Intro to APP Design

Prepared by:

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Superintendent of Schools:

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Approved by the Midland Park Board of Education on

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Midland Park Public Schools

Intro to APP Design

Course Description: Intro to App Design is an introductory course that delves into the exciting world of developing apps for Android mobile devices. Topics that will be covered include the Android User Interface, Implementing Audio, and Creating Animation. Students will learn the basics of programming through creating apps for an Android device. Best design practices and user accessibility will also be covered. Lastly, students will learn how to publish their apps.

Course Sequence:

Unit 1: Introduction to AI2 and Event-Driven Programming – about 2 weeks
Unit 2: Build Drawing, Animation, and Game apps – about 3 weeks
Unit 3: Build Apps with Texting and Location Sensing - about 2 ½ weeks
Unit 4: Build Quizzes and other Information Apps – about 2 ½
Unit 5: Create New Blocks – Define Procedures – about 2 ½ weeks
Unit 6: Build Apps with User-Generated Data – about 2 ½ weeks
Unit 7: Build Apps that Communicate with the Web – about 3 weeks

Pre-requisite: None

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Unit 1 - Overview

[redacted]

Core Ideas: In this first module, students will be introduced to App Inventor and learn the basics of app building. Students will learn how to design the user interface for an app, and how to code the blocks that specify the app's interactive behavior. Students will learn how to code blocks that specify how an app responds to events, and you'll learn about conditional blocks that allow an app to make decisions

Unit 1 - Standards

[redacted]

8.1.12.IC.2 Test and refine computational artifacts to reduce bias and equity deficits.

8.1.12.DA.1 Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.

[redacted] 8.1.12.AP.3 Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice.

8.1.12.AP.4 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue.

[redacted] 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.

8.2.12.ITH.1 Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints.

[redacted]

9.2.12.CAP.2 Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.

9.2.12.CAP.8 Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, and drug tests) used by employers in various industry sectors.

[redacted]

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).

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

9.4.12.DC.4 Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3)

[redacted] 9.4.12.IML.9 Analyze the decisions creators make to reveal explicit and implicit messages within information and media (e.g., 1.5.12acc.C2a, 7.1.IL.IPRET.4).

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.).

[redacted]

LGBTQ and Disabilities NJSA 18A:35- 4.35

🎬 Explore LGBTQ owned APP design companies, including but not limited to MobiDev, Hyperlink InfoSystem, Designli, Foxbox Digital, The Tactile Group, and B2C InfoSolutions

🎬 Students will learn about bias in media (LGBTQ, gender, race) and how to not include it in their APPs. 🎬 Throughout the course students will learn how to make APPs accessible for all, including those with disabilities.

Amistad Law NJSA 18A:35- 4.43	Explore African-American owned APP design companies, including but not limited to Core Mobile App Development, Azumo, Modernized Mobile LLC, Rose Digital, CivicSoft and Encompass IT Security Solutions.

Holocaust Law NJSA 18A:35- 28

AAPI Law
NJSA 18A:25- 4.44
Midland Park Public Schools

Explore Jewish owned APP design companies, including but not limited to RustyBrick, Inc. Jewish apps, and Brainvire.

Explore Asian-American and Pacific Islander owned APP design companies, including but not limited to Wizeline, Vinova App Developers, Osbay and Codigo

[redacted]

[redacted]

Science
HS-ETS1-4 History
6.1.12.SE.14.a
Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. Explore the various ways women, racial and ethnic minorities, the LGBTQ community, and individuals with disabilities have contributed to the American economy, politics and society

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NJSLSA.SL1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
NJSLSA.SL2 Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media in order to address a question or solve a problem.

[redacted]

Self-Awareness
- Examining prejudices and biases
- Having a growth mindset

Self Management
Social Awareness
Relationship Skills
Responsible Decision Making
- Exhibiting self-discipline and self-motivation
- Using planning and organizational skills
- Taking others' perspectives
- Understanding the influences of organizations/systems on behavior
- Communicating effectively
- Practicing teamwork and collaborative problem-solving
- Showing leadership in groups
- Demonstrating curiosity and open-mindedness
- Recognizing how critical thinking skills are useful both inside & outside of school

Unit Essential Question(s):
- How do you program an app's event-response behavior?
- How do you program an app to make decisions?

Unit Enduring Understandings:
- Understand how event-response behavior works in an app and use it
- Use conditionals in an app to have a decision be made.

Evidence of Learning

Formative Assessments:
- Do Now
- Teacher observations
- Questioning
- Quizzes
- Practice Programs
- Entry tickets
- Exit tickets
- Online games
- Discussions
- Homework

Summative/Benchmark Assessment(s):
- Projects
- Tests
- Chapter Review / Quizzes
- Chapter Assignments
- Labs

- Final Project

Alternative Assessments:
- Portfolio
- Projects
- Online tests / assignments

Resources/Materials:
- App Inventor: http://www.appinventor.org/content/CourseInABox/Intr o/itnroduction

Key Vocabulary:
App Inventor, Blocks Editor, Event Handles, Buttons, Conditionals, Properties, Publish

Suggested Pacing Guide

Lesson Name/Topic Student Learning Objective(s)	Suggested Tasks/Activities: Day(s) to Complete
Portfolio	- Create a portfolio to display work - Create an online website, using a template, to display students work. 3 Days

I Have a Dream	▪ Learn the mechanics of using App Inventor to build apps. ▪ Learn how to design an app's user interface with the App Inventor Designer, and its behavior with the Blocks Editor. ▪ Understand that an app's behavior consists of event handlers-- blocks that specify how an app responds to each event. ▪ Understand that an app can make decisions using a conditional (if) block. ▪ Understand that a component has a set of properties and that a property is a memory cell that can be changed to modify how a component looks and behaves. ▪ Learn how to test an app, how to deploy it to a device, and how to publish it on a portfolio and the App Inventor Gallery	▪ Walk through App Inventor as a class to learn how it works. ▪ Have students work through the I Have a Dream tutorial and build the app themselves. ▪ Have students answer questions and a quiz based on what they learned during this unit. ▪ Students complete other basic apps to practice	5 Days

Unit Project ▪ Students will create their own project based on what they learned [redacted]

Additional Resources:
Midland Park Public Schools

▪ Students create their own project based on what they learned in this module.

3 Days

Differentiation/Modification Strategies

Students with Disabilities	Learners English Language	Gifted and Talented Students	Students at Risk	504Students
• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation on any level, even one word • Consult with Case Managers and follow IEP accommodations/ modifications	• Assign a buddy, same language or English speaking • Allow errors in speaking • Rephrase questions, directions, and explanations • Allow extended time to answer questions • Accept participation at any level, even one word	• Provide extension activities • Build on students' intrinsic motivation • Consult with parents to accommodate students' interests in completing tasks at their level of engagement	• Provide extended time to complete tasks • Consult with Guidance Counselors and follow I&RS procedures/action plans • Consult with other members of the 7th grade team for specific behavior interventions • Provide rewards as necessary	• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation on any level, even one word • Consult with Case Managers and follow IEP accommodations/ modifications • Assign a buddy, same language or English speaking

[redacted]

Core Ideas: In this module, students will learn about drawing, animation, and game-making and become familiar with the Canvas, ImageSprite, and Clock components. students will build a Painting app and two classic arcade games, MoleMash and Pong.

Unit 2 - Standards

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8.1.12.DA.1 Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.

[redacted] 8.1.12.AP.3 Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice.

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9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

9.4.12.DC.4 Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3)

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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.).

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LGBTQ and Disabilities NJSA 18A:35- 4.35

Amistad Law NJSA 18A:35- 4.43

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- Students will learn about bias in media (LGBTQ, gender, race) and how to not include it in their APPs.
- Throughout the course students will learn how to make APPs accessible for all, including those with disabilities.

Explore African-American owned APP design companies, including but not limited to Core Mobile App Development, Azumo, Modernized Mobile LLC, Rose Digital, CivicSoft and Encompass IT Security Solutions.

Holocaust Law	Explore Jewish owned APP design companies, including but not limited to RustyBrick, Inc. Jewish apps, and Brainvire.

NJSA 18A:35-
28
AAPI Law NJSA 18A:25- 4.44
Explore Asian-American and Pacific Islander owned APP design companies, including but not limited to Wizeline, Vinova App Developers, Osbay and Codigo

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Science
HS-ETS1-4 History
6.1.12.SE.14.a
Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. Explore the various ways women, racial and ethnic minorities, the LGBTQ community, and individuals with disabilities have contributed to the American economy, politics and society

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[redacted]

Self-Awareness ☐ Examining prejudices and biases
☐ Having a growth mindset

Self Management Social Awareness Relationship Skills

Responsible Decision Making
☐ Exhibiting self-discipline and self-motivation
☐ Using planning and organizational skills
☐ Taking others' perspectives
☐ Understanding the influences of organizations/systems on behavior ☐ Communicating effectively
☐ Practicing teamwork and collaborative problem-solving
☐ Showing leadership in groups
☐ Demonstrating curiosity and open-mindedness
☐ Recognizing how critical thinking skills are useful both inside & outside of school

Unit Essential Question(s):
☐ How do you increment a variable or component property?
☐ How do you repeat an action pausing between each iteration?
☐ How do you animate sprites?

Unit Enduring Understandings:
☐ To create an app with variables ☐ To be able to change component properties ☐ To use timers in apps.
☐ To be able to animate sprites.

Evidence of Learning

Formative Assessments:
- Do Now
- Teacher observations
- Questioning
- Quizzes
- Practice Programs
- Entry tickets
- Exit tickets
- Online games
- Discussions
- Homework

Summative/Benchmark Assessment(s):
- Projects
- Tests
- Chapter Review / Quizzes
- Chapter Assignments

- Labs
- Final Project

Alternative Assessments:
- Portfolio
- Projects
- Online tests / assignments

Resources/Materials:
- App Inventor: http://www.appinventor.org/content/CourseInABox/Intr o/itnroduction

Key Vocabulary:
Canvas, ImageSprite, Clock, Screen, Title, Button, Width, Watch, Set, Get, Components Properties, Parameters, Function call parameters, Variables

Lesson	Name/Topic Student Learning Objective(s) Suggested Pacing Guide	Suggested Tasks/Activities: Day(s) to Complete
Drawing and Animation - Understand how to build apps that let the user draw on a canvas. - Learn that a variable is used to remember information, and how to create and use variables in App Inventor. - Understand how to program an app to do Math, e.g., incrementing a score. - Learn the basics of animation and how to use the Clock component and ImageSprite properties to animate objects. - Learn the basics of coding randomness, e.g., an object appearing in a random place. - Become familiar with the Canvas, ImageSprite, and Clock components. - As a class learn how to change the initial properties of components and how to get properties - Review how to use variables in programs - As a class look at examples of the APP Inventor coordinate grid and how to add a canvas to your app. Do a quick check to make sure students understand. - Have students complete the paint pot tutorial and pick their own components for the end of the app. Have them answer questions at the end. - Have students complete quizzes throughout the unit - Students will create additional small apps for practice - Students will create the app Mole Mash to learn how to use timers. They will then customize it and answer questions. - As a class learn how to animate sprites and have students complete some		

simple apps to practice.
🎬 Have students complete the pong tutorial to further learn how to

then customize and answer questions.
10 Days

animate. They will create their own project based on what they learned
[redacted]
Additional Resources:
🎬 Students create their own project based on what they learned in this module.
5 Days

Unit Project 🎬 Students will

Differentiation/Modification Strategies

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Students with Disabilities	English Language Learners	Gifted and Talented Students	Students at Risk 504Students
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Unit 3 - Overview

[redacted]

Core Ideas: In this module, students will learn how to create social, location-sensitive apps that use some high-tech components including the Texting, LocationSensor, and WebView components. Students will build a "Missing You" app that texts a list of friends with one click, a "No Texting While Driving" app that auto-responds to text messages, a "Where Am I?" app that identifies your location and shows it on a map, and students will be exposed to persistent (database) data and the Web Viewer component.

Unit 3 - Standards

[redacted] 8.1.12.IC.2 Test and refine computational artifacts to reduce bias and equity deficits.

8.1.12.DA.1 Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.

[redacted] 8.1.12.AP.3 Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice.

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Explore Asian-American and Pacific Islander owned APP design companies, including but not limited to Wizeline, Vinova App Developers, Osbay and Codigo

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Science
HS-ETS1-4 History
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Self-Awareness ☐ Examining prejudices and biases
☐ Having a growth mindset
Self Management Social Awareness Relationship Skills
☐ Demonstrating curiosity and open-mindedness
☐ Recognizing how critical thinking skills are useful both inside & outside of school

Responsible Decision Making
☐ Exhibiting self-discipline and self-motivation
☐ Using planning and organizational skills
☐ Taking others' perspectives
☐ Understanding the influences of organizations/systems on behavior ☐ Communicating effectively
☐ Practicing teamwork and collaborative problem-solving
☐ Showing leadership in groups

Unit Essential Question(s):
☐ How do you do something to every item in a list? ☐ How do you record data persistently? ☐ How do you know where you are?
Unit Enduring Understandings: ☐ Understand how to use a list in apps ☐ Understand how to use GPS in apps

Evidence of Learning

Formative Assessments:
- Do Now
- Teacher observations
- Questioning
- Quizzes
- Practice Programs
- Entry tickets
- Exit tickets
- Online games
- Discussions
- Homework

Summative/Benchmark Assessment(s):
- Projects
- Tests
- Chapter Review / Quizzes
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- Labs

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- Final Project

Alternative Assessments:
- Portfolio
- Projects
- Online tests / assignments

Resources/Materials:
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Key Vocabulary:
Lists, Location, GPS, Location, URLs, Texting component, Dynamic data, Event Parameters

Lesson	Name/Topic Student Learning Objective(s) Suggested Pacing Guide	Suggested Tasks/Activities: Day(s) to Complete
Texting and Location Aware Apps - Learn to build apps that send texts and process incoming texts. - Understand how to create a list of data and process its items using a for each loop. - Understand how to use GPS to obtain the device's current location).	including maps, within an app. - Understand the basics of how URLs work and how to build them programmatically to show dynamic information (e.g., a map of your location information. - Learn the basics of persistent data and the TinyDB component. - Learn how to show web pages,	- As a class teach and demonstrate how lists are used in apps and how they are processed. - As a class discuss

GPS and how it works with different apps.
- Students will learn how to use lists and to record data by creating small practice apps.
- Students will complete the No Texting While Driving app and the "Where Am I" app as practice
- Students will create their own project based on what they learned

for this module.

Teacher Notes:

Additional Resources:

- Students create their own project based on what they learned in this module.

5 Days

complete questions and a quiz at the end of the unit.

7 Days

Unit Project
- Students will

Differentiation/Modification Strategies

Students with Disabilities	English Language Learners	Gifted and Talented Students	Students at Risk 504Students

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Unit 4 - Overview

[redacted]

Core Ideas: In this module, students will learn how to process lists of information using an index to "walk" through the list. This module presents a conceptual challenge and more abstract coding than the previous modules. Students will create a slideshow app and a quiz app.

Unit 4 - Standards

[redacted]

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6.1.12.SE.14.a

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[redacted]

Self-Awareness ☛ Examining prejudices and biases
☛ Having a growth mindset

Self Management Social Awareness Relationship Skills

Responsible Decision Making
☛ Exhibiting self-discipline and self-motivation
☛ Using planning and organizational skills
☛ Taking others' perspectives
☛ Understanding the influences of organizations/systems on behavior ☛ Communicating effectively
☛ Practicing teamwork and collaborative problem-solving
☛ Showing leadership in groups
☛ Demonstrating curiosity and open-mindedness
☛ Recognizing how critical thinking skills are useful both inside & outside of school

Unit Essential Question(s):
☛ How do you step through a list of information ☛ How do you process each item of a list, pausing in between

Unit Enduring Understandings: ☛ Understand how lists use indexes

Evidence of Learning

Formative Assessments:
- Do Now
- Teacher observations
- Questioning
- Quizzes
- Practice Programs
- Entry tickets
- Exit tickets
- Online games
- Discussions
- Homework

Summative/Benchmark Assessment(s):
- Projects
- Tests
- Chapter Review / Quizzes
- Chapter Assignments
- Labs

- Final Project

Alternative Assessments:
- Portfolio
- Projects
- Online tests / assignments

Resources/Materials: ☛ App Inventor:

http://www.appinventor.org/content/CourseInABox/Introduction Lists, Iteration, Indexing

Key Vocabulary:

Lesson	Name/Topic Student Learning Objective(s) Suggested Pacing Guide		Suggested Tasks/Activities: Day(s) to Complete
Quizzes and Informational apps ▰ Understand what an index variable is and how it is used to traverse a list of information. ▰ Learn how to use	the ListPicker component to let a user choose an item. ▰ Gain a basic understanding of complex data and in particular lists of lists. ▰ Through lecture	and demonstration students will learn how to iterate through lists ▰ Students will learn how to iterate through lists by creating small practice apps. ▰ Students will create their own project based on what they learned [redacted] Additional Resources: ▰ Students create their own project based on what they learned in this module. 5 Days	complete the Presidents Quiz app as practice for this module. ▰ Students will complete questions and a quiz at the end of the unit. 7 Days
Unit Project ▰ Students will			

Differentiation/Modification Strategies

Students with Disabilities	English Language Learners	Gifted and Talented Students	Students at Risk 504Students

• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation	• Assign a buddy, same language or English speaking • Allow errors in speaking • Rephrase questions, directions, and explanations • Allow extended time to answer questions • Accept participation at any level, even one word	• Provide extension activities • Build on students' intrinsic motivation • Consult with parents to accommodate students' interests in completing tasks at their level of engagement	• Provide extended time to complete tasks • Consult with Guidance Counselors and follow I&RS procedures/action plans • Consult with other members of the 7th grade team for specific behavior interventions	• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation on any level, even one word • Consult with Case Managers and follow IEP accommodations/ modifications • Assign a buddy, same language or English speaking

on any level, even one word • Consult with Case Managers and follow IEP accommodations/ modifications			• Provide rewards as necessary	

Midland Park Public Schools

Unit 5 - Overview

[redacted]

Core Ideas: In this module, students will learn how to better organize your apps by defining procedures and breaking down your app into parts. Students will learn about a key topic in computer science and software engineering—procedural abstraction. Students will work with a pre-defined Logo graphics package to create some apps that draw complex pictures.

Unit 5 - Standards

[redacted]

8.1.12.IC.2 Test and refine computational artifacts to reduce bias and equity deficits.

8.1.12.DA.1 Create interactive data visualizations using software tools to help others better understand real world

phenomena, including climate change.

[redacted] 8.1.12.AP.3 Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice.

8.1.12.AP.4 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue.

[redacted] 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.

8.2.12.ITH.1 Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints.

[redacted]

9.2.12.CAP.2 Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.

9.2.12.CAP.8 Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, and drug tests) used by employers in various industry sectors.

[redacted]

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).

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

9.4.12.DC.4 Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3)

[redacted] 9.4.12.IML.9 Analyze the decisions creators make to reveal explicit and implicit messages within information and media (e.g., 1.5.12acc.C2a, 7.1.IL.IPRET.4).

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.).

[redacted]

LGBTQ and Disabilities NJSA 18A:35- 4.35

Amistad Law NJSA 18A:35- 4.43

- Explore LGBTQ owned APP design companies, including but not limited to MobiDev, Hyperlink InfoSystem, Designli, Foxbox Digital, The Tactile Group, and B2C InfoSolutions
- Students will learn about bias in media (LGBTQ, gender, race) and how to not include it in their APPs.
- Throughout the course students will learn how to make APPs accessible for all, including those with disabilities.

Explore African-American owned APP design companies, including but not limited to Core Mobile App Development, Azumo, Modernized Mobile LLC, Rose Digital, CivicSoft and Encompass IT Security Solutions.

Holocaust Law	Explore Jewish owned APP design companies, including but not limited to RustyBrick, Inc. Jewish apps, and Brainvire.

NJSA 18A:35-28

AAPI Law NJSA 18A:25- 4.44

Explore Asian-American and Pacific Islander owned APP design companies, including but not limited to Wizeline, Vinova App Developers, Osbay and Codigo

[redacted]

Science

HS-ETS1-4 History

6.1.12.SE.14.a

Use a computer simulation to model the impact of

proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. Explore the various ways women, racial and ethnic minorities, the LGBTQ community, and individuals with disabilities have contributed to the American economy, politics and society

[redacted]

NJSLSA.SL1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

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

RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media in order to address a question or solve a problem.

[redacted]

Self-Awareness ☐ Examining prejudices and biases
☐ Having a growth mindset

Self Management Social Awareness Relationship Skills

☐ Showing leadership in groups
☐ Demonstrating curiosity and open-mindedness
☐ Recognizing how critical thinking skills are useful both inside & outside of school

Responsible Decision Making
☐ Exhibiting self-discipline and self-motivation
☐ Using planning and organizational skills
☐ Taking others' perspectives
☐ Understanding the influences of organizations/systems on behavior ☐ Communicating effectively
☐ Practicing teamwork and collaborative problem-solving

Unit Essential Question(s):
☐ How and why should I define a procedure?

Unit Enduring Understandings:
☐ Understand how to use procedures in apps

Evidence of Learning

Formative Assessments:
- Do Now
- Teacher observations
- Questioning
- Quizzes
- Practice Programs
- Entry tickets
- Exit tickets
- Online games
- Discussions
- Homework

Summative/Benchmark Assessment(s):
- Projects
- Tests
- Chapter Review / Quizzes
- Chapter Assignments
- Labs
- Final Project

Alternative Assessments:
- Portfolio
- Projects
- Online tests / assignments

Resources/Materials:

- App Inventor: http://www.appinventor.org/content/CourseInABox/Intr o/itnroduction

Key Vocabulary:

Algorithm, Procedure, Procedural abstraction, Program Counter, for each,

Lesson Name/Topic Student Learning Objective(s) Suggested Pacing Guide			Suggested Tasks/Activities: Day(s) to Complete
Procedures to Create New Blocks - Understand the concept of procedural abstraction. - Learn how to define and call a procedure in App Inventor. - Understand what a parameter is and why parameters make procedures more reusable. - As a class learn about algorithms and how to create new procedures.	- Review how to use variables in programs - Have students complete the Logo tutorial and pick their own components for the end of the app. Have them answer questions at the end.	- Have students complete quizzes throughout the unit - Students will create additional small apps for practice 7 Days	
Unit Project - Students will create their own project based on what they learned Additional Resources: - Students create their own project based on what they learned in this module. 5 Days			

Differentiation/Modification Strategies

Students with Disabilities	Learners	Students	504Students
English Language	Gifted and Talented	Students at Risk	

• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation on any level, even one word	• Assign a buddy, same language or English speaking • Allow errors in speaking • Rephrase questions, directions, and explanations • Allow extended time to answer questions • Accept participation at any level, even one word	• Provide extension activities • Build on students' intrinsic motivation • Consult with parents to accommodate students' interests in completing tasks at their level of engagement	• Provide extended time to complete tasks • Consult with Guidance Counselors and follow I&RS procedures/action plans • Consult with other members of the 7th grade team for specific behavior interventions	• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation on any level, even one word • Consult with Case Managers and follow IEP accommodations/ modifications • Assign a buddy, same language or English speaking

• Consult with Case Managers and follow IEP accommodations/ modifications			• Provide rewards as necessary	

Midland Park Public Schools

Unit 6 - Overview

[redacted]

Core Ideas: In this module, students will learn to build apps that accept user input through forms and other means. Instead of working with fixed data (as in the Quiz app), students will use lists to store data that changes dynamically and that must be saved persistently. Students will build a personal NoteTaker app and a MathBlaster app that generates arithmetic problems.

Unit 6 - Standards

[redacted]

8.1.12.IC.2 Test and refine computational artifacts to reduce bias and equity deficits.

8.1.12.DA.1 Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.

[redacted] 8.1.12.AP.3 Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice.

8.1.12.AP.4 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue.

[redacted] 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.

8.2.12.ITH.1 Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints.

[redacted]

9.2.12.CAP.2 Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.

9.2.12.CAP.8 Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, and drug tests) used by employers in various industry sectors.

[redacted]

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).

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

9.4.12.DC.4 Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3)

[redacted] 9.4.12.IML.9 Analyze the decisions creators make to reveal explicit and implicit messages within information and media (e.g., 1.5.12acc.C2a, 7.1.IL.IPRET.4).

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.).

[redacted]

LGBTQ and Disabilities NJSA 18A:35- 4.35

🎬 Explore LGBTQ owned APP design companies, including but not limited to MobiDev, Hyperlink InfoSystem, Designli, Foxbox Digital, The Tactile Group, and B2C InfoSolutions

🎬 Students will learn about bias in media (LGBTQ, gender, race) and how to not include it in their APPs. 🎬 Throughout the course students will learn how to make APPs accessible for all, including those with disabilities.

Amistad Law NJSA 18A:35- 4.43	Explore African-American owned APP design companies, including but not limited to Core Mobile App Development, Azumo, Modernized Mobile LLC, Rose Digital, CivicSoft and Encompass IT Security Solutions.

Holocaust Law NJSA 18A:35- 28

AAPI Law
NJSA 18A:25- 4.44
Midland Park Public Schools

Explore Jewish owned APP design companies, including but not limited to RustyBrick, Inc. Jewish apps, and Brainvire.

Explore Asian-American and Pacific Islander owned APP design companies, including but not limited to Wizeline, Vinova App Developers, Osbay and Codigo

[redacted]

[redacted]

Science
HS-ETS1-4 History
6.1.12.SE.14.a
Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. Explore the various ways women, racial and ethnic minorities, the LGBTQ community, and individuals with disabilities have contributed to the American economy, politics and society

[redacted]

NJSLSA.SL1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
NJSLSA.SL2 Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media in order to address a question or solve a problem.

[redacted]

Self-Awareness ☐ Examining prejudices and biases
☐ Having a growth mindset

Self Management Social Awareness Relationship Skills

☐ Showing leadership in groups
☐ Demonstrating curiosity and open-mindedness
☐ Recognizing how critical thinking skills are useful both inside & outside of school

Responsible Decision Making
☐ Exhibiting self-discipline and self-motivation
☐ Using planning and organizational skills
☐ Taking others' perspectives
☐ Understanding the influences of organizations/systems on behavior ☐ Communicating effectively
☐ Practicing teamwork and collaborative problem-solving

Unit Essential Question(s):
☐ How do you record data into a list?
Unit Enduring Understandings:
☐ Understand how to get user data into an app Evidence of Learning

Formative Assessments:
- Do Now
- Teacher observations
- Questioning
- Quizzes
- Practice Programs
- Entry tickets
- Exit tickets
- Online games
- Discussions
- Homework

Summative/Benchmark Assessment(s):
- Projects
- Tests
- Chapter Review / Quizzes
- Chapter Assignments
- Labs
- Final Project

Alternative Assessments:
- Portfolio
- Projects
- Online tests / assignments

Resources/Materials:
- App Inventor: http://www.appinventor.org/content/CourseInABox/Intr o/itnroduction

Key Vocabulary:
User generated data, Dynamic lists, Persistent lists, multiple lists

Lesson	Name/Topic Student Learning Objective(s) Suggested Pacing Guide	Suggested Tasks/Activities: Day(s) to Complete
User Generated Data - Understand the difference between fixed and dynamic data. - Learn how to define lists that begin empty but are filled with user generated data.	- Further your knowledge of persistent data and in particular persistent lists. - As a class learn about gathering user data and using it in apps - Have students complete the Note Taker tutorial and pick their own components for the end of the app. Have them answer questions at the end. - Have students complete the Soundboard tutorial and pick their own components for the end of the app - Have students complete quizzes throughout the unit	- Students will create additional small apps for practice 7 Days
Unit Project - Students will create their own project based on what they learned [redacted] Additional Resources: - Students create their own project based on what they learned in this module. 5 Days		

Differentiation/Modification Strategies

Students with Disabilities | English Language Learners | Gifted and Talented

Students Students at Risk 504Students

• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation	• Assign a buddy, same language or English speaking • Allow errors in speaking • Rephrase questions, directions, and explanations • Allow extended time to answer questions • Accept participation at any level, even one word	• Provide extension activities • Build on students' intrinsic motivation • Consult with parents to accommodate students' interests in completing tasks at their level of engagement	• Provide extended time to complete tasks • Consult with Guidance Counselors and follow I&RS procedures/action plans • Consult with other members of the 7th grade team for specific behavior interventions	• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation on any level, even one word • Consult with Case Managers and follow IEP accommodations/ modifications • Assign a buddy, same language or English speaking

on any level, even one word • Consult with Case Managers and follow IEP accommodations/ modifications			• Provide rewards as necessary	

Midland Park Public Schools

Unit 7 - Overview

[redacted]

Core Ideas: In this module, students will learn the basics of building "cloud" apps, that is, apps which a web database that is shared by all app users. students will learn how to create your own web database, and will also explore apps that communicate with pre-existing web information sources (APIs).

Unit 7 - Standards

[redacted]

[redacted] 8.1.12.IC.2 Test and refine computational artifacts to reduce bias and equity deficits.

8.1.12.DA.1 Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.

[redacted] 8.1.12.AP.3 Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice.

8.1.12.AP.4 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue.

[redacted] 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.

8.2.12.ITH.1 Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints.

[redacted]

9.2.12.CAP.2 Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.

9.2.12.CAP.8 Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, and drug tests) used by employers in various industry sectors.

[redacted]

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).

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

9.4.12.DC.4 Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3)

[redacted] 9.4.12.IML.9 Analyze the decisions creators make to reveal explicit and implicit messages within information and media (e.g., 1.5.12acc.C2a, 7.1.IL.IPRET.4).

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.).

[redacted]

LGBTQ and Disabilities NJSA 18A:35- 4.35

Amistad Law NJSA 18A:35- 4.43

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NJSA 18A:35-28

AAPI Law NJSA 18A:25- 4.44

Explore Asian-American and Pacific Islander owned APP design companies, including but not limited to Wizeline, Vinova App Developers, Osbay and Codigo

[redacted]

[redacted]

Science
HS-ETS1-4 History
6.1.12.SE.14.a
Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. Explore the various ways women, racial and ethnic minorities, the LGBTQ community, and individuals with disabilities have contributed to the American economy, politics and society

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

RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media in order to address a question or solve a problem.

[redacted]

Self-Awareness
- Examining prejudices and biases
- Having a growth mindset

Self Management
- Exhibiting self-discipline and self-motivation
- Using planning and organizational skills
- Taking others' perspectives
- Understanding the influences of organizations/systems on behavior

Social Awareness
- Communicating effectively
- Practicing teamwork and collaborative problem-solving
- Showing leadership in groups
- Demonstrating curiosity and open-mindedness

Relationship Skills

Responsible Decision Making
- Recognizing how critical thinking skills are useful both inside & outside of school

Unit Essential Question(s):
- What is the purpose of App Inventor's Web component?
- How is it different than WebViewer component?

Unit Enduring Understandings:
- Understand how to create an app with a Web component.

Evidence of Learning

Formative Assessments:
- Do Now
- Teacher observations
- Questioning
- Quizzes
- Practice Programs
- Entry tickets
- Exit tickets
- Online games
- Discussions
- Homework

Summative/Benchmark Assessment(s):
- Projects
- Tests
- Chapter Review / Quizzes
- Chapter Assignments
- Labs

- Final Project

Alternative Assessments:
- Portfolio
- Projects
- Online tests / assignments

Resources/Materials:
- App Inventor: http://www.appinventor.org/content/CourseInABox/Intr o/itnroduction

Key Vocabulary: Web component, URLs

Lesson	Name/Topic Student Learning Objective(s) Suggested Pacing Guide	Suggested Tasks/Activities: Day(s) to Complete
Web-Enabled Apps - Understand what a web-enabled (cloud) app is. - Learn to use the TinyWebDB and Fusion tables to store web data. - Learn to use the Web component to communicate with an API.	- Have students complete the Stock Market tutorial and pick their own components for the end of the app. Have them answer questions at the end. as the final project [redacted]	- Have students complete quizzes throughout the unit - Students will create additional small apps for practice 5 Days
Final Project	- Create an app from Scratch	

Additional Resources:
- Finish Project 10 days

Differentiation/Modification Strategies

Students with Disabilities	English Language Learners	Gifted and Talented Students	Students at Risk 504Students

• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation on any level, even one word • Consult with Case Managers and follow IEP	• Assign a buddy, same language or English speaking • Allow errors in speaking • Rephrase questions, directions, and explanations • Allow extended time to answer questions • Accept participation at any level, even one word	• Provide extension activities • Build on students' intrinsic motivation • Consult with parents to accommodate students' interests in completing tasks at their level of engagement	• Provide extended time to complete tasks • Consult with Guidance Counselors and follow I&RS procedures/action plans • Consult with other members of the 7th grade team for specific behavior interventions • Provide rewards as necessary	• Allow errors • Rephrase questions, directions, and explanations • Allow extended time to answer questions and permit drawing as an explanation • Accept participation on any level, even one word • Consult with Case Managers and follow IEP accommodations/ modifications • Assign a buddy, same language or English speaking

accommodations/ modifications				