Unit 2: Game Theory

Content Area: **Technology**
Course(s):
Time Period: **Marking Period 1**
Length: **7 Blocks**
Status: **Published**

Enduring Understandings

The physics of game elements are fully customizable in Unity.

Gameplay is impacted by game genres, environments, assets, goals, and mechanics.

Player motivation and playability impact the success of a game.

Game designers must symmetry, balance, and game structure when designing video games.

Game Development is an iterative process with many opportunities for prototyping.

Essential Questions

How can game designers modify player controls?

How do elements of a game's identity, such as it's genre, impact the game experience?

How can game designers impact player motivation and increase playability?

What is the importance of prototyping in game development?

Student Learning Objectives

Students will be able to…

- Add and manipulate objects in the scene to position them where you want and position a camera in an ideal spot for your game.
- Create basic C# scripts and apply them to objects.
- Write comments to make your code more readable.
- Add Rigidbody and Collider components to allow objects to collide realistically.
- Duplicate objects in the hierarchy to populate your scene.
- Declare variables properly and understand that variables can be different data types (float, Vector3, GameObject).
- Initialize/assign variables through code or through the inspector to set them with appropriate values.
- Use appropriate access modifiers (public/private) for your variables in order to make them easier to change in the inspector.
- Gain user input with Input.GetAxis, allowing the player to move in different ways.
- Use the Rotate function to rotate an object around an axis and clean and organize your hierarchy with

Empty objects.
- Identify and categorize common game genres.
- Summarize important considerations in game design.
- Describe rule creation and elements of player challenge.
- Explain the theories behind player motivation.
- Generate models and materials for project(s) created within the Unity Editor.
- Apply fundamental concepts of project management.
- Evaluate the importance of iteration and rapid prototyping in game design

Vocabulary and Learning Experiences

Vocabulary:

Prototype, script, comments, components, parameters, obstacle, floats and integers, variable, translate, rotate, storyboard, Minimum Viable Product, iteration

Planned Learning Experiences:

Driving Simulator:

Learn basic player control as you program a car that can steer down a floating road, avoiding (or hitting) obstacles in the way.

Resources

Unity Learn

Unity Curricular Framework

Google Classroom

Standards

CLKS:

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice

9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving

9.4.12.CT.4: Participate in online strategy and planning sessions for course-based, school-based, or other project and determine the strategies that contribute to effective outcomes.

9.4.12.DC.3: Evaluate the social and economic implications of privacy in the context of safety, law, or ethics
9.4.12.DC.4: Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users

9.4.12.DC.5: Debate laws and regulations that impact the development and use of software

9.4.12.DC.8: Explain how increased network connectivity and computing capabilities of everyday objects allow for innovative technological approaches to climate protection.

CSDT:

8.2.12.ED.1: Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.

8.2.12.ED.3: Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis.

8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).
8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor).

8.2.12.NT.1: Explain how different groups can contribute to the overall design of a product.

8.2.12.NT.2: Redesign an existing product to improve form or function.

8.2.12.EC.3: Synthesize data, analyze trends, and draw conclusions regarding the effect of a technology on the individual, culture, society, and environment and share this information with the appropriate audience.

TECH.8.1.12.A.1	Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
TECH.8.1.12.A.3	Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.
TECH.8.1.12.A.CS2	Select and use applications effectively and productively.
TECH.8.1.12.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.1.12.B.2	Apply previous content knowledge by creating and piloting a digital learning game or tutorial.

TECH.8.1.12.C	Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
TECH.8.1.12.D.1	Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.
TECH.8.1.12.D.5	Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.
TECH.8.1.12.F	Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
TECH.8.1.12.F.1	Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.
TECH.8.2.12.A.1	Propose an innovation to meet future demands supported by an analysis of the potential full costs, benefits, trade-offs and risks, related to the use of the innovation.
TECH.8.2.12.B.3	Analyze ethical and unethical practices around intellectual property rights as influenced by human wants and/or needs.
TECH.8.2.12.B.4	Investigate a technology used in a given period of history, e.g., stone age, industrial revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.
TECH.8.2.12.B.CS4	The influence of technology on history.
TECH.8.2.12.C	Design: The design process is a systematic approach to solving problems.
TECH.8.2.12.C.1	Explain how open source technologies follow the design process.
TECH.8.2.12.C.2	Analyze a product and how it has changed or might change over time to meet human needs and wants.
TECH.8.2.12.C.4	Explain and identify interdependent systems and their functions.
TECH.8.2.12.C.CS1	The attributes of design.
TECH.8.2.12.C.CS2	The application of engineering design.
TECH.8.2.12.D.6	Synthesize data, analyze trends and draw conclusions regarding the effect of a technology on the individual, society, or the environment and publish conclusions.
TECH.8.2.12.E.1	Demonstrate an understanding of the problem-solving capacity of computers in our world.
TECH.8.2.12.E.2	Analyze the relationships between internal and external computer components.
TECH.8.2.12.E.3	Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).
TECH.8.2.12.E.4	Use appropriate terms in conversation (e.g., troubleshooting, peripherals, diagnostic software, GUI, abstraction, variables, data types and conditional statements).