Unit 1: "Hello, It's Me" and "My Piano"

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **2 weeks**
Status: **Published**

Standards

Computer Science Standards

CS.9-12.8.1.12.AP.1	Design algorithms to solve computational problems using a combination of original and existing algorithms.
CS.9-12.8.1.12.CS.1	Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.
CS.9-12.8.1.12.CS.3	Compare the functions of application software, system software, and hardware.
CS.9-12.8.2.12.ED.1	Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.
CS.9-12.8.2.12.NT.2	Redesign an existing product to improve form or function.

Life Literacies and Key Skills

TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).
TECH.9.4.12.TL.3	Analyze the effectiveness of the process and quality of collaborative environments.

Transfer Goals

Transfer Goals

Students will be able to take the skills learned in this unit to develop their own apps which can be shared and used on mobile devices.

Concepts

Essential Questions

- How do computer scientists create programs?

- What is abstraction?

- What is debugging?

Understandings

- Creating procedures with parameters organize code and make it easier to use.

- Programs can be broken down into problems and subproblems, which facilitates the design and implementation.

- Programs must be systematically tested and refined using a range of test cases.

Critical Knowledge and Skills

Knowledge
Students will know:

- Abstraction
- Debugging
- Incrementation
- Iteration
- Procedures

Skills
Students will be able to:

- Apply the computational thinking practices of being incremental and iterative, developing and testing an app in stages.

- Code an app using the App Inventor Blocks Editor.

- Demonstrate abstraction by creating and implementing a procedure in App Inventor;

- Demonstrate an understanding of the Designer and what its different sections represent.

- Develop computational identity by creating a mobile app.

- Identify and use the correct components and blocks for an audio and visual app.

- Increase their positive perception of programming by creating a useful and fun app.

- Log in and out; and create, save, and retrieve projects in the MIT App Inventor programming environment.

- Reuse code in an app.

- Test and debug using the MIT AI2 Companion app (or emulator).

Assessment and Resources

School Formative Assessment Plan (Other Evidence)

- Multiple Choice Questions
- Student Reflection

School Summative Assessment Plan

- "Hello, It's Me" App
- "My Piano" App

Primary Resources

Unit One Outline: https://drive.google.com/file/d/1dEE-4W9P1ErbvfqiSW1l_2odMEQUZ6gY/view

Unit Two Outline: https://drive.google.com/file/d/1x5kKdU-yuNRptiREK7PFSHdtqG6iOF6z/view

Supplementary Resources

MIT App Inventor Community: https://community.appinventor.mit.edu/

App Inventor Book: http://www.appinventor.org/book2

Technology Integration and Differentiated Instruction

Technology Integration

- **Google Products**

  - Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
  - GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time and see results upon completion of the assignments to allow for 21st century learning.

- **One to One Student Laptops**

  - All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

- **Additional Support Videos**

The videos below are just examples of videos that can be used to support each of the Lessons within this Topic. There are more additional videos provided for each and can be assigned from the Pearson enVisions 2.0 online textbook from the teachers' login.

NJCCCS- Technology 9-12

8.1.12.C.1   Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.

8.1.12.D.2   Evaluate consequences of unauthorized electronic access (e.g., hacking) and disclosure, and on dissemination of personal information.

8.1.12.D.3   Compare and contrast policies on filtering and censorship both locally and globally.

8.1.12.D.4   Research and understand the positive and negative impact of one's digital footprint.

8.1.12.D.5   Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.

8.1.12.E.1   Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.

8.1.12.E.2   Research and evaluate the impact on society of the unethical use of digital tools and present your research to peers.

8.1.12.F.1   Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

Differentiated Instruction

Gifted Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, the Gifted Students are given choice on topic and subject matter allowing them to explore interests appropriate to their abilities, areas of interest and other courses.

English Language Learners (N.J.A.C.6A:15)

❏   Within each lesson, the English Language Learners are given choice of topic and resources so that their materials are within their ability to grasp the language.

❏   All assignments have been created in the student's native language.

❏   Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

❏   Within each lesson, the at-risk students are given choice of topic and resources so that their materials are within their ability level and high-interest.

Special Education Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, special education students are given choice of topic and resources so that their materials are within their ability level and high-interest.

❏   All content will be modeled with examples and all essays are built on a step-by-step basis so modifications for assignments in small chunks are met.

All other IEP modifications will be honored (ie. hard copies of notes, directions restated, etc.)

Interdisciplinary Connections

MATH - Coordinates and sizing require the use of geometry.

SCIENCE -

SOCIAL STUDIES -

WORLD LANGUAGES -

VISUAL/PERFORMING ARTS - Design decisions must be made for the "Hello" app, and the "Piano" app gives students the opportunity to explore music digitally.

APPLIED TECHNOLOGY -

BUSINESS EDUCATION -

GLOBAL AWARENESS - Programming is also seen as a "global" language, but we will discuss which parts of this would be difficult for ESL learners.

Learning Plan / Pacing Guide

Week 1:

- "Hello, It's Me" App
- Quiz
- Student Reflection

Week 2:

- "My Piano" App
- Quiz
- Student Reflection

Unit 2: "Music Maker" and "Find the Gold"

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **3 weeks**
Status: **Published**

Standards

Computer Science Standards

CS.9-12.8.1.12.AP.5	Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
CS.9-12.8.1.12.AP.6	Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.
CS.9-12.8.1.12.CS.1	Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.
CS.9-12.8.1.12.CS.2	Model interactions between application software, system software, and hardware.
CS.9-12.8.1.12.CS.3	Compare the functions of application software, system software, and hardware.

Life Literacies and Key Skills

TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

Transfer Goals and Career Ready Practices

Transfer Goals

Students will be able to take the skills learned in this unit to develop their own apps which can be shared and used on mobile devices.

Concepts

Essential Questions

- In what ways can code be reused and remixed?
- What is incremental design?
- Why is collaboration important in programming?

Understandings

- Different programming design interfaces make designing certain types of applications easier.
- Many programs are made up of already written code that is being remixed or reused.
- User interface is an important part of any app design.
- Using flowcharts and pseudocode are important steps in expressing complex ideas, such as algorithms.

Critical Knowledge and Skills

Knowledge
Students will know:

- Accelerometer
- Algorithm
- Conditionals
- Incrementation
- Iteration
- Layout, Canvas, Ball, and ImageSprite components of App Inventor
- Pseudocode

Skills
Students will be able to:

- Be iterative and incremental in developing their app.

- Provide feedback and act on suggestions for improvement.
- Reuse and remix code.
- Test and debug to make a working app.
- Use conditionals correctly in a program.
- Use events, parallelism, and naming in their app.
- Work collaboratively to design, develop, and test new features in an app.

Assessment and Resources

School Formative Assessment Plan (Other Evidence)
- Multiple Choice Questions
- Student Reflection

School Summative Assessment Plan
- "Music Maker" App
- "Find the Gold" App

Primary Resources

Unit Three Outline: https://drive.google.com/file/d/1ssOoMf7Pk__TjPk0Re0uZoxDjeJ-9a9f/view?usp=sharing

Unit Four Outline: https://drive.google.com/file/d/10nao34obiuXeZwZPD2MOpaZQ-Nw5gnKt/view?usp=sharing

Supplementary Resources

MIT App Inventor Community: https://community.appinventor.mit.edu/

App Inventor Book: http://www.appinventor.org/book2

Technology Integration and Differentiated Instruction

Technology Integration

● **Google Products**

- o Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
- o GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time and see results upon completion of the assignments to allow for 21st century learning.

● **One to One Student laptop**

- o All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

Differentiated Instruction

Gifted Students (N.J.A.C.6A:8-3.1)

❏ Within each lesson, the Gifted Students are given choice on topic and subject matter allowing them to explore interests appropriate to their abilities, areas of interest and other courses.

English Language Learners (N.J.A.C.6A:15)

❏ Within each lesson, the English Language Learners are given choice of topic and resources so that their materials are within their ability to grasp the language.

❏ All assignments have been created in the student's native language.

❏ Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

❏ Within each lesson, the at-risk students are given choice of topic and resources so that their materials

are within their ability level and high-interest.

Special Education Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, special education students are given choice of topic and resources so that their materials are within their ability level and high-interest.

❏   All content will be modeled with examples and all essays are built on a step-by-step basis so modifications for assignments in small chunks are met.

All other IEP modifications will be honored (ie. hard copies of notes, directions restated, etc.)

Interdisciplinary Connections

MATH - Coordinates and sizing require the use of geometry.

SCIENCE -

SOCIAL STUDIES -

WORLD LANGUAGES -

VISUAL/PERFORMING ARTS - User interface decisions are guided in large part by visual art design.

APPLIED TECHNOLOGY -

BUSINESS EDUCATION - Monetization of mobile applications will be discussed.

GLOBAL AWARENESS - Programming is also seen as a "global" language, but we will discuss which parts of this would be difficult for ESL learners.

Learning Plan / Pacing Guide

Week 1:

- "Music Maker" App
- Quiz
- Student Reflection

Week 2:

- "Find the Gold" App
- Quiz
- Student Reflection

<u>Week 3:</u>

- Peer Review of Apps
- Review
- Unit 1-4 Test

Unit 3: "Food Chase Game" and "Make a Game"

Content Area: **Applied Tech**
Course(s): **Generic Course, WOOD I**
Time Period: **Marking Period 1**
Length: **3 weeks**
Status: **Published**

Standards

Computer Science Standards

CS.9-12.8.1.12.AP.1	Design algorithms to solve computational problems using a combination of original and existing algorithms.
CS.9-12.8.1.12.CS.1	Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.
CS.9-12.8.1.12.CS.2	Model interactions between application software, system software, and hardware.
CS.9-12.8.1.12.CS.3	Compare the functions of application software, system software, and hardware.
CS.9-12.8.1.12.CS.4	Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.
CS.9-12.8.1.12.DA.2	Describe the trade-offs in how and where data is organized and stored.
CS.9-12.8.2.12.ED.1	Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.

Life Literacies and Key Skills

TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).
TECH.9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).
TECH.9.4.12.TL.3	Analyze the effectiveness of the process and quality of collaborative environments.

Transfer Goals

Transfer Goals

Students will be able to take the skills learned in this unit to develop their own apps which can be shared and used on mobile devices.

Concepts

Essential Questions

- What considerations must be given when naming procedures and variables?
- What is the role of feedback when designing and refining an app?
- How does the use of conditionals expand what programmers are able to do in an application?
- What is your computational identity?
- Why is it important to use a range of test cases when testing and debugging an app?

Understandings

- A step-by-step implementation plan is necessary when designing a robust application.
- Mobile applications are meant to be shared and used by multiple users.
- Naming variables and procedures in such a way that describes their use makes design and debugging a simpler process.
- The storage and retrieval of data is an important component of mobile app design.

Critical Knowledge and Skills

Knowledge
Students will know:

- Abstraction
- Computational identity
- Conditionals
- Data storage and retrieval
- Drawing and Animation components

Skills

Students will be able to:

- Code a game app that includes animated sprites.

- Demonstrate abstraction with a procedure.

- Design a new app based on Drawing and Animation components in App Inventor.

- Design and code an app incrementally, by developing a plan for step-by-step implementation of a design.

- Improve their computational identity by making an app that can be shared with friends and family.

- Provide feedback and act on suggestions for improvement.

- Reuse and remix code used previously to make a new app.

- Use conditionals to correctly check two values within a program.

- Use variables correctly to store and retrieve data.

- Work collaboratively with a partner to create a mobile app.

Assessment and Resources

School Formative Assessment Plan (Other Evidence)
- Multiple Choice Questions
- Student Reflection

School Summative Assessment Plan
- "Food Chase" App
- "Make a Game"...uhhh...Game/App

Primary Resources
Unit Five Outline: https://drive.google.com/file/d/1wBiOy04phAaj5g-WQqXW24e_EueK9skx/view?usp=sharing

Unit Six
Outline: https://drive.google.com/file/d/1hBlAS_i81cQWF5XyJNC8Rdxf8h1XvvdJ/view?usp=sharing

Supplementary Resources

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App Inventor Book: http://www.appinventor.org/book2

Technology Integration and Differentiated Instruction

Technology Integration

- **Google Products**

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- **One to One Student's laptop**

    o All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

Differentiated Instruction

Gifted Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, the Gifted Students are given choice on topic and subject matter allowing them to explore interests appropriate to their abilities, areas of interest and other courses.

English Language Learners (N.J.A.C.6A:15)

❏   Within each lesson, the English Language Learners are given choice of topic and resources so that their materials are within their ability to grasp the language.

❏ All assignments have been created in the student's native language.

❏ Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

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Special Education Students (N.J.A.C.6A:8-3.1)

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Interdisciplinary Connections

MATH -

SCIENCE -

SOCIAL STUDIES -

WORLD LANGUAGES -

VISUAL/PERFORMING ARTS -

APPLIED TECHNOLOGY -

BUSINESS EDUCATION -

GLOBAL AWARENESS -

Learning Plan / Pacing Guide

Week 1:

- "Food Chase" App
- Quiz

Week 2:

- "Food Chase" Feedback
- Student Reflection
- "Make a Game" App

Week 3:

- Quiz
- "Make a Game" Peer Review
- Student Reflection

Unit 4: "Tour Guide" and "Two Button Game"

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 2**
Length: **4 weeks**
Status: **Published**

Standards

Computer Science Standards

CS.9-12.8.1.12.AP.1	Design algorithms to solve computational problems using a combination of original and existing algorithms.
CS.9-12.8.1.12.AP.2	Create generalized computational solutions using collections instead of repeatedly using simple variables.
CS.9-12.8.1.12.CS.1	Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.
CS.9-12.8.1.12.CS.2	Model interactions between application software, system software, and hardware.
CS.9-12.8.1.12.CS.3	Compare the functions of application software, system software, and hardware.
CS.9-12.8.1.12.IC.1	Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.

Life Literacies and Key Skills

TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).
TECH.9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).

Transfer Goals

Transfer Goals

Students will be able to take the skills learned in this unit to develop their own apps which can be shared and used on mobile devices.

Concepts

Essential Questions

- How do lists and indices make it easier to manage data?
- What considerations are important when storing user data?
- What is the cloud and what role does it play in data storage and retrieval?

Understandings

- Data can be collected using computational tools.
- Data can be represented using multiple encoding schemes.
- Protocols play an important role in in transmitting data across networks and the Internet.
- Transforming data makes it more useful and reliable.

Critical Knowledge and Skills

Knowledge
Students will know:

- Arrangement and Map components
- Indices
- Lists
- Passing values
- TinyDB and CloudDB components
- User interface

Skills
Students will be able to:

- Add multiple components and use Arrangement components to organize a complex user interface

involving several components for an app.

- Build a simple app that uses CloudDB.
- Create an app that uses multiple screens and passes values.
- Demonstrate understanding of CloudDB and storing and retrieving data from the cloud.
- Demonstrate understanding of lists and indexes, utilizing multiple lists to manage data.
- Design and code a location-based app, using the Maps component in App Inventor.
- Use the Clock component to add a timer to a game app.
- Use the TinyDB component to store data persistently on a device.
- Work collaboratively to build and test a working app.

Assessment and Resources

School Formative Assessment Plan (Other Evidence)
- Multiple Choice Questions
- Student Reflection

School Summative Assessment Plan
- "Tour Guide" App
- "Two Button Game" App

Primary Resources
Unit Seven Outline: https://drive.google.com/file/d/1eegk4gFWIWYCyR82WLd1Uo-PHgY4G1eP/view?usp=sharing

Unit Eight Outline: https://drive.google.com/file/d/1SqWJJ_BTRwiSPetK8GNwW3UDj-AEYQTM/view?usp=sharing

Supplementary Resources
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App Inventor Book: http://www.appinventor.org/book2

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Differentiated Instruction

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Interdisciplinary Connections

MATH - Studnets must consider the use of the timer when designing the Two Button App.

SCIENCE -

SOCIAL STUDIES - Students will explore global landmarks on the Landmarks worksheet.

WORLD LANGUAGES -

VISUAL/PERFORMING ARTS - Aesthetic design is an importnt part when considering the user interface.

APPLIED TECHNOLOGY -

BUSINESS EDUCATION -

GLOBAL AWARENESS - The exploration of the "Cloud" will deomnstrate ways in which we can all be connected via technology.

Learning Plan / Pacing Guide

Week 1:

- Landmark worksheet
- Maps component and Lists review
- Begin "Tour Guide" App

Week 2:

- Complete "Tour Guide" App
- Quiz
- Student Reflection

Week 3:

- Review Layout component
- Clock and Timer components
- Begin "Two Button Game" App

Week 4:

- Complete "Two Button Game" App
- Quiz
- Student Reflection

Unit 5: "Sketch and Guess" App

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 2**
Length: **3 weeks**
Status: **Published**

Standards

Computer Science Standards

CS.9-12.8.1.12.AP.1	Design algorithms to solve computational problems using a combination of original and existing algorithms.
CS.9-12.8.1.12.CS.1	Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.
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CS.9-12.8.1.12.CS.3	Compare the functions of application software, system software, and hardware.
CS.9-12.8.1.12.CS.4	Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.
CS.9-12.8.2.12.ED.3	Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis.
CS.9-12.8.2.12.NT.2	Redesign an existing product to improve form or function.

Life Literacies and Key Skills

TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
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TECH.9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).
TECH.9.4.12.TL.3	Analyze the effectiveness of the process and quality of collaborative environments.

Transfer Goals

Transfer Goals

Students will be able to take the skills learned in this unit to develop their own apps which can be shared and

used on mobile devices.

Concepts

Essential Questions

- How can apps be designed to allow for multiple users to access them simultaneously?
- How can information be passed between devices?
- How do booleans and nested conditionals add dimension to our apps?

Understandings

- Apps are designed to be used by multiple users simultaneously.
- Even simple apps can be expanded for multiplayer use.
- Making use of cloud services makes multi-user apps possible.

Critical Knowledge and Skills

Knowledge
Students will know:

- Boolean
- Conditionals
- Data manipulation
- Incrementation
- Iteration
- Parallelism
- Protocols

Skills

Students will be able to:

- Demonstrate understanding of how to use CloudDB to pass multiple pieces of information between devices.

- Make a multiplayer drawing app that uses CloudDB.

- Use CT concepts such as sequences, events, conditionals, parallelism, naming, operators, and data manipulation in creating an app.

- Use the boolean "not" and "and" operators and nested if statements correctly.

- Work collaboratively to code and test a working multiplayer app.

Assessment and Resources

School Formative Assessment Plan (Other Evidence)
- Multiple Choice Questions
- Student Reflection

School Summative Assessment Plan
- "Sketch and Guess" App

Primary Resources
Unit Nine
Outline: https://drive.google.com/file/d/1ckKNRSzgCh8rJ1WUxS_xNlm7ZPSSPjlv/view?usp=sharing

Supplementary Resources
MIT App Inventor Community: https://community.appinventor.mit.edu/

App Inventor Book: http://www.appinventor.org/book2

Technology Integration and Differentiated Instruction

Technology Integration

● **Google Products**

- o Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
- o GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time and see results upon completion of the assignments to allow for 21st century learning.

● **One to One Student's laptop**

- o All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic

Differentiated Instruction

Gifted Students (N.J.A.C.6A:8-3.1)

❏   Within each lesson, the Gifted Students are given choice on topic and subject matter allowing them to explore interests appropriate to their abilities, areas of interest and other courses.

English Language Learners (N.J.A.C.6A:15)

❏   Within each lesson, the English Language Learners are given choice of topic and resources so that their materials are within their ability to grasp the language.

❏   All assignments have been created in the student's native language.

❏   Work with ELL Teacher to allow for all assignments to be completed with extra time.

At-Risk Students (N.J.A.C.6A:8-4.3c)

❏   Within each lesson, the at-risk students are given choice of topic and resources so that their materials are within their ability level and high-interest.

Special Education Students (N.J.A.C.6A:8-3.1)

❏ Within each lesson, special education students are given choice of topic and resources so that their materials are within their ability level and high-interest.

❏ All content will be modeled with examples and all essays are built on a step-by-step basis so modifications for assignments in small chunks are met.

All other IEP modifications will be honored (ie. hard copies of notes, directions restated, etc.)

Interdisciplinary Connections

MATH -

SCIENCE -

SOCIAL STUDIES -

WORLD LANGUAGES -

VISUAL/PERFORMING ARTS - We're designing a Pictionary game!

APPLIED TECHNOLOGY -

BUSINESS EDUCATION - Elements of monetization will be discussed.

GLOBAL AWARENESS -

Learning Plan / Pacing Guide

Week 1:

- Concept review
- Drawing App

Week 2:

- Sketch and Guess Game
- Guess Checking Utility

Week 3:

- Quiz
- Student Reflection

Unit 6: Final Project

Content Area: **Applied Tech**
Course(s): **Generic Course**
Time Period: **Marking Period 2**
Length: **3 weeks**
Status: **Published**

Standards

Computer Science Standards

CS.9-12.8.1.12.AP.1	Design algorithms to solve computational problems using a combination of original and existing algorithms.
CS.9-12.8.1.12.AP.4	Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue.
CS.9-12.8.1.12.AP.8	Evaluate and refine computational artifacts to make them more usable and accessible.
CS.9-12.8.1.12.AP.9	Collaboratively document and present design decisions in the development of complex programs.
CS.9-12.8.1.12.CS.1	Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.
CS.9-12.8.1.12.CS.2	Model interactions between application software, system software, and hardware.
CS.9-12.8.1.12.IC.1	Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.
CS.9-12.8.1.12.IC.2	Test and refine computational artifacts to reduce bias and equity deficits.

Life Literacies and Key Skills

TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).
TECH.9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).

Transfer Goals

Transfer Goals

Students will be able to take the skills learned in this unit to develop their own apps which can be shared and used on mobile devices.

Concepts

Essential Questions

- How can collaboration improve app design?
- What computational thinking concepts and practices go into the development of an app?
- What decisions must be made when making an app?
- Why is testing and debugging important?

Understandings

- App design involves all of the computational thinking concepts and practices we've learned in this course.
- Collaboration is an important part of app design.
- It is important to plan an app in full before you begin coding.

Critical Knowledge and Skills

Knowledge
Students will know:

- Conditionals
- Data structures
- Events
- Naming
- Operations
- Parallelism
- Repetition

- Sequences

Skills

Students will be able to:

- Apply computational thinking concepts such as sequences, events, repetition, conditionals, parallelism, operators, data structures, and naming.

- Employ computational thinking practices such as reusing and/or remixing code, decomposing tasks into subtasks, being iterative and incremental, and testing.

- Ideate and design an app that can be used to solve a problem.

- Increase personal interest and confidence in computing by creating a complex app from the initial ideation and design stages.

- Work collaboratively to design and build a project.

Assessment and Resources

School Formative Assessment Plan (Other Evidence)
- Multiple Choice Questions
- Student Reflection

School Summative Assessment Plan
- Final Project

Primary Resources

Final Project Outline: https://drive.google.com/file/d/1Virs4RQnfnpFKbtpEC7LBaInpZT89-JK/view?usp=sharing

Supplementary Resources

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Interdisciplinary Connections

MATH -

SCIENCE -

SOCIAL STUDIES -

WORLD LANGUAGES -

VISUAL/PERFORMING ARTS - App design has a large visual component.

APPLIED TECHNOLOGY -

BUSINESS EDUCATION - Monetization will be discussed.

GLOBAL AWARENESS - Accessibility will be discussed.

Learning Plan / Pacing Guide

Week 1:

- App Design/Planning

<u>Week 2:</u>

- Programming of App

<u>Week 3:</u>

- Review/Feedback
- Final Submission

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