Lesson 6: Conditionals, Functions, and Vectors

In this lesson, students will learn about conditionals, functions, and vectors in GDScript, a scripting language used in the Godot game engine. They will understand the concept of conditionals and how to use if, elif, and else statements to control the flow of a game. Students will also explore the purpose of functions and how to define and use them in GDScript. Additionally, they will learn about vectors and how to create and manipulate them in GDScript. Through hands-on activities and projects, students will apply these concepts to create a simple game, fostering their understanding of game development and programming.

## **Objectives:**

- Understand the concept of conditionals in GDScript.

- Learn how to write and use functions in GDScript.

- Explore the use of vectors in GDScript.

- Apply the learned concepts to create a simple game in Godot.

## **Materials:**

- Computers with Godot game engine installed

- Projector or smart board for displaying code examples and demonstrations

- Handouts with code snippets and exercises

## **Bell-Ringer Activity (5 minutes):**

- Display a code snippet on the board that uses a conditional statement in GDScript.

- Ask the students to identify the purpose of the conditional statement and predict the output of the code.

- Allow a few students to share their answers and discuss their reasoning.

## **Introduction (10 minutes):**

- Introduce the topic of GDScript conditionals, functions, and vectors.

- Explain that GDScript is a scripting language used in the Godot game engine for game development.

- Discuss the importance of conditionals, functions, and vectors in game development.

- Provide real-world examples of how these concepts are used in games.

## **Direct Instruction (20 minutes):**

- Explain the concept of conditionals in GDScript.

- Discuss the different types of conditional statements, such as if, elif, and else.

- Provide code examples and explain the syntax and usage of conditionals in GDScript.

- Demonstrate how to use conditionals to control the flow of a game.

## **Guided Practice (20 minutes):**

- Divide the students into pairs or small groups.

- Distribute handouts with code snippets and exercises related to conditionals in GDScript.

- Instruct the students to work together to solve the exercises and discuss their solutions.

- Circulate the classroom to provide assistance and answer any questions.

## **Independent Practice (20 minutes):**

- Assign a small project to the students where they have to create a simple game using GDScript.

- Provide a set of requirements for the game, such as using conditionals, functions, and vectors.

- Allow the students to work individually or in pairs to complete the project.

- Encourage creativity and experimentation with the concepts learned.

## **Exit Ticket (10 minutes):**

- Distribute exit tickets to the students.

- Ask them to write a short paragraph summarizing the key concepts they learned about conditionals, functions, and vectors in GDScript.

- Collect the exit tickets before the end of the class.

## **Closure (5 minutes):**

- Recap the main points discussed in the lesson.

- Emphasize the importance of understanding conditionals, functions, and vectors in game development.

- Encourage the students to continue exploring GDScript and the Godot game engine on their own.

**Common Core Standards:**

- CCSS.ELA-LITERACY.RST.9-10.3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

- CCSS.ELA-LITERACY.RST.9-10.4 - Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.