

First Steps in Game Development

Course Progression

This document isn't a substitution for lesson planning, please work through the course on the platform ahead of time to prepare for teaching.

Course Overview

This introductory course for beginners focuses on building five different games that are centered on the theme of fantasy and magic. Using the BSD Online learning platform, students will be introduced to the basics of HTML, CSS, and JavaScript. Students will develop fundamental skills in programming, learn about game development, and explore how to add further customizations to their game.

Course Learning Objectives

The BSD First Steps in Game Development Course aims for students to:

- Apply different uses of technology to multiple real-world scenarios
- Build digital artifacts using HTML, CSS, and JavaScript
- Expand their knowledge and understanding of the real-world application of technology tools across different industries
- Exercise the fundamental principles and processes of computational thinking, design thinking, and user experience design
- Communicate effectively with digital media
- Practice collaborative skills as an informed digital citizen

Course Structure

First Steps in Game Development is designed to be led by an instructor in a virtual, hybrid or offline learning environment, with the possibility of allowing students to complete Guided Projects self-paced or asynchronously. All lessons center around the completion of a Guided Project that, once finished, provides students with their own digital artifact customized to their individual creative vision and ideas.

Following our 3-step approach to curriculum **Explore, Learn & Create**, learning unfolds by *exploring* new concepts, *learning* tools and methods needed to produce a digital artifact and then *creating* the artifact in a Guided Project.



Explore: Students will learn to develop a fundamental understanding of the basic concepts in HTML, CSS and JavaScript by working through a progression of five game projects centered on the theme of magic and fantasy.



Learn: Teachers will lead students through Guided Projects that teach the uses of basic syntax in HTML, CSS and JavaScript to create a series of game projects on BSD Online.



Create: Students will create 5 unique projects throughout the course.

Course Level Standards Alignment

	Witch Room Game	Potion-Matching Memory Card Game	Flying Broom Game	Spellcasting	Potion Maker Game
ISTE	1a, 3c, 4a, 5d, 6b, 6d	1a, 3c, 4a, 5d, 6b, 6d	1a, 3c, 4a, 5d, 6b, 6d	1a, 3c, 4a, 5d, 6b, 6d	1a, 3c, 4a, 5d, 6b, 6d
CSTA	1A-AP-08 1A-AP-13 1B-CS-03 1B-AP-08 1B-AP-09 1B-AP-10 1B-AP-12 1B-AP-15 1B-IC-19 1B-IC-21 2-AP-11 2-AP-12 2-AP-14	1A-AP-08 1A-AP-13 1B-CS-03 1B-AP-08 1B-AP-09 1B-AP-10 1B-AP-12 1B-AP-15 1B-IC-19 1B-IC-21	1A-AP-08 1A-AP-13 1B-CS-03 1B-AP-08 1B-AP-09 1B-AP-10 1B-AP-12 1B-AP-15 1B-IC-19 1B-IC-21	1A-AP-08 1A-AP-13 1B-CS-03 1B-AP-08 1B-AP-09 1B-AP-10 1B-AP-12 1B-AP-15 1B-IC-19 1B-IC-21	1A-AP-08 1A-AP-13 1B-CS-03 1B-AP-08 1B-AP-09 1B-AP-10 1B-AP-12 1B-AP-15 1B-IC-19 1B-IC-21

Course Summary

This guide is intended to help you set the pace for this course. Each project is broken down into 45-min to 1-hour sessions, but can be customized to meet your needs.

Teacher Resources:

- [Welcome to First Steps in Game Development](#)
- [Witch Room - Customizing teaching tips](#)
- [Potion-Matching Memory Card Game - Customization teaching tips](#)

- [Flying Broom Game - Customization teaching tips](#)
- [Spellcasting - Customization teaching tips](#)
- [Potion Maker Game - Customization teaching tips](#)

Course Vocabulary

All vocabulary definitions are located in the glossary, which contains definitions, syntax, examples and interactive steps.

Objective	function	Placeholder
Heading	alert	Button
<h1>	font-size	Array
<h2>	Color	
<h3>	Score++	
<h4>	text-align	Transform
<h5>	class	Hover
<h6>	Event Listener	Draggable
Selector	addEventListener	ondragstart
Property	Animation	Ondrop
Value	animation-name	Condition
<div>	animation-duration	Display
id	animation-iteration-count	innerHTML
	Variable	setAttribute
src	Event	
div selector	Border	
background-image	background-color	
position	Span	
absolute	Input	
onclick	Width	

Hour 1:

Explore/Learn:

1. Discussion Questions
 - a. What type of video games do you like to play?
 - i. Answers will vary
 - b. Why do you like to play that game?
 - i. Answers will vary
2. Introduce students to game development using **Welcome to First Steps in Game Development.**
 - a. Vocabulary: Objective

- Have student explore Explore First Steps in Game Development to introduce them to the 5 projects that they will be working on.

Create:

- Introduce the Witch Room Game:
 - You will learn how to use HTML, CSS, and JavaScript to create an “item collection” game, where players find and click on items to score points. You will learn how to add images, position images, make images clickable, and hide items when clicked. Students will also learn how to add a score system to score a point for each item collected in the game.
- Optional: You may choose to do the first 7-steps of the guided project as a whole class or self-paced. The first 7-steps contain vocabulary terms.

Guided Project - Witch’s Room

Difficulty	2	
Learning Hours	6	
Languages(s)	HTML, CSS, JS	
Theme(s)	Game design	
Description	Students will learn how to use HTML, CSS, and JavaScript to create an “item collection” game, where players find and click on items to score points. Students will learn how to add images, position images, make images clickable, and hide items when clicked. Students will also learn how to add a score system to score a point for each item collected in the game.	
ISTE	1a, 3c, 4a, 5d, 6b, 6d	
CSTA	1A-AP-08, 1A-AP-13, 1B-CS-03, 1B-AP-08, 1B-AP-09, 1B-AP-10, 1B-AP-12, 1B-AP-15, 1B-IC-19, 1B-IC-21, 2-AP-11, 2-AP-12, 2-AP-14	

Hour 2-4:

- Today’s you will continue to work on your Witch’s Room

Hour 5-6:

- Students will complete their project between hour 5 and 6.
- After completing the project, the student can then go into sandbox mode to complete the extension and/or integration.

Extensions & Integration:

1. Extensions
 - a. Use the [Witch Room - Customizing teaching tips](#) for directions on how to use Sandbox mode and how to customize this project.
2. Integration
 - a. Create a game for Kindergarten students - Find objects that start with the letter A
 - b. Create math problems - $2 \times 6 = ?$ - Find the hidden answer

Wrap Up:

1. Discussion questions:
 - a. What did we create today?
 - i. A witch's room with hidden objects
 - b. What HTML elements did you use?
 - i. `<div>`, `<h1>`, ``
 - c. What CSS elements did you use?
 - i. Background-image, position
 - d. What JavaScript element did you use?
 - i. Onclick, function, alert
 - e. Did you create anything new?
 - i. Answers will vary

Hour 7:

Explore/Learn:

1. Review vocabulary
 - a. `<div>`, `<h1>`, ``, Background-image, position, Onclick, function, alert
2. Discussion Questions
 - a. What is a Hex Code used for?
 - i. Choosing specific color (over 16 million options)
 - b. What symbol does a Hex Code start with?
 - i. #
3. For our next project you will build a card-matching game by learning how to create the layout and interaction of the game by using HTML and JavaScript.

Create:

1. Students will work on the guided project called Potion-Matching Memory Game

Guided Project - Potion Matching Memory Card Game

Difficulty	2	
Learning Hours	4	
Languages(s)	HTML, CSS, JS	
Theme(s)	Game design	
Description	Students will build a card-matching game by learning how to create the layout and interaction of the card-matching game by using HTML and JavaScript.	
ISTE	1a, 3c, 4a, 5d, 6b, 6d	
CSTA	1A-AP-08, 1A-AP-13, 1B-CS-03, 1B-AP-08, 1B-AP-09, 1B-AP-10, 1B-AP-12, 1B-AP-15, 1B-IC-19, 1B-IC-21	

Hour 8:

Create:

- Students will continue the guided project called Potion-Matching Memory Game.

Hour 9:

Create:

- Students will begin completing their project.
- After completing the project, students can then go into sandbox mode to complete the extension and/or integration.

Hour 10:

- Students will complete the extension project called Potion-Matching Memory Game.

Extensions & Integration:

- Extensions
 - Use the **Potion-Matching Memory Card Game - Customization teaching tips** for directions on how to use Sandbox mode and how to customize this project.
- Integration
 - Create vocabulary cards
 - Create math cards

Wrap Up:

- Discussion questions:
 - What did we create today?
 - Potion-Matching Memory Game

- b. Which HTML elements did you use?
 - i. Class
- c. Which CSS elements did you use?
 - i. Position
- d. Which JS elements did you use?
 - i. function, addEventListener
- e. Did you create anything new?
 - i. Answers will vary

Hour 11:

Explore/Learn:

1. Review vocabulary
 - a. Position, function, addEventListener, Class
2. Discussion Questions
 - a. What is the difference between id and class?
 - i. An id only focuses on one <div> element, class allows you to group <div>s together.
 - b. What symbol must come before a class name when in CSS?
 - i. . (period)
3. For our next project you will build a “click and collect” game by learning how to position objects and code the clicking interaction by using HTML, CSS and JavaScript in order to create this game.

Create:

1. Students will start working on the guided project called Flying Broom Game

Guided Project - Flying Broom Game

Difficulty	2	
Learning Hours	4	
Languages(s)	HTML, CSS, JS	
Theme(s)	Game Design	
Description	Students will build a “click and collect” game by learning how to position objects and code the clicking interaction by using HTML, CSS and JavaScript in order to create this game.	
ISTE	1a, 3c, 4a, 5d, 6b, 6d	
CSTA	1A-AP-08, 1A-AP-13, 1B-CS-03, 1B-AP-08, 1B-AP-09, 1B-AP-10, 1B-AP-12, 1B-AP-15, 1B-IC-19, 1B-IC-21	

Hour 12:

Create:

1. Students will continue to work on the guided project called Flying Broom Game.

Hour 13:

Create:

1. Students will begin completing their project.
2. After completing the project, students can then go into sandbox mode to complete the extension and/or integration.

Hour 14:

Extensions & Integration:

1. Extensions
 - a. Use the [Flying Broom Game - Customization teaching tips](#) for directions on how to use Sandbox mode and how to customize to this project.
2. Integration
 - a. Give the students a theme to work on, e.x. Easter, Beach, Christmas, etc.

Wrap Up:

1. Discussion questions:
 - a. What did we create today?
 - i. Click and Collect game - flying broom game
 - b. Which HTML elements did you use?
 - i. `<div>`, ``, `<h1>`
 - c. Which CSS elements did you use?
 - i. color, top, left
 - d. Which JS elements did you use?
 - i. Variable, function
 - e. Did you create anything new?
 - i. Student answers will vary.

Hour 15:

Explore/Learn:

1. Review vocabulary
 - a. `<div>`, ``, `<h1>`, variable, function
2. Discussion Questions
 - a. Out of the three coding languages that we have learned, which one is the most interesting to you and why?
 - i. Answers will vary - JS (action), CSS (design and style)
3. Today's you will learn how to use HTML and JavaScript to create this "text-based combat" game.

Create:

1. Students will start working on the guided project called Spellcasting.

Guided Project - Master Spells and Potions with Code

Difficulty	2	
Learning Hours	4	
Languages(s)	HTML, CSS, JS	
Theme(s)	Game design	
Description	Students will learn how to use HTML and JavaScript to create this “text-based combat” game.	
ISTE	1a, 3c, 4a, 5d, 6b, 6d	
CSTA	1A-AP-08, 1A-AP-1, 1B-CS-03, 1B-AP-08, 1B-AP-09, 1B-AP-10, 1B-AP-12, 1B-AP-15, 1B-IC-19, 1B-IC-21	

Create:

1. Students will continue to work on the guided project called Spellcasting.

Hour 16:

Create:

1. Students will begin completing their project.
2. After completing the project, students can then go into sandbox mode to complete the extension and/or integration.

Hour 17:

Extensions & Integration:

1. Extensions
 - a. Use the [Spellcasting - Customization teaching tips](#) for directions on how to use Sandbox mode and how to customize to this project.
2. Integration
 - a. Create a typing game, practice spelling words

Hour 18:

Create:

1. Students will complete the extension called Spellcasting.

Wrap Up:

1. Discussion questions:
 - a. What did we create today?
 - i. Spellcasting, “text-based combat”.
 - b. Which HTML elements did you use?

- i. `<p>`, ``, `<h4>`, `<input>`, button
- c. Which CSS elements did you use?
 - i. Border
- d. Which JS elements did you use?
 - i. array
- e. Did you create anything new?
 - i. Student answers will vary.

Hour 19:

Explore/Learn:

1. Review vocabulary
 - a. Are there any HTML, CSS or JS elements that you need explaining or are struggling with?
 - i. Answers will vary. (common responses: function or array)
2. Discussion Questions
 - a. If I want to make a large heading, which HTML element should I use?
 - i. `<h1>`
3. Today you will learn how to position items and images by using HTML and JavaScript in order to create this “drag and drop” combination game.

Create:

1. Students will start working on the guided project called Potion Maker Game.

Guided Project - Potion Maker Game

Difficulty	2	
Learning Hours	7	
Languages(s)	HTML, CSS, JS	
Theme(s)	Game design	
Description	Students will learn how to position items and images by using HTML and JavaScript in order to create this “drag and drop” combination game.	
ISTE	1a, 3c, 4a, 5d, 6b, 6d	
CSTA	1A-AP-08, 1A-AP-13, 1B-CS-03, 1B-AP-08, 1B-AP-09, 1B-AP-10, 1B-AP-12, 1B-AP-15, 1B-IC-19, 1B-IC-21	

Hour 20-23:

Create:

1. Students will continue to work on the guided project called Potion Maker Game.

Hour 24:

Create:

1. Students will begin completing their project.
2. After completing the project, students can then go into sandbox mode to complete the extension and/or integration

Hour 25:

Extensions & Integration:

1. Extensions
 - a. Use the **Potion Maker Game - Customization teaching tips** for directions on how to use Sandbox mode and how to customize to this project.
2. Integration
 - a. Challenge the students to come up with a new game theme.

Wrap Up:

1. Discussion questions:
 - a. What did we create today?
 - i. Potion Maker Game, Drag and Drop
 - b. Which HTML elements did you use?
 - i. <p>, , , , draggable
 - c. Which CSS elements did you use?
 - i. transform
 - d. Which JS elements did you use?
 - i. innerHTML, setAttribute
 - e. Did you create anything new?
 - i. Student answers will vary.