Course 3

OVERVIEW

Students create programs with different kinds of loops, events, functions, and conditions and write algorithms for everyday tasks. Through this they will investigate different problem-solving techniques, discuss societal impacts of computing and the Internet, and learn about Internet transmission methods. By the end of the curriculum, students create interactive stories and games they can share with anyone. Students taking Course 3 will have already taken Course 2.

Lesson Sequence of Course 3

Online lessons are in regular text and unplugged activities are in **bolded** text.

#	Lesson Name	Description
1	**Computational Thinking**	Students use the steps of computational thinking (decompose, pattern match, abstract, algorithm) to figure out how to play a game that comes with no instructions.
2	Maze	Students write programs (an algorithm for the computer) that get a character through a maze. They'll understand the importance of sequence and basic loops (repeated statements) in the programs they write.
3	Artist	Students write programs to draw different shapes.
4	**Functional Suncatchers**	Students create an algorithm with functions (pieces of code that you want to use over and over again) to create suncatchers using string and beads.
5	Artist: Functions	Using and modifying prebuilt procedures in the the Artist environment, students gain familiarity with how code is written for functions.
6	Bee: Functions	Using the Bee environment, students use and modify functions to help the bee collect nectar and make honey.
7	Bee: Conditionals	In the Bee environment, students write programs with conditional statements. Students originally learned this concept in Course 2, but this lesson introduces more complex implementations of conditionals.
8	Maze: Conditionals	Using the Maze environment, students write programs using conditionals.
9	**Songwriting**	Students use the concept of the chorus in a song to learn about functions.
10	**Real-Life Algorithms - Dice Race**	This lesson calls out ways we use algorithms in our daily lives. Students have to identify and write down the algorithm for a dice race game.
11	Artist: Nested Loops	Students use the Artist environment to write programs that have looped statements inside another loop, which is called a nested loop.

#	Lesson Name	Description
12	Farmer: While Loops	Using while loops, students control a farmer shovel dirt into holes until they're full and remove dirt from piles until it's all gone.
13	Bee: Nested Loops	Students use the Bee environment to write programs using nested loops.
14	Bee: Debugging	Using the same environment as the prior online activity, students are presented with a pre-written program that fails to complete the puzzle. Students will have to "debug" or fix the pre-written program.
15	**Bounce**	Using the concept of "Events," (a concept learned in Course 2) students will create a game of their own with events like "When the ball goes through the goal, you score a point."
16	Play Lab: Create a Story	Students use the Mini-Studio environment to create their own interactive stories.
17	Play Lab: Create a Game	Students use the Mini-Studio environment to create their own interactive games.
18	**Internet**	Students send messages representing various Internet transmission methods using pieces of paper.
19	**Crowdsourcing**	Student use crowdsourcing, a problem-solving technique common in computer science, to complete a task together as a classroom more efficiently than if a student attempted it alone.
20	**Digital Citizenship**	Students explore the difference between private information and personal information, distinguishing what is safe and unsafe to share online.
21	Artist: Patterns	Students write programs that draw interesting and beautiful patterns.