Code.org Unit 1 Lesson 3: Circle Square Patterns • CSP Unit 1 - Digital Information - Slides • Circle Square Patterns - Activity Guide • Shape Cutouts - Resource • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Explain how the position of each binary digit determines its place value and numeric value • Represent binary numbers using combinations of decimal (base 10) digits 0-9 • Represent decimal numbers using combinations of binary (base 2) digits 0 and 1		• Code.org Unit 1 Lesson 4: Binary Numbers • CSP Unit 1 - Digital Information - Slides • U1 L4 How to Make a FlippyDo - Teacher Guide • KEY U1L4 Flippy Do Pt 1 Activity Guide - Exemplar • Flippy Do • U1 L4 Flippy Do Pt 1 - Activity Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Understand that overflow and roundoff errors result from real-world limitations in representing place value.		• Code.org Unit 1 Lesson 5: Overflow and Rounding • CSP Unit 1 - Digital Information - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Describe the challenges in representing text when using a fixed number of bits for each character		• Code.org Unit 1 Lesson 6: Representing Text • CSP Unit 1 - Digital Information - Slides • ASCII Reference Sheet • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary.

• Develop a system for using numbers to represent text • Explain how bits are grouped to represent abstractions like numbers and text.			**GT**: Provide enrichment activities to expand upon the curriculum.
• Explain how bits can be used to represent the individual pixels of a black and white image • Explain how sampling is used to create a digital form of an analog image		• Code.org Unit 1 Lesson 7: Black and White Images • CSP Unit 1 - Digital Information - Slides • KEY U1L8 Black & White Images Activity Guide - Exemplar • B&W Pixelation Tutorial - Video • U1L7 Black and White Images - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain how bits can be used to represent the individual pixels of a color image • Explain how digital data is used to approximate real-world analog data		• Code.org Unit 1 Lesson 8: Color Images • CSP Unit 1 - Digital Information - Slides • How Computers Work - Data and Binary - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Analyze patterns in data to determine compression strategies • Create lossless compressions of text files		• Code.org Unit 1 Lesson 9: Lossless Compression • CSP Unit 1 - Digital Information - Slides • Text Compression widget (tutorial) - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Examine the effects of lossy compression on text & images • Given a piece of media, decide whether to use lossy or lossless compression based on the needs of a situation		• Code.org Unit 1 Lesson 10: Lossy Compression • CSP Unit 1 - Digital Information - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Argue if current copyright laws are helping or harming society using evidence from an article • Explain how copyright and Creative Commons Licenses can be		• Code.org Unit 1 Lesson 11: Intellectual Property • CSP Unit 1 - Digital Information - Slides • Article - Fortnite Stealing Dance Moves • Copyright Overview - Video • Copyright in Practice - Video • Creative Commons Copyright - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon

applied to digital works of creativity			the curriculum.
• Analyze an article about information digitization to determine the information being digitized and the initial goal or purpose. • Weigh social benefits or harms from a specific instance of information digitization		• Code.org Unit 1 Lesson 12: Project Digital Information Dilemmas Part 1 • CSP Unit 1 - Digital Information - Slides • Athletes Don't Own Their Tattoos • DNA Testing Kits & The Security Risks in Digitized DNA - Article • The Ethics of Computer-Generated Actors - Article • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Argue whether the digitization of information has broadly speaking improved or damaged society • Examine articles to identify the social benefits and harms caused by information digitization		• Code.org Unit 1 Lesson 13: Project Digital Information Dilemmas Part 2 • CSP Unit 1 - Digital Information - Slides • U1 High Score Sample Article Markup - Exemplar • U1 High Score Sample Poster - Exemplar • U1 High Score Sample Rubric - Exemplar • U1 Mid Score Sample Article Markup - Exemplar • U1 Mid Score Sample Poster - Exemplar • U1 Mid Score Sample Rubric - Exemplar • CSP Unit 1 Project Rubric - Rubric • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Reflect upon the main ideas of Unit 1 - Digital Information		• Code.org Unit 1 Lesson 14: Assessment Day	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Begin programming an app which uses a database • Translate a paper prototype to screens • Continue programming an app which uses a database • Complete a Written Response modeled after the Create PT		• APCSP Create Performance Task Instructions - Resource • APCSP Create Performance Task Scoring Guidelines - Rubric • CSP Create PT Code.org Annotated Sample 1 - Annotated Sample • CSP Create PT Code.org Annotated Sample 2 - Annotated Sample • CSP Create PT Code.org Annotated Sample 3 - Annotated Sample • CSP Create PT Code.org Sample 1 Video - Video • CSP Create PT Code.org Sample 1 WR - Written Response • CSP Create PT Code.org Sample 2 Video - Video • CSP Create PT Code.org Sample 2 WR - Written Response • CSP Create PT Code.org Sample 3 Video - Video • CSP Create PT Code.org Sample 3 WR - Written Response • CSP Create PT College Board Annotated Sample A - Annotated Sample	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

		• CSP Create PT College Board Annotated Sample C - Annotated Sample • CSP Create PT College Board Annotated Sample F - Annotated Sample • CSP Create PT College Board Annotated Sample G - Annotated Sample	

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
End of Unit Assessment -Multiple Choice code.org	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Big Topic 2.1, 2.2, 5.5 Multiple Choice Assessment - AP Classroom	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
code.org Unit 1 Project - Students will present articles of interest related to a digital dilemma. Students will design an artifact that represents their analysis of an article on the impacts of digitizing information.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

AP Create PT First Draft - Students will create an application as a first draft submission for the AP Create PT. Students will use the College Board Performance Task Rubric for guidance in completion of their application.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
Students will base their application on the topic of their choosing thus leading to a natural Interdisciplinary Connection between Computer Science and the interest of the student.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Unit 7 - The Internet

Unit Title: The Internet (code.org Unit 2)

Grade level: 9-12 **Timeframe: 10 Days**

Rationale

This unit reveals how the Internet was designed to connect billions of devices and people to one another. Learn how the different protocols of the Internet work and actually build them yourself using the Internet Simulator. Then consider the impacts the Internet has had, both good and bad, on modern life.

Guiding Questions

- How will students evaluate, assess, and solve problems that were stumbling blocks to the inventors of the internet?
- How will students comprehend the ideas of networking and internet protocols?
- How can students best balance the ideas in this Unit while producing a second draft of the Create PT?

Standards

Standards (Taught and Assessed):

CSN-1: that computer systems and networks facilitate how data are transferred
IOC-1: and that while computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.
9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
9.3.IT-PRG.3 Analyze system and software requirements to ensure maximum operating efficiency.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.
9.3.IT-PRG.8 Perform quality assurance tasks as part of the software development cycle.

Social-Emotional Learning Competencies

- Self Awareness

- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess student understanding of sharing digital data. How is data shared in the real world? Who do you share with and why?	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT We are learning to/that	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
• Identify questions they have about how the Internet works • Use the Internet Simulator to communicate	• Entrance Tickets • Exit Tickets • Project: Internet Dilemmas • Project: Create PT Second Draft	• Code.org Unit 2 Lesson 1:Welcome to the Internet • CSP Unit 2 - The Internet - Slides • What is the Internet? - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a

information with a partner	• End of Unit Multiple Choice Test • AP Classroom Questions Topics 4.1 The Internet, 4.2 Fault Tolerance, 5.2 Digital Divide		bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain how computing devices can be connected to form a network • Identify the path(s) connecting two devices in a simulated network		• Code.org Unit 2 Lesson 2: Building a Network • CSP Unit 2 - The Internet - Slides • What is the Internet? - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Describe the way the Internet Protocol helps uniquely identify one another on the Internet • Explain the need for open and shared protocols for communicating on the Internet		• Code.org Unit 2 Lesson 3: The Need for Addressing • CSP Unit 2 - The Internet - Slides • The Internet: IP Addresses and DNS - Video • U2L03 The Need for Addressing - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Describe how the redundant nature of networks can lead to dynamic, fault tolerant routes		• Code.org Unit 2 Lesson 4: Routers and Redundancy • CSP Unit 2 - The Internet - Slides • Teacher Guide - Routers & Redundancy - Unit 2 Lesson 4 - Activity Guide	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect

• Explain how data is routed through the Internet		• AP Classroom Daily Video	students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Describe how information flows through the Internet as a datastream of packets • Explain how packet numbering and re-ordering can allow for large messages to reliably be sent even if packets are dropped or arrive out of order • Explain the differences between the Transmission Control Protocol (TCP) and User Datagram Protocol (UDP)		• Code.org Unit 2 Lesson 5: Packets • CSP Unit 2 - The Internet - Slides • The Internet: Packets, Routing, and Reliability - Video • U2L05 Packets - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Describe how HTTP is used for sharing the files and pages that make up the World Wide Web • Describe how the Domain Name		• Code.org Unit 2 Lesson 6: HTTP and DNS • CSP Unit 2 - The Internet - Slides • IP Address Labels - Resource • Layers of the Internet - Activity Guide • The Internet: HTTP and HTML - Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a

System helps the Internet scale by allowing devices to find the IP addresses associated with a domain name • Explain how different layers of protocols on the Internet build upon and rely on one another		• The Internet: IP Addresses and DNS - Video • AP Classroom Daily Video	bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Identify how an internet dilemma has the potential to benefit and harm different stakeholders • Identify the ways the technical structure and design of the Internet contributes to a social dilemma		• Code.org Unit 2 Lesson 7: Project Internet Dilemmas Part 1 • CSP Unit 2 - The Internet - Slides • EXEMPLAR: Internet Dilemmas - Exemplar • U2 High Score Sample Guide & Rubric - Exemplar • U2 Mid Score Sample Guide & Rubric - Exemplar • Internet Dilemmas - Project Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Identify how an internet dilemma has the potential to benefit and harm different stakeholders • Identify the ways the technical structure and design of the Internet		• Code.org Unit 2 Lesson 8: Project Internet Dilemmas Part 2 • CSP Unit 2 - The Internet - Slides • EXEMPLAR: Internet Dilemmas - Exemplar • U2 High Score Sample Guide & Rubric - Exemplar • U2 Mid Score Sample Guide & Rubric - Exemplar • Internet Dilemmas - Project Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment

contributes to a social dilemma			activities to expand upon the curriculum.
• Reflect upon the main ideas of Unit 2 - The Internet		• Code.org Unit 2 Lesson 9: Assessment Day	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Program an app which uses a database • Translate a paper prototype to screens • Continue programming an app which uses a database • Complete a Written Response modeled after the Create PT		• APCSP Create Performance Task Instructions - Resource • APCSP Create Performance Task Scoring Guidelines - Rubric • CSP Create PT Code.org Annotated Sample 1 - Annotated Sample • CSP Create PT Code.org Annotated Sample 2 - Annotated Sample • CSP Create PT Code.org Annotated Sample 3 - Annotated Sample • CSP Create PT Code.org Sample 1 Video - Video • CSP Create PT Code.org Sample 1 WR - Written Response • CSP Create PT Code.org Sample 2 Video - Video • CSP Create PT Code.org Sample 2 WR - Written Response • CSP Create PT Code.org Sample 3 Video - Video • CSP Create PT Code.org Sample 3 WR - Written Response	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

		• CSP Create PT College Board Annotated Sample A - Annotated Sample • CSP Create PT College Board Annotated Sample C - Annotated Sample • CSP Create PT College Board Annotated Sample F - Annotated Sample • CSP Create PT College Board Annotated Sample G - Annotated Sample	

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
End of Unit Assessment -Multiple Choice code.org	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Big Topic 4.1, 4.2, 5.2 Multiple Choice Assessment - AP Classroom	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments.

	At risk: Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
code.org Unit 2 Project - Students explore a relevant Internet dilemma: Net Neutrality, Internet Censorship, or the Digital Divide. Students apply their knowledge of how the Internet works to address the core question related to their chosen dilemma.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

AP Create PT Second Draft - Students will create an application as a second draft submission for the AP Create PT. Students will use the College Board Performance Task Rubric for guidance in completion of their application.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
Students will base their application on the topic of their choosing thus leading to a natural Interdisciplinary Connection between Computer Science and the interest of the student.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Unit 8 - Create PT Prep

Unit Title: Create PT Prep (code.org Unit 2)

Grade level: 9-12 **Timeframe: 21 Days**

Rationale

In this unit prepare for, and do the AP Create Performance Task. Each lesson contains links to helpful documents and activities to help you understand the task and develop a plan for completing it.

Guiding Questions

- In what ways can students maximize their score on the Create PT using the AP College Board Create PT Rubric?
- How can students best stay on task with their Create PT?

Standards

Standards (Taught and Assessed):

AAP-1 - To find specific solutions to generalizable problems, programmers represent and organize data in multiple ways.
AAP-2 - The way statements are sequenced and combined in a program determines the computed result. Programs incorporate iteration and selection constructs to represent repetition and make decisions to handle varied input values.
AAP-3 - Programmers break down problems into smaller and more manageable pieces. By creating procedures and leveraging parameters, programmers generalize processes that can be reused. Procedures allow programmers to draw upon existing code that has already been tested, allowing programmers to write programs more quickly and with more confidence.
CRD-2 - Developers create and innovate using an iterative design process that is user-focused, that incorporates implementation/feedback cycles, and that leaves ample room for experimentation and risk-taking.
DAT-1 - The way that the computer represents data is different from the way that the data are interpreted and displayed for the user. Programs are used to translate data into a representation that is more easily understood by people.

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.
9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet custome rspecifications.
9.3.IT-PRG.3 Analyze system and software requirements to ensure maximum operating efficiency.

9.3.IT-PRG.4 Demonstrate the effective use of software development tools to develop software applications.
9.3.IT-PRG.5 Apply an appropriate software development process to design a software application.
9.3.IT-PRG.6 Program a computer application using the appropriate programming language.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.
9.3.IT-PRG.8 Perform quality assurance tasks as part of the software development cycle.
9.3.IT-PRG.9 Perform software maintenance and customer support functions.
9.3.IT-PRG.10 Design, create and maintain a database.

Social-Emotional Learning Competencies

- Self Awareness
- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess student understanding of the requirements for the Create PT.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT We are learning to/that	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
• Describe how the Create PT Scoring Guidelines will be used to assess the task • Describe the major components of the Create PT • Evaluate sample Create PT submissions by applying the scoring guidelines • Identify remaining questions about the Create PT	• Project: Internet Dilemmas • Project: Create PT Second Draft • AP Classroom Questions Topics	• Code.org Unit 8 Lesson 1: Create PT Review the Task • CSP Unit 8 - Create PT Prep - Slides • APCSP Create Performance Task Instructions - Resource • APCSP Create Performance Task Scoring Guidelines - Rubric • CSP Create PT Code.org Annotated Sample 1 - Annotated Sample • CSP Create PT Code.org Annotated Sample 2 - Annotated Sample • CSP Create PT Code.org Annotated Sample 3 - Annotated Sample • CSP Create PT Code.org Sample 1 Video - Video • CSP Create PT Code.org Sample 1 WR - Written Response • CSP Create PT Code.org Sample 2 Video - Video • CSP Create PT Code.org Sample 2 WR - Written Response • CSP Create PT Code.org Sample 3 Video - Video • CSP Create PT Code.org Sample 3 WR - Written Response • CSP Create PT College Board Annotated Sample A - Annotated Sample • CSP Create PT College Board Annotated Sample C - Annotated Sample • CSP Create PT College Board Annotated Sample F - Annotated Sample	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

		• CSP Create PT College Board Annotated Sample G - Annotated Sample	
• Describe the scoring guidelines for the Create PT • Evaluate sample Create PT components by applying the scoring guidelines		• Code.org Unit 8 Lesson 2: Create PT Deep Dive • CSP Unit 8 - Create PT Prep - Slides • [KEY] Create PT Survival Guide - Answer Key • Create PT Survival Guide - Resource	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Begin to develop a plan for completing the Create PT • Describe the elements and purpose of the Create PT • Develop strategies for narrowing down topics for the Create PT		• Code.org Unit 8 Lesson 3: Create PT Make a Plan • CSP Unit 8 - Create PT Prep - Slides • [KEY] Create PT Survival Guide - Answer Key • Create PT Survival Guide - Resource	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Complete and submit the Create Performance Task.		• Code.org Unit 8 Lesson 4: Create PT - Complete the Task (12 hrs) • CSP Unit 8 - Create PT Prep - Slides • APCSP Create Performance Task Instructions - Resource • APCSP Create Performance Task Scoring Guidelines - Rubric	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary.

			GT: Provide enrichment activities to expand upon the curriculum.

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Select Big Topic Multiple Choice Question Assessment - AP Classroom	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Submission of the AP Create PT	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections

Students will base their application on the topic of their choosing thus leading to a natural Interdisciplinary Connection between Computer Science and the interest of the student.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Unit 9 - Data

Unit Title: Data (code.org Unit 9)

Grade level: 9-12 **Timeframe: 10 Days**

Rationale

This unit is a quick exploration of how computer scientists design algorithms to solve problems and how they analyze the speed of different algorithms. Learn about the concept of algorithmic efficiency through a variety of hands-on activities and learn how it's being applied in modern computing.

Guiding Questions

- In what ways are students able to demonstrate The Data Analysis Process?
- How can students use data to tell a "story" by using data visualizations?

Standards

Standards (Taught and Assessed):

DAT-2: Programs can be used to process data, which allows users to discover information and create new knowledge.
IOC-1: While computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences.

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.
9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
9.3.IT-PRG.3 Analyze system and software requirements to ensure maximum operating efficiency.
9.3.IT-PRG.4 Demonstrate the effective use of software development tools to develop software applications.
9.3.IT-PRG.5 Apply an appropriate software development process to design a software application.
9.3.IT-PRG.6 Program a computer application using the appropriate programming language.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.
9.3.IT-PRG.8 Perform quality assurance tasks as part of the software development cycle.
9.3.IT-PRG.9 Perform software maintenance and customer support functions.
9.3.IT-PRG.10 Design, create and maintain a database.

Social-Emotional Learning Competencies

- Self Awareness
- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess student ability to understand, and interpret basic statistics vocabulary. Discuss/Assess student ability to clean, organize, and analyze data.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT We are learning to/that	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
• Differentiate between what data shows and why	• Entrance Tickets • Exit Tickets	• Code.org Unit 9 Lesson 1: Learning from Data • CSP Unit 9 - Data - Slides	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide

that might be the case • Explain the usefulness of metadata	• Project: Tell a Data Story • End of Unit Multiple Choice Test • AP Classroom Questions Topics 2.3 Extracting Information from Data, 2.4 Using Programs with Data, 5.3 Computing Bias, 5.4 Crowdsourcing	• Learning From Data - Activity Guide • What's Going On in This Graph? - Resource • AP Classroom Daily Video	Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Create a bar chart and a histogram in App Lab's data visualizer • Draw conclusions by reading bar charts and histograms • Explain the reasons that someone would create either a bar chart or a histogram in order to explore a single column of data		• Code.org Unit 9 Lesson 2: Exploring One Column • CSP Unit 9 - Data - Slides • Data Visualizer in App Lab - Part 1 - Video • Exploring One Column - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Create filtered charts that answer specific questions • Explain why data needs to be cleaned • Use the Data Visualizer to filter data		• Code.org Unit 9 Lesson 3: Filtering and Cleaning Data • CSP Unit 9 - Data - Slides • Filtering Data Unit 9 Lesson 3 - Exemplar • Filtering Data Unit 9 Lesson 3 - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon

			the curriculum.
• Create a crosstab and scatter charts in App Lab's Data Visualizer • Draw conclusions by reading crosstab and scatter charts • Explain the reasons that someone would create either a crosstab and scatter chart in order to explore two columns of data		• Code.org Unit 9 Lesson 4: Exploring Two Columns • CSP Unit 9 - Data - Slides • Data Visualizer in App Lab - Part 2 - Video • Exploring Two Columns - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Students will be able to: • Define and explain the impacts of crowdsourcing, crowdfunding, and citizen science • Explain the impact of open data on scientific research and discovery • Explain why in some contexts large amounts of data need to be analyzed in parallel and scalable systems		• Code.org Unit 9 Lesson 5: Big, Open, and Crowdsourced Data • CSP Unit 9 - Data - Slides • Big, Open, and Crowdsourced Data - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Explain ways that designers and developers can consider the potential effects of their programs • Reason about how human bias plays a role in machine learning.		• Code.org Unit 9 Lesson 6: Machine Learning • CSP Unit 9 - Data - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reason about which types of tasks are should not be completed by an algorithm		• Code.org Unit 9 Lesson 7: Algorithmic Bias • CSP Unit 9 - Data - Slides • Sharing learnings about our image cropping algorithm (Twitter) - Resource • Twitter says its image-cropping algorithm was biased, so it's ditching it (CNN) - Resource • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Create an effective visualization • Follow the Data Analysis Process to tell a data story • Write a short explanation of a data set referencing the metadata		• Code.org Unit 9 Lesson 8: Project Tell a Data Story Part 1 • CSP Unit 9 - Data - Slides • U9 Sample Project 1 - Exemplar • U9 Sample Project 2 - Exemplar • U9 Sample Project 3 - Exemplar • U9 Sample Project 4 - Exemplar • CSP U9 Project Guide - Tell a Data Story - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon

			the curriculum.
• Describes new insights or decisions that can be made based on a visualization • Explain information in a visualization • Follow the Data Analysis Process to tell a data story • Recognize and explain potential bias in a dataset or interpretation		• Code.org Unit 9 Lesson 9: Project Tell a Data Story Part 2 • CSP Unit 9 - Data - Slides • U9 Sample Project 1 - Exemplar • U9 Sample Project 2 - Exemplar • U9 Sample Project 3 - Exemplar • U9 Sample Project 4 - Exemplar • CSP U9 Project Guide - Tell a Data Story - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Reflect upon the main ideas of Unit 9 - Data		• Code.org Unit 9 Lesson 10: Assessment Day	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

Benchmark Assessment 1

Benchmark Assessment	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
End of Unit Assessment -Multiple Choice code.org	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary.

	GT: Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Benchmark Assessment 2

Benchmark Assessment	**Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections**
Big Topic 2.3, 2.4, 5.3, 5.4 *Multiple Choice Assessment - AP Classroom*	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
code.org Unit 9 Project - Students will demonstrate data analysis skills by presenting Data Story projects.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Students will base their application on the topic of their choosing thus leading to a natural Interdisciplinary Connection between Computer Science and the interest of the student.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Unit 10 - Cybersecurity and Global Impacts

Unit Title: Cybersecurity and Global Impacts (code.org Unit 10)

Grade level: 9-12 **Timeframe: 14 Days**

Rationale

In this unit learn how computing innovations have impacted our world in beneficial and harmful ways. Learn how data can pose a threat to our privacy and security and the ways that encryption and other techniques are used to protect it. Throughout the unit participate in a "school of the future" conference in which you and a team make a proposal for how best to improve school life with computing innovations.

Guiding Questions

- How can students better contextualize their ideas by moving from abstract ideas of privacy or security to concrete potential innovations?
- Given that computing technology has led to both benefits and harms to culture, economy, and society at large, how will students develop an understanding that responding to important questions facing our world requires understanding technology and an ability to identify and interpret the impacts it causes?

Standards

Standards (Taught and Assessed):

DAT-2: Programs can be used to process data, which allows users to discover information and create new knowledge.
IOC-1: While computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences.

Highlighted Career Ready Practices and 21st Century Themes/Skills

9.3.IT-PRG.1 Analyze customer software needs and requirements.
9.3.IT-PRG.2 Demonstrate the use of industry standard strategies and project planning to meet customer specifications.
9.3.IT-PRG.3 Analyze system and software requirements to ensure maximum operating efficiency.
9.3.IT-PRG.4 Demonstrate the effective use of software development tools to develop software applications.
9.3.IT-PRG.5 Apply an appropriate software development process to design a software application.
9.3.IT-PRG.6 Program a computer application using the appropriate programming language.
9.3.IT-PRG.7 Demonstrate software testing procedures to ensure quality products.
9.3.IT-PRG.8 Perform quality assurance tasks as part of the software development cycle.

9.3.IT-PRG.9 Perform software maintenance and customer support functions.
9.3.IT-PRG.10 Design, create and maintain a database.

Social-Emotional Learning Competencies

- Self Awareness
- Self Management
- Social Awareness
- Relationship Skills
- Responsible Decision Making

Instructional Plan

Pre-Assessment and Reflection

Pre-Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Discuss/Assess proper grouping procedures with students. Discuss/Assess multiple current computing innovations.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

SLO – WALT We are learning to/that	Formative Assessment	Activities and Resources	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections

• Identify a computing innovation • Understand how to conduct research on a computing innovation	• Entrance Tickets • Exit Tickets • Project: Tell a Data Story • End of Unit Multiple Choice Test • AP Classroom Questions Topics 5.1 Beneficial and Harmful Effects, 5.6 Safe Computing	• Code.org Unit 10 Lesson 1: Project Innovation Simulation Part 1 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • CSP Innovation Simulation Badges - Handout • CSP Innovation Simulation Character Bios - Handout • CSP Innovation Simulation Nameplates - Handout • CSP Unit 10 Project Overview - Resource • Computer Science is Changing Everything - Video • CSP Innovation Simulation Project Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Identify benefits of a computing innovation • Research computing innovations through the lens of one beneficiary		• Code.org Unit 10 Lesson 2: Project Innovation Simulation Part 2 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • CSP Unit 10 Project Overview - Resource • CSP Innovation Simulation Project Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Define Personally Identifiable Information as information about an individual that identifies, links, relates, or describes them.		• Code.org Unit 10 Lesson 3: Data Policies and Privacy • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • Privacy, Security, and Innovation - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary.

• Describe the different types of data that are used and collected by modern computing innovations • Explain how disparate pieces of personal information can be combined to identify individuals or deduce other private information.			**GT**: Provide enrichment activities to expand upon the curriculum.
• Assess a computing innovation to identify the specific privacy risks that could arise from the data it collects and stores. • Evaluate whether the benefits to society from a given computing innovation outweigh the privacy risks it poses. • Explain the risks to privacy that arise from using modern		• Code.org Unit 10 Lesson 4: The Value of Privacy • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • Privacy, Security, and Innovation - Activity Guide • Cops Need A Warrant To Search Your Cell Phone's Location History, Supreme Court Rules - Video • Is Facial Recognition Invading Your Privacy? - Video • Privacy, Security, and Innovation - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

computing technology			
• Evaluate the benefits and harms that could potentially be caused by a computing innovation • Explain how the benefits and harms of a computing innovation may be different in the eyes of different people		• Code.org Unit 10 Lesson 5: Project Innovation Simulation Part 3 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • CSP Unit 10 Project Overview - Resource • CSP Innovation Simulation Project Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Discuss the warning signals for these common security risks • Explain how these common security risks target people • Identify commons security risks: phishing, keylogging, malware, rogue access points		• Code.org Unit 10 Lesson 6: Security Risks Part 1 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Confidently explain security risks and their impact on society • Describe the role human error		• Code.org Unit 10 Lesson 7: Security Risks Part 2 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • CSP U10L07 - Optional Podcast Transcripts - Activity Guide	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task.

played in the Equifax breach		• Equifax Data Breach: What Went Wrong (Podcast) - Resource • Planet Money: Bad Credit Bureau (Podcast) - Resource • The Internet: Cybersecurity and Crime - Vide • AP Classroom Daily Video	Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Students will have completed the majority of the one-pager for their project.		• Code.org Unit 10 Lesson 8: Project Innovation Simulation Part 4 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • CSP Unit 10 Project Overview - Resource • CSP Innovation Simulation Project Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Explain how computing tools can be used for decryption • Explain the difference between asymmetrical and symmetrical encryption • Identify why Caesar Cipher and Random Substitution Ciphers are not adequate for most encryption needs		• Code.org Unit 10 Lesson 9: Protecting Data Part 1 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • Encryption and Public Keys - Video • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.

• Discuss the benefits of computer virus scanning software and the need for regular updates • Explain the benefits of multi factor authentication • Thoughtfully answer a stimulus question		• Code.org Unit 10 Lesson 10: Protecting Data Part 2 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • Call Center - Reading Passage - Resource • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Students will have started to design a group presentation or artifact that presents their innovations and aligns them to a single theme.		• Code.org Unit 10 Lesson 11: Project Innovation Simulation Part 5 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • CSP Unit 10 Project Overview - Resource • CSP Innovation Simulation Project Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon the curriculum.
• Students will have completed designing and preparing for their group presentation.		• Code.org Unit 10 Lesson 12: Project Innovation Simulation Part 6 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • CSP Unit 10 Project Overview - Resource • CSP Innovation Simulation Project Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon

			the curriculum.
• Evaluate innovations for its potential benefits and harms based on the perspective of a specific audience		• Code.org Unit 10 Lesson 13: Project Innovation Simulation Part 7 • CSP Unit 10 - Cybersecurity and Global Impacts - Slides • CSP Unit 10 Project Overview - Resource • CSP Innovation Simulation Project Guide - Activity Guide • AP Classroom Daily Video	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon
• Reflect upon the main ideas of Unit 9 - Data		• Code.org Unit 10 Lesson 14: Assessment Day	**SPED/504/at risk:** Individualized as needed **ELL:** Model and Provide Example. Establish a nonverbal cue to redirect students when not on task. Students may use a bilingual dictionary. **GT**: Provide enrichment activities to expand upon

Benchmark Assessment 1

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
End of Unit Assessment -Multiple Choice code.org	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Benchmark Assessment 2

Benchmark Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Big Topic 5.1, 5.6 Multiple Choice Assessment - AP Classroom	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Summative Assessments (add rows as needed)

Summative Assessment	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
code.org Unit 10 Project - Students take on the roles of different stakeholders in school communities converging at a convention where they eventually will deliver a proposal on the best computing innovation for the Future School.	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments. **At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP

Interdisciplinary Connections

Interdisciplinary Connections	Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections
Students will base their application on the topic of their choosing thus leading to a natural Interdisciplinary Connection between	**ELL:**Model and Provide Example. Establish a non-verbal cue to redirect students when not on task.Students may use a bilingual dictionary. **GT:**Provide enrichment activities to expand upon the curriculum.Use higher level questioning techniques in class and on assessments.

Computer Science and the interest of the student.	**At risk:**Individualized as needed **IEP/504:** Modifications/ Accommodations as stated in IEP