

JavaScript: Self-Guided Syllabus (Y7S1S2)

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Introduction

This syllabus outlines a self-guided learning path leveraged through a web browser as the sole environment for coding, requiring no additional software. The curriculum spans approximately 8.5 hours, divided into 30-minute and 40-minute lessons, with a focus on building skills from basic JavaScript concepts to a complete Snake game. Lessons are structured for independent learning, with optional breaks to maintain engagement.

1 Syllabus Overview

- **Total Duration:** Approximately 8 hours and 50 minutes
- **Prerequisites:** A modern web browser (e.g., Firefox, Chrome)
- **Format:** Self-guided, browser-based learning
- **Challenges:** The challenges are part of the format, though may need an educator's intervention (especially once the student reaches the advanced section)
- **Recommended Schedule:** 1–2 lessons per week, or condensed into fewer weeks with multiple sessions

2 Lesson Plan by Week

2.1 Week 1: Foundations of JavaScript

- **Lesson 1: Introduction to JavaScript and Getting Started (30 minutes)**
 - **Objective:** Introduce JavaScript and guide students to write their first code in the Google Chrome browser console.
 - **Focus:** Understanding the browser as a coding environment and basic setup steps.
- **Lesson 2: Variables and Basic Data Types (30 minutes)**
 - **Objective:** Teach variables and explore numbers, strings, and Booleans in JavaScript.
 - **Focus:** Storing and manipulating data using variables.

2.2 Week 2: Data Structures

- **Lesson 3: Working with Arrays (30 minutes)**
 - **Objective:** Introduce arrays to hold lists of data.
 - **Focus:** Creating and accessing array elements.
- **Lesson 4: Understanding Objects (30 minutes)**
 - **Objective:** Explore objects with key-value pairs for data organization.
 - **Focus:** Defining and using objects.

2.3 Week 3: Web Development Basics

- **Lesson 5: Introduction to HTML for Web Pages (30 minutes)**
 - **Objective:** Provide an overview of HTML for creating web pages.
 - **Focus:** Basic HTML structure and its role in web development.
- **Lesson 6: Gaining Control with If Statements and Loops (30 minutes)**
 - **Objective:** Teach control structures like if statements and for loops.
 - **Focus:** Writing conditional logic and repetitive tasks.

2.4 Week 4: Building a Game

- **Lesson 7: Creating a Hangman Word-Guessing Game (40 minutes)**
 - **Objective:** Combine learned concepts to design a Hangman game.
 - **Focus:** Integrating variables, arrays, and control structures.

2.5 Week 5: Advanced JavaScript Techniques

- **Lesson 8: Writing Your Own Functions (30 minutes)**
 - **Objective:** Introduce functions to group and reuse code.
 - **Focus:** Defining and calling functions.
- **Lesson 9: Introduction to jQuery for Web Control (30 minutes)**
 - **Objective:** Explore jQuery to simplify web page control.
 - **Focus:** Basic jQuery usage and integration.

2.6 Week 6: Interactive Coding

- **Lesson 10: Using Timeouts, Intervals, and Event Handlers (30 minutes)**
 - **Objective:** Teach interactive coding with timeouts, intervals, and event handlers.
 - **Focus:** Adding dynamic behavior to applications.
- **Lesson 11: Creating the Find the Buried Treasure Game (40 minutes)**
 - **Objective:** Apply functions, jQuery, and event handlers to build a treasure game.
 - **Focus:** Developing a complete interactive game.

2.7 Week 7: Object-Oriented Programming and Graphics

- **Lesson 12: Exploring Object-Oriented Programming (30 minutes)**
 - **Objective:** Introduce object-oriented programming for structured coding.
 - **Focus:** Understanding objects and methods.
- **Lesson 13: Introduction to the Canvas Element (30 minutes)**
 - **Objective:** Explore the canvas element for drawing graphics.
 - **Focus:** Basic canvas setup and drawing techniques.

2.8 Week 8: Animations and Game Development

- **Lesson 14: Creating Animations with Canvas (40 minutes)**
 - **Objective:** Build animations using canvas techniques.
 - **Focus:** Applying motion and graphics to projects.
- **Lesson 15: Controlling Canvas Animations with the Keyboard (30 minutes)**
 - **Objective:** Learn to control animations with keyboard input.
 - **Focus:** Adding user-controlled interactivity.

2.9 Week 9: Final Project

- **Lesson 16: Programming the Snake Game (Part 1) (40 minutes)**
 - **Objective:** Begin programming a Snake game using previous concepts.
 - **Focus:** Setting up game structure and initial functionality.
- **Lesson 17: Programming the Snake Game (Part 2) (40 minutes)**
 - **Objective:** Complete the Snake game with all learned skills.
 - **Focus:** Finalizing game mechanics and testing.

3 Additional Notes

- **Browser Setup:** Use Google Chrome with access to the developer console (e.g., Ctrl + Shift + J). A text editor like Notepad is sufficient for HTML files.
- **Support:** Optional educator or teacher check-ins for complex projects like Hangman or Snake.
- **Progress Tracking:** Save work in text files or use browser console history.
- **Engagement:** Gamified projects maintain motivation for independent learning.

4 Total Time and Structure

- **Total Duration:** 8 hours and 50 minutes
- **Session Breakdown:** 1–2 lessons per session (30–80 minutes), with 5–10 minute breaks.
- **Flexibility:** Adjust pacing based on comprehension, revisiting lessons as needed.