

Wilson Area School District Planned Course Guide

Title of planned course: Computer Programming

Subject Area: Computer Arts

Grade Level: 8

Course Description: Students will gain a basic understanding of programming terminology and techniques. Students will be able to create a basic computer program using Alice software.

Time/Credit for this Course: 6 weeks

Curriculum Writing Committee: Kristin Godshall

Wilson Area School District Planned Course Materials

Course Title: Computer Programming

Supplemental Books:

Learning to Program with Alice
William Dunn, Stephen Cooper, and Randy Pansch

Teacher Resources:

- Alice Programming Software
- Scratch Software and online tutorials
- Various online websites on programming

Curriculum Map

- Week 1:** Review of AUP, introduction to programming concept, introduction to Scratch (importing objects, inserting backgrounds, movement of objects)
- Week 2:** Exploring Scratch and Introduction to Alice
- Week 3:** Exploring Alice and functions (inserting and positioning objects, writing basic method, events, inserting sound), creating a world
- Week 4:** Beginning programming (planning a project)
- Week 5:** Beginning programming (final project, testing, and completion)
- Week 6:** Programming real life application: creating your own application

Curriculum Scope & Sequence

Planned Course: Computer Programming (Grade 8)

Unit: Introductory Programming with Scratch

Time frame: 5-7 classes

State Standards: 15.4.8.H, I, J

Essential content/objectives: At end of the unit, students will be able to:

- Become familiar with Scratch language
- Add and edit sprites (resize, rename, rotate, move)
- Use the paint editor to change the costume of a sprite
- Format a background
- Insert sound
- Write scripts by adding blocks
- Upload and view a presentation

Core Activities: Students will complete/participate in the following:

- Take a tour of the Scratch interface
- Create a scene together as a class utilizing the key features in Script
- Design a scene of their own and share with the class

Extensions:

- Create a short commercial or recreate a scene from a book or movie

Remediation:

- Screencasts on desired skills can be accessed at any time, paused, and reviewed again to ensure comprehension.

Instructional Methods:

- Activation of prior knowledge
- Direct instruction
- Flipped classroom
- Discussion
- Collaborative learning

Materials & Resources:

- Scratch Program
- Teacher created materials
- Instructional Screencasts
- Web 2.0 Instructional Tools
- Teacher created rubrics

Assessments:

- Teacher created rubric
- Online discussions and activities
- Various Web 2.0 tools

Curriculum Scope & Sequence

Planned Course: Computer Programming (Grade 8)

Unit: Introductory Programming with Alice

Time frame: 15-17 classes

State Standards: 15.4.8.H, I, J

Essential content/objectives: At end of the unit, students will be able to:

- Become familiar with Alice language
- Develop a working vocabulary for programming
- Understand the program development process
- Insert, position, and resize objects
- Write methods
- Write interactive events
- Drop and utilize dummy cameras
- Insert recorded and downloaded sound
- Import images
- Change vehicle property of objects
- Change color of objects
- Create several worlds in Alice according to rubrics

Core Activities: Students will complete/participate in the following:

- Complete tour of Alice and learn Alice terms
- Create “Getting Started World” to learn basic functions in Alice
- Compose advanced world using tutorial videos as guide
- Watch instructional screencasts on functions in Alice
- Create, test, and submit an original world using rubric as guide

Extensions:

- Create an interactive game, movie, or instructional video in Alice

Remediation:

- Screencasts on desired skills can be accessed at any time, paused, and reviewed again to ensure comprehension
- Written instructions to compliment screencasts on Getting started and advanced worlds
- Vocabulary sheet with instructions

Instructional Methods:

- Activation of prior knowledge
- Direct instruction
- Flipped classroom
- Discussion
- Collaborative learning

Materials & Resources:

- Alice Programming Language Software
- Teacher created materials
- Instructional Screencasts
- Vocabulary Sheets
- Web 2.0 Instructional Tools
- Tutorial guides on Getting Started and Advanced Worlds
- Teacher created rubrics

Assessments:

- Teacher created rubric
- Online discussions and activities
- Various Web 2.0 tools

Curriculum Scope & Sequence

Planned Course: Computer Programming (Grade 8)

Unit: Introductory Programming with Scratch

Time frame: 5-6 classes

State Standards: 15.4.8.H, I, J

Essential content/objectives: At end of the unit, students will be able to:

- Write basic code to get program on website to do something
- Understand what coding language looks like and does for a computer or app
- Write basic program to create an application for computer use

Core Activities: Students will complete/participate in the following:

- View videos on programming
- Engage in online programming demo on website
- Write code to create their own program/app using online site

Extensions:

- Create another application/program or write proposal to launch application

Remediation:

- Screencasts on desired skills can be accessed at any time, paused, and reviewed again to ensure comprehension

Instructional Methods:

Activation of prior knowledge, direct instruction, flipped classroom, discussion, collaborative learning

Materials & Resources:

- Online websites on code writing:
 - www.code.org
 - <https://app.cat/>
 - <http://www.codecademy.com/>
- iPads, if available
- Teacher created materials
- Instructional Screencasts
- Web 2.0 Instructional Tools
- Teacher created rubrics
- Today Show interview with Hadi Partovi on teaching kids to program:
<http://ryanseacrest.com/2013/07/31/ryan-seacrest-interviews-code-org-found-hadi-partovi-for-today/>

Assessments:

- Teacher created rubric
- Online discussions and activities
- Various Web 2.0 tools

Suggested Day-By-Day Guide

1. Opening Class – review class rules and procedures, review AUP
2. Introduction to Programming and introduction to Scratch with interface tour
3. Creation of scene in Scratch together as a class
4. Scene creation using features in Scratch
5. Scene creation using features in Scratch
6. Scene creation using features in Scratch
7. Finish scene creation using features in Scratch and share
8. Introduction to Alice-view student created worlds, tour of Alice
9. Getting Started with Alice tutorial
10. Getting Started with Alice tutorial
11. Placement of objects activity
12. Screencasting tutorials on Alice world
13. Screencasting tutorials on Alice world
14. Screencasting tutorials on Alice world
15. Screencasting tutorials on Alice world
16. Screencasting tutorials on Alice world
17. Creation of My First World in Alice
18. Creation of My First World in Alice
19. Creation of My First World in Alice
20. Final World Assignment
21. Final World Assignment
22. Final World Assignment
23. Final World Assignment
24. Final World Assignment
25. Introduction to real world programming
26. Explore online programming sites and write code to make something happen
27. Use online website to write a program/application
28. Use online website to write a program/application
29. Use online website to write a program/application
30. Class wrap up