Kingsway Regional School District

Committed to Excellence

Course Name: Introduction to Video Game Design I	**Grade Level(s): 9-12**
Department: Technology Department	**Credits: 1**
BOE Adoption Date: September 2019	**Revision Dates:**

Course Description and Outcomes

Introduction to Video Game Design I, students will gain a foundational understanding of Game Design by discovering the process through multiple perspectives. Students will explore the basic principles that work for various game types to obtain an understanding of the components that make top-quality video games. Students are introduced to industry leading software, the latest version of the Unity Game Engine. Video Game Design is a project and challenge based course that utilizes cross disciplines and incorporates Science Technology Engineering Art and Math (STEAM). By the end of the course, teams of students will take on the roles of game designers, creative directors, graphic designers, and game testers in planning, assembling and marketing a video game using the tools learned throughout the year.

Throughout this course:
- Students will describe the concepts, elements and effectiveness of video games through analysis and critique of existing video game designs.
- Students will be introduced to project management concepts used to create multiple video game concepts, storyboards and game documentation.
- Students will be introduced to basic coding using JavaScript and C# programming languages.
- Students will apply coding knowledge to create characters and objects in the environment.
- Students will communicate the design process and integrate 2D and 3D graphic objects in their games in a thematic manner
- Students will gain an understanding of audio (sound), video recording, and video editing in relation to game design.
- Students will be introduced to basic physics as related to video game movements.

Proficiencies and Pacing Guide:

Course Title: Introduction to Video Game Design I
Prerequisite(s): None

Unit Title:	Number of Weeks	Relevant Content Standards:	Learning Goals:	Learning Objectives/Topics and Skills (Identify the DOK Level)
Unit 1: Introduction to Video Game Design	8 weeks Sept - Oct	Tech.8.1.12.A2 Produce and edit a multipage digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review. Tech.8.1.12.F.CS2 Plan and manage activities to develop a solution or complete a project. Tech.8.2.12.B.1 Research and analyze the impact of the design constraints (specifications and limits) for a product or technology driven by a cultural, social, economic or political need and publish for review. TECH.8.2.12.C.6 Research an existing product, reverse engineer and redesign it to improve form and function. TECH.8.2.12.D.3 Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system. 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).	Students will be able to research and analyze the design principles for games and improve game functionality. 8.2.12.B.1; 8.1.12.C.6 Students will learn to use appropriate software for the design, development and creation of assigned projects. 8.2.12.D.3	Identify basic game design principles, reciting common (visual, audial, interactive, narrative, etc.) choices styles, and/or aesthetics. (DOK 1) Define creative and critical thinking (DOK 1) Establish, list, and manage activities to complete a project. (DOK 1-3) Identify common game genres (DOK 1) Utilize the game editor user interface to open and organize a simple project or scene. (DOK 2) Utilize contemporary problem solving techniques (DOK 2) Generate models and materials for project(s) created within the Unity Editor. (DOK 2) Create a game proposal for a one button game. (DOK 2) Distinguish contemporary game genres and platforms. (DOK 3) Reconstruct the rules of contemporary games, in order to improve the gameplay experience. (DOK 3) Differentiate between a game review and a critical analysis of a game. (DOK 3)

				Differentiate 2D from 3D game environments. (DOK 3)
				Critique contemporary video games; providing adequate arguments and justification. (DOK 4)
				Use oral/written communication skills to clearly communicate and defend a position or conclusion with regard to a story specific issue or evaluation. (DOK 4)
				Unit Terms: Students will be able to identify the meanings of the following: file menu, edit menu, assets menu, game objects menu, component menu, window menu, help menu, transform tools, transform Gizmo toggles, gamevue controls, hierarchy, inspector, project browser, seen you, game view, 3D formats, 2D formats, packages, game objects, components, prefabs, Sprint, pixel to unit, manual slicing, automatic slicing, grid slicing, Sprite packing
Unit 2: Understanding Video Game Concepts	7 weeks Oct - Dec	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.D.3 Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system. TECH.8.2.12.C.6 - Research an existing product, reverse engineer and redesign it to improve form and function.	Students will develop critical thinking skills to create original works individually or as a group. 8.1.12.B.CS2	Identify the benefits of creating a storyboard. (DOK 1) Define the components of the design and problem solving process. (DOK 1) Define & implement game pathways, choke points, spawn points, and methods of defining where game objects will meet at choke points. (DOK 1) Establish, list, and manage activities to complete a project. (DOK 1-3) Sequence events by writing variable, operators, and conditionals within a script. (DOK 2)

		TECH.8.1.12.B.CS2 - Create original works as a means of personal or group expression.		Describe the Process of creating characters & designing character actions. (DOK 2)
				Explain the use of storyboarding in game design. (DOK 2)
				Explain the concept of a balanced layout. (DOK 2)
				Explain the principles of level design. (DOK 2)
				Deconstruct and review the general principles of storytelling. (DOK 3)
				Create a bug tracking list for software applications. (DOK 3)
				Differentiate contemporary scripting languages. (DOK 3)
				Create script(s) to perform an action in a game. (DOK 4)
				Create a basic script and attach it to one or more game objects. (DOK 4)
				Create and control terrains within the Unity Editor. (DOK 4)
				Create a sketch of a level layout for a hypothetical game. (DOK 4)
				Unit Terms: Students will be able to identify the meanings of the following: road map, seen Gizmo, camera controls, perspective view, isometric view, transform tools, translate, rotate, scale, z-depth,

				sorting layer, grid, snap settings, scripting languages: boo, c#, JavaScript, character acceleration, air control, zero control, reduce control, full control, input manager: size, name, descriptive name, descriptive negative name, negative button, positive button, alternative button, all positive button, gravity, dead, sensitivity, snap, invert, type, join num, debug function
Unit 3: Principles of Gaming Environments	10 weeks Jan - Mar	TECH.8.2.12.D.3 Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system. 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). 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.CS4 - Contribute to project teams to produce original works or solve problems. TECH.8.2.12.D.1 - Design and create a prototype to solve a real world problem	Students will be able to use a programming language to create and play a digital game or tutorial. 8.1.12.B.2; 8.2.12.E.3	Identify contemporary game developmentals (DOK 1) List the different types of audio files used in most game engines. (DOK 1) Select the appropriate assets for projects of adequate format, size and use in a game. (DOK1) Establish, list, and manage activities to complete a project. (DOK 1-3) Explain the function in purpose of physics engines, middleware, 3D engines and level editors. (DOK 2) Explain how viewpoint impacts gameplay. (DOK 2) Describe how sound files and music are used to enhance game experience and provide realism. (DOK 2) Demonstrate the importance of scene balancing. (DOK 3) Differentiate graphical user interfaces and human machine interfaces. (DOK 3)

		using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.		Apply 2D and 3D sounds appropriately within the game environment. (DOK 3)
				Apply terrain and environment effects within the game environment, skins to game interfaces and skyboxes to create dynamic game world environments. (DOK 3)
				Write scripts that perform specific functions. (DOK 4)
				Position lighting and cameras in order to focus attention within a game. (DOK 4)
				Create and place cameras within 2D and 3D game environments. (DOK 4)
				Create scripts to manage audio files within the game environment. (DOK 4)
				Create a game using a guided practice approach. (DOK 4)
				Unit Terms: Students will be able to identify the meanings of the following: animation principles: anticipation, appeal, arcs, exaggeration, follow through and overlapping action, secondary action, slow and slow out, solid drawing, squash and stretch, staging, straight ahead action and pose to pose, timing, frame animation, animation components, animation window, key frame editor, keyed frames, tangents, dope sheet, animation events, state machines, animation state machines, animator controller, animator components, animation layer, transitions, blend trees, mass, gravity, force, rotation, general

				physics settings, layer collision matrix, Ridgid bodies, colliders, constraints, trigger components, checkpoints, critical path, respond, collectibles: floating coins, coin boxes, 3 coin values, damage trigger, variable, variable type, functions, four types of inner face colon diegetic and non-diegetic, meta, spatial, GY skin, GY controls, compound controls, GUI class, GY layouts, GUI text, GUI texture, splash screen, title screen, game over screen, game win screen, heads up display, particle, particle system, particle effect, audio source, audio listener, audio file formats
Unit 4: Video Game Development	10 weeks Mar - June	TECH.8.2.12.D.3 Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system. 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). 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.CS4 - Contribute to project teams to produce original works or solve	Students will work together in small teams to solve problems and create and/or revise multipage documents for a professional audience. 8.1.12.A.2; 8.1.12.C.CS4 Students will be able to use a programming language to design and create a prototype using a design process, identifying constraints addressed during creation, updates made, and present final product for peer review. 8.2.12.D.1; 8.2.12.E.3	Establish, list, and manage activities to complete a project. (DOK 1-3) Students will work in small groups to identify a common idea for the final capstone project. (DOK 1) Students will be able to demonstrate a working knowledge of game development tools. (DOK 1) Students will modify the game design document to accurately reflect the team idea. (DOK 2) The student will be able to verbally summarize the important considerations in game design. (DOK 2) Student will be able to integrate the principles of project management toward the completion of a basic project charter for the capstone project. (DOK 3) Students will be able to create a thorough and detailed written design document for the capstone project. (DOK 3)

		problems. TECH.8.2.12.D.1 - Design and create a prototype to solve a real world problem using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.		Students will critique the work of their peers. In small groups, students will apply concepts learned in previous units to create a working video game for final submission. (DOK 3) Students will create a 15 minute presentation illustrating the final game design document and working copy of game. (DOK 3) Create and control elements and simple scripts to perform specific actions within the Unity editor. (DOK 3) Within the Unity Editor, the students will be able to create basic structures for fully functioning discrete code. (DOK 4) Students will be able to create manipulate and transform animation controllers. (DOK 4) Unit Terms: Students will be able to identify the meanings of the following: Pre-alpha, Alpha, Beta, Release candidate, versioning numbers, commercial distribution, shareware, constant shorthand code, batching, switch platform, player settings, Target platform, architecture, development build, web build settings, monetization

Unit: 1 - Intro to Video Game Design	Recommended Duration: 8 weeks (September - October)
Unit Learning Goal(s): Students will be able to research and analyze the design principles for games and improve game functionality. 8.2.12.B.1; 8.1.12.C.6 Students will learn to use appropriate software for the design, development and creation of assigned projects. 8.2.12.D.3	

Relevant Content Standards:	Learning Objectives/Topics and Skills (Identify the DOK Level)
Tech.8.1.12.A1 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.A2 Produce and edit a multipage digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review. Tech.8.1.12.F.CS2 Plan and manage activities to develop a solution or complete a project. Tech.8.2.12.B.1 Research and analyze the impact of the design constraints (specifications and limits) for a product or technology driven by a cultural, social, economic or political need and publish for review. 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).	Identify basic game design principles, reciting common (visual, audial, interactive, narrative, etc.) choices styles, and/or aesthetics. (DOK 1) Define creative and critical thinking. (DOK 1) Identify common game genres. (DOK 1) Utilize the game editor user interface to open and organize a simple project or scene. (DOK 2) Utilize contemporary problem solving techniques. (DOK 2) Generate models and materials for project(s) created within the Unity Editor. (DOK 2) Create a game proposal for a one button game. (DOK 2) Distinguish contemporary game genres and platforms. (DOK 3) Reconstruct the rules of contemporary games, in order to improve the gameplay experience. (DOK 3) Differentiate between a game review and a critical analysis of a game. (DOK 3) Differentiate 2D from 3D game environments. (DOK 3) Critique contemporary video games; providing adequate arguments and justification. (DOK 4) Use oral/written communication skills to clearly communicate and defend a position or conclusion with regard to a story specific issue or evaluation. (DOK 4)

Essential Questions:	Enduring Understandings:
How are games created?	Assess and describe the basic gameplay from an existing game.

How do environment features facilitate and/or hinder game play in each genre?	Explain how "Interactive Narrative" pertain to game design. Describe the difference between goals and objectives.
What is project management and why is it important?	Examine and existing game and critique its design with respect to functionality and usability.
What is the difference between thinking critically and thinking creatively?	Identify the primary steps in the design process (conceptualize, prototype, text, analyze).
What is the purpose for each of the steps in the design process?	Describe problem solving processes and use brainstorming techniques to creatively generate a multitude of possible solutions to a stated problem.

Unit Learning Scale	
Unit Learning Goal: Students will be able to research and analyze the design principles for games and improve game functionality. 8.2.12.B; 8.1.12.C.6	
4	In addition to score 3 performances The student can: ● Critique contemporary video games; providing adequate arguments and justification ● Use oral/written communication skills to clearly communicate and defend a position or conclusion with regard to a story specific issue or evaluation
3	The student can: ● Distinguish contemporary game genres and platforms ● Research and analyze the design principles for games ● Reconstruct the rules of contemporary games in order to improve the gameplay experience ● Differentiate between game review and a critical analysis of a game, 2D & 3D game environments ● Establish, list, and manage activities to complete a project
2	The student sometimes needs assistance from the teacher, makes minor mistakes, and/or can do the majority of score 3 performances. The student can: ● Utilize contemporary problem solving techniques. ● Create a game proposal for a one button game.
1	The student needs assistance or make multiple errors in attempting to reach score 3 performance. The student can: ● Define creative and critical thinking ● Identify common game genres
0	Even with help, the student does not exhibit understanding of performance listed in score 3.

Unit Learning Scale	
Unit Learning Goal: Students will learn to use appropriate software for the design, development and creation of assigned projects. 8.2.12.D.3	
4	In addition to score 3 performances The student can: ● Use third party software to create applications to build into sprite sheets

3	The student can: ● Wse appropriate software for the design, development and creation of assigned projects ● Demonstrate how to open a pre-developed scene, view its components and configure the user interface with the game editor ● Import, manipulate, and create game objects ● Set project to work in 2D workspace mode ● Set up sprites and sprite sheets
2	The student sometimes needs assistance from the teacher, makes minor mistakes, and/or can do the majority of score 3 performances. The student can: ● Describe the purpose of the different interface views ● Utilize the game editor user interface to open and organize a simple project or scene
1	The student needs assistance or make multiple errors in attempting to reach score 3 performance. The student can: ● Navigate the Unity interface ● Identify basic game design principles, re
0	Even with help, the student does not exhibit understanding of performance listed in score 3.

*To ensure the needs of all learners (including, but not limited to, special education, 504, ELL & advanced learners) are met when **assessing**, please refer to the District approved **Instructional & Assessment Supports: Accommodations/Modifications Reference Sheet** found at the link below. These should be used :*
https://www.krsd.org/Page/1489

Pre-Assessments (Diagnostic)	Secondary Assessments (Formative)	Primary Assessments (Summative)
KWL chart Google form assessing unit's essential question components prior to topic exposure Use of a video with anticipatory questions	Quiz relative to student learning activities Responses to discussion questions Exit tickets Guided notes Internet research Oral Presentation Contemporary Game Assignment	Critical Analysis Assignment Project Management for Game Developer Assignment Unit based projects

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Week(s)	Student Learning Activities	Differentiated Learning Strategies (**by readiness, interest, learning profile**)	Resources
1*	Review *syllabus* and teacher expectations Icebreakers, *All about me*, Kahoot *CSA -Sept Pre-Assessment - Google Form*	**Readiness**: adjust the degree of difficulty of a task to provide an appropriate level of challenge	Game Developers Journal Template (Google Doc)
2*	Scratch Tutorial (1 day)		Scratch Online Tutorial

	Unity Core Concepts: Interactive Tutorials 1-4 (1 day) Game Developers Journal/E-Notebook setup Game Design Overview, Game Developers Journal - Notes	add or remove teacher or peer coaching, use 'hands-on' tasks, presence or absence of models for a task (scaffolding) vary direct instruction by small group need **Interest**: provide a variety of avenues for student exploration of a topic or expression of learning offer a choice of tasks and products, including student-designed options use jigsaw groups **Learning Profiles**: create a learning environment with flexible spaces and learning options encourage students to explore information and ideas through auditory, visual and kinesthetic modes allow students to work alone or with peers	Unity Online Tutorial Videos Textbook: The Art of Game Design (p. 3-7, 36,41-45)
3*	Group project - Game Platform/Genre presentation (2 days) Game Element Exploration- Notes Game Developer Journal Entry - 4 basic elements definitions		Textbook: A Theory of Fun (p. 34-47) Online resources linked to Google Classroom
4*	Basic Elements Presentation - Choose a video game from the student choice pile. Create a presentation explaining the mechanics, aesthetics, story & technology of the game. Peer Review & group discussion of Basic Elements presentations		Beginner's Guide to Game Mechanics - online article Textbook: The Art of Game Design
5*	Game analysis - Day 1 Choose puzzle games from King.com Days 2 & 3 *Contemporary Game Assignments* - Game Modification Task Sheet, Game Modification Plan		Puzzle Game - online game Game Modification Templates Game Analysis Guidelines
6*	Chapter 9 - Game for all Ages review Day 1 study guide & peer review Days 2 & 3 group project		Textbook: The Art of Game Design
7*	Game analysis - Day 1 Choose a 2D Platform games from *website* Days 2 & 3 *Contemporary Game Assignments* - Game Modification Task Sheet, Game Modification Plan		Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to Game Creation Unity Online Tutorial Videos
8*	Contemporary Game Assignment - Document primary rules of a simple game, goals and objectives of a student selected game. Short essay explaining game environments and suitable genre. (2 days) Class discussion/presentation (1 day)	Template- Project Charter Form	Game Modification Templates Game Analysis Guidelines Game Flashcards - student choice

Interdisciplinary Connections: *Note applicable NJ standards from other content areas used within the unit*
- *CORE AREA CONNECTIONS*

Language Arts:
- Draw evidence from informational texts to support analysis, reflection, and research.
- Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.
- Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
- Determine the central ideas or themes of a text and analyze their development; summarize the key supporting details and Ideas.
- Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
- Conduct short as well as more sustained research projects based on focused questions, demonstrating an understanding of the subject under investigation.

Career Ready Practices: *Note applicable CRPs used within the unit*

CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

Integration of Technology: *Note applicable NJ technology standards used within the unit*

8.1 All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.

8.2 All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.
- B. Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society.
- C. The design process is a systematic approach to solving problems.
- D. The designed world is the product of a design process that provides the means to convert resources into products and systems.
- E. Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

Course Resources:

Unity Educator TookKIt Curricular Framework
Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to Game Creation
The Art of Game Design
A Theory of Fun for Game Design
Software: Unity Game Engine

Unit: 2 - Understanding Video Game Concepts	Recommended Duration: 7 weeks (October - December)

Unit Learning Goal(s): Students will develop critical thinking skills to create original works individually or as a group. 8.1.12.B.CS2

Relevant Content Standards:	Learning Objectives/Topics and Skills (**Identify the DOK Level**)
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).	Identify the benefits of creating a storyboard. (DOK 1)
	Define the components of the design and problem solving process. (DOK 1)
TECH.8.2.12.D.3 Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system.	Define & implement game pathways, choke points, spawn points, and methods of defining where game objects will meet at choke points. (DOK 1)
	Sequence events by writing variable, operators, and conditionals within a script. (DOK 2)
TECH.8.2.12.C.6 - Research an existing product, reverse engineer and redesign it to improve form and function.	
TECH.8.1.12.B.CS2 - Create original works as a means of personal or group expression.	Describe the Process of creating characters & designing character actions. (DOK 2)
	Explain the use of storyboarding in game design. (DOK 2)
	Explain the concept of a balanced layout. (DOK 2)
	Explain the principles of level design. (DOK 2)
	Deconstruct and review the general principles of storytelling. (DOK 3)
	Create a bug tracking list for software applications. (DOK 3)
	Differentiate contemporary scripting languages. (DOK 3)
	Create script(s) to perform an action in a game. (DOK 4)
	Create a basic script and attach it to one or more game objects. (DOK 4)
	Create and control terrains within the Unity Editor. (DOK 4)

	Create a sketch of a level layout for a hypothetical game. (DOK 4)

Essential Questions:	Enduring Understandings:
How should designers use a storyboard when developing a new concept?	Investigate the concept of "Interactive Narrative" and explain how it could pertain to game design.
What is the difference between characters and objects and how are they important to the game development process?	Determine the relevance of character development, backstory and attributes in game design.
What is the purpose of the Game Design Document?	Develop, analyze and communicate design ideas using annotated sketches, technical drawings, graphical, mathematical and/or physical models.
What is level design theory?	Create a narrative & storyboard for a new interactive video game. Create, iterate and maintain a full set of game design documentation.
	Demonstrate and understanding of basic coding skills. Explain principles of user navigation and level progression.

Unit Learning Scale	
Unit Learning Goal: Students will develop critical thinking skills to create original works individually or as a group.	
4	In addition to score 3 performances The student can: ● Create script(s) to perform an action in a game. ● Create a basic script and attach it to one or more game objects. ● Create and control terrains within the Unity Editor. ● Create a sketch of a level layout for a hypothetical game.
3	The student can: ● Use critical thinking skills to create original works individually or as a group. ● Deconstruct and review the general principles of storytelling. ● Create a bug tracking list for software applications. ● Differentiate contemporary scripting languages.
2	The student sometimes needs assistance from the teacher, makes minor mistakes, and/or can do the majority of score 3 performances. The student can: ● Sequence events by writing variable, operators, and conditionals within a script. ● Describe the Process of creating characters & designing character actions. ● Explain the use of storyboarding in game design, the concept of a balanced layout, and the principles of level design.
1	The student needs assistance or make multiple errors in attempting to reach score 3 performance. The student can: ● Identify the benefits of creating a storyboard. ● Define the components of the design and problem solving process.

	● Define & implement game pathways, choke points, spawn points, and methods of defining where game objects will meet at choke points.
0	Even with help, the student does not exhibit understanding of performance listed in score 3.

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Pre-Assessments (Diagnostic)	Secondary Assessments (Formative)	Primary Assessments (Summative)
KWL chart Google form assessing unit's essential question components prior to topic exposure Use of a video with anticipatory questions	Quiz relative to student learning activities Responses to discussion questions Exit tickets Guided notes Internet research Oral Presentation Consider the Image Game Development Plan - Flowcharts Game for All Ages Project	Critical Thinking Project Proposal Game Design Document Capstone Project Unit based projects

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Week(s)	Student Learning Activities	Differentiated Learning Strategies (**by readiness, interest, learning profile**)	Resources
1*	Chapter 12 - Some Elements are Game Mechanics day 1 - Space & Time with DQ day 2 - Objects, Attributes & Actions with DQ day 3 - Rules & Skill with DQ	**Readiness**: adjust the degree of difficulty of a task to provide an appropriate level of challenge add or remove teacher or peer coaching, use 'hands-on' tasks, presence or absence of models for a task (scaffolding) vary direct instruction by small group need	Art of Game Design E-Journal & Study guide
2*	Chapter 17 - One Kind of Experience Is the Story chapter review day 1 - string of pearls & DQ day 2 - story machine & DQ day 3 study guide & peer review		Art of Game Design E-Journal & Study guide Guide for creating a Work
3*	Intro to storytelling principles Group Story Generation Exercise Part1 - build a story Storyboarding fundamentals Group Story Generation Exercise Part2- convert into a storyboard with illustrations		7 Keys of storytelling videos List of character archetypes Art of Game Design E-Journal & Study guide

		Interest:	Photos
4*	Contemporary Game Assignment - how does initial cutscene set stage for gameplay Consider the Image Exercise - create a 350-500 word story that includes the scene provided Five Card Flicker - build a coherent storyline from 5 random photos (5 times)	provide a variety of avenues for student exploration of a topic or expression of learning	Interactive Storytelling for Video Games
5*	Scratch activities - 1. Learning the Basics 2. Disco Pop 3. Star Storm	offer a choice of tasks and products, including student-designed options use jigsaw groups	Textbook: Animation for Kids with Scratch Programming
6*	Scratch activities - 4. Rescue Mission (cut scene with mini game) Journal Entry - Short story about character(s) then create a storyboard for the cut scene Journal Entry - storyboard for mini game idea Create Scratch cut scene with mini game	**Learning Profiles**: create a learning environment with flexible spaces and learning options encourage students to explore information and ideas through	Textbook: Animation for Kids with Scratch Programming Game Design Document Template/E-Notebook
7*	Complete Scratch cut scene with mini game for peer review Unity Tutorial Walkthrough - Unity Playground (2days)	auditory, visual and kinesthetic modes allow students to work alone or with peers	Unity game tutorial https://learn.unity.com/project/unity-playground?uv=2017.4&courseId=5d532306edbc2a1334dd9aa8 https://learn.unity.com/project/creator-kit-rpg/?tab=overview

Interdisciplinary Connections: *Note applicable NJ standards from other content areas used within the unit*
- *CORE AREA CONNECTIONS*

Language Arts:
- Draw evidence from informational texts to support analysis, reflection, and research.
- Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.
- Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
- Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and Ideas.
- Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
- Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

Math:
- Analysis of various mathematical sources in relation topics and themes from ELS, History or Science, such as, but not limited to:
  - Statistics
  - Graphs and Charts

Science:
- Science practices require the analysis and interpretation of data, the use of mathematical and computational thinking
- Ask questions and defining problems
- Construct explanations and designing solutions
- Engage in argument from evidence

Career Ready Practices: *Note applicable CRPs used within the unit*

CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

Integration of Technology: *Note applicable NJ technology standards used within the unit*

8.1 All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- B. Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.

8.2 All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.
- C. The design process is a systematic approach to solving problems.
- D. The designed world is the product of a design process that provides the means to convert resources into products and systems.
- E. Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

Course Resources:

Unity Educator TookKIt Curricular Framework
Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to Game Creation
The Art of Game Design
A Theory of Fun for Game Design
Animation for Kids with Scratch Programming
Software: Scratch Online Editor, Unity Game Engine

Unit: 3 - Principles of Gaming Environments	Recommended Duration: 11 weeks (January - March)

Unit Learning Goal(s): Students will be able to use a programming language to create and play a digital game or tutorial. 8.1.12.B.2; 8.2.12.E.3

Relevant Content Standards:	Learning Objectives/Topics and Skills ([Identify the DOK Level](#))
TECH.8.2.12.D.3 Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system. 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). 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.CS4 - Contribute to project teams to produce original works or solve problems. TECH.8.2.12.D.1 - Design and create a prototype to solve a real world problem using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.	Identify contemporary game developmentals (DOK 1) List the different types of audio files used in most game engines. (DOK 1) Select the appropriate assets for projects of adequate format, size and use in a game. (DOK1) Explain the function in purpose of physics engines, middleware, 3D engines and level editors. (DOK 2) Explain how viewpoint impacts gameplay. (DOK 2) Describe how sound files and music are used to enhance game experience and provide realism. (DOK 2) Demonstrate the importance of scene balancing. (DOK 3) Differentiate graphical user interfaces and human machine interfaces. (DOK 3) Apply 2D and 3D sounds appropriately within the game environment. (DOK 3) Apply terrain and environment effects within the game environment, skins to game interfaces and skyboxes to create dynamic game world environments. (DOK 3) Write scripts that perform specific functions. (DOK 4) Position lighting and cameras in order to focus attention within a game. (DOK 4) Create and place cameras within 2D and 3D game environments. (DOK 4) Create scripts to manage audio files within the game environment. (DOK 4) Create a game using a guided practice approach. (DOK 4)

Essential Questions:	Enduring Understandings:

What are the components of the game environment?	Demonstrate a working knowledge of game development tools.
What is the difference between a GUI and HMI?	Implement environmental designs in to 2D & 3D levels. Create, edit and enhance environments to optimize quality.
What components make a good user interface?	Implement a new user interface system, test and evaluate its usability. Use physics to create realistic motions with objects and characters.
How do cameras and lighting engage the gamer?	Demonstrate understanding of pathways, chokepoints, control points, and spawn points and other design methods for creating balance, timing, pacing and flow.
What is intellectual property?	Create, iterate and maintain a full set of game design documentation.
How do music and sound effects add to the excitement of a game?	Explain the role of cameras and lighting with respect to ambiance. Use cameras and lighting to create specific emotional experiences such as tension, fear, excitement.

Unit Learning Scale	
Unit Learning Goal:	
4	In addition to score 3 performances The student can: ● Write scripts that perform specific functions. ● Position lighting and cameras in order to focus attention within a game. ● Create and place cameras within 2D and 3D game environments, scripts to manage audio files, a game using a guided practice approach.
3	The student can: ● Use a programming language to create and play a digital game or tutorial. ● Demonstrate the importance of scene balancing. ● Differentiate graphical user interfaces and human machine interfaces. ● Apply 2D and 3D sounds appropriately within the game environment. ● Apply terrain and environment effects within the game environment, skins to game interfaces and skyboxes to create dynamic game world environments.
2	The student sometimes needs assistance from the teacher, makes minor mistakes, and/or can do the majority of score 3 performances. The student can: ● Explain the function in purpose of physics engines, middleware, 3D engines and level editors. ● Explain how viewpoint impacts gameplay. ● Describe how sound files and music are used to enhance game experience and provide realism.
1	The student needs assistance or make multiple errors in attempting to reach score 3 performance. The student can: ● Identify contemporary game developmentals ● List the different types of audio files used in most game engines.

	● Select the appropriate assets for projects of adequate format, size and use in a game.
0	Even with help, the student does not exhibit understanding of performance listed in score 3.

*To ensure the needs of all learners (including, but not limited to, special education, 504, ELL & advanced learners) are met when **assessing**, please refer to the District approved **Instructional & Assessment Supports: Accommodations/Modifications Reference Sheet** found at the link below. These should be used :*
https://www.krsd.org/Page/1489

Pre-Assessments (Diagnostic)	Secondary Assessments (Formative)	Primary Assessments (Summative)
KWL chart Google form assessing unit's essential question components prior to topic exposure Use of a video with anticipatory questions	Quiz relative to student learning activities Responses to discussion questions Exit tickets Guided notes Internet research Oral Presentation Lesson Exercises GUI Practice Roll a Ball game with sound effects	Interface Design Activity Building simple game (guided practice) Unit based projects

*To ensure the needs of all learners (including, but not limited to, special education, 504, ELL & advanced learners) are met when **delivering instruction**, please refer to the District approved **Instructional & Assessment Supports: Accommodations/Modifications Reference Sheet** here: https://www.krsd.org/Page/1489*

Week(s)	Student Learning Activities	Differentiated Learning Strategies (**by readiness, interest, learning profile**)	Resources
1	1 Intro to Unity - Getting to Know the Editor & Scene View 2 Game Objects - Dimensions & Coordinate Systems, Transforms 3 Models, Materials, and Textures	**Readiness**: adjust the degree of difficulty of a task to provide an appropriate level of challenge	Textbook: Unity Game Development in 24 hours Tutorial Videos - provided by teacher
2	4 Terrain - Generation & Textures 5 Environments - Trees, grass, effects controllers 6 Lights & Cameras	add or remove teacher or peer coaching, use 'hands-on' tasks, presence or absence of models for a task (scaffolding) vary direct instruction by small group need	Textbook: Unity Game Development in 24 hours Tutorial Videos - provided by teacher https://learn.unity.com/tutorial/lighting-lights-shading-basics https://learn.unity.com/tut

		Interest:	orial/cameras-and-effects
3	Build a Simple Game (Guided Practice): 7 Game 1 - Amazing Racer Design, creation, playtesting 8 Scripting - Part 1 Scripts, variables, operators, conditionals, iteration	provide a variety of avenues for student exploration of a topic or expression of learning offer a choice of tasks and products, including student-designed options	Textbook: Unity Game Development in 24 hours Tutorial Videos - provided by teacher
4	9 Scripting - Part 2 Methods, input, accessing local components, accessing other objects 10 Collision - Rigidbodies, triggers, collision	use jigsaw groups	Textbook: Unity Game Development in 24 hours Tutorial Videos - provided by teacher
5	Build a Simple Game (Guided Practice): 11 Game 2 - Chaos Balls Design, creation, playtesting	Learning Profiles: create a learning environment with flexible spaces and learning options	Textbook: Unity Game Development in 24 hours Tutorial Videos - provided by teacher
6	12 Prefabs 13 2D Game Tools Orthographic cameras, adding sprites, draw order, 2d physics 14 User Interface - Principles, canvas, elements, render modes	encourage students to explore information and ideas through auditory, visual and kinesthetic modes	Textbook: Unity Game Development in 24 hours Tutorial Videos - provided by teacher
7	Build a Simple Game (Guided Practice): 15 Game 3 - Captain Blaster Design, world, controls, improvements 16 Particle Systems	allow students to work alone or with peers	Textbook: Unity Game Development in 24 hours Tutorial Videos - provided by teacher
8	17 Animations - Basics, types, tools 18 Animators - Basics, assets, creating an animator, scripting animators		Textbook: Unity Game Development in 24 hours Tutorial Videos - provided by teacher
9	Build a Simple Game (Guided Practice): 19 Game 4 - Gauntlet Runner Designt, world, entities, controls, improvements 20 Audio- Basics, sources, scripting		Textbook: Unity Game Development in 24 hours Tutorial Videos - provided by teacher
10	Unity Tutorial - Platformer Microgame 2D Platformer Mod: Billboard Face 2D Platformer Mod: Name the Game 2D Platformer Mod: A Splash of Color 2D Platformer Mod: Add Trails		Unity Online Tutorial Video https://learn.unity.com/project/2d-platformer-template?uv=2019.3

	2D Platformer Mod: Tinted World 2D Platformer Mod: Animate your World 2D Platformer Mod: Custom Triggers 2D Platformer Mod: Trick out the world 2D Platformer Mod: Bouncy sparkly 2D Platformer Mod: Add speed and bounce pads 2D Platformer Mod: Decorate your world		
11	Unity Tutorial Projects - Creator Kit: RPG Creator Kit: Beginner Code		Unity Online Tutorial Video https://learn.unity.com/project/creator-kit-rpg https://learn.unity.com/project/creator-kit-beginner-code
1-11	Exploring the Unity Editor - developmentals, engines, level design concepts, GUI practice using different controls and change skins, create buttons, pop-ups, scene changes, and other prompts, build character controls in third person and first person, develop skills of physics, camera & lighting skills development, three point lighting tutorial, camera use tutorial,		Unity Online Tutorial Videos

Interdisciplinary Connections: *Note applicable NJ standards from other content areas used within the unit*.
  ● *CORE AREA CONNECTIONS*

Language Arts:
  ● Draw evidence from informational texts to support analysis, reflection, and research.
  ● Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.
  ● Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
  ● Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and Ideas.
  ● Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
  ● Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
Math:
  ● Analysis of various mathematical sources in relation topics and themes from ELS, History or Science, such as, but not limited to:
    ○ Statistics
    ○ Graphs and Charts

Career Ready Practices: *Note applicable CRPs used within the unit*.

CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9. Model integrity, ethical leadership and effective management.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

Integration of Technology: *Note applicable NJ technology standards used within the unit*

8.1 All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

- ● B. Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
- ● C. 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.

8.2 All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

- ● D. The designed world is the product of a design process that provides the means to convert resources into products and systems.
- ● E. Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

Course Resources:

Unity Educator TookKIt Curricular Framework

Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to Game Creation

The Art of Game Design

A Theory of Fun for Game Design

Unity Game Development in 24 hours

Software: Unity Game Engine

Unit: 4 - Video Game Development	Recommended Duration: 11 weeks (March - June)

Unit Learning Goal(s): Students will work together in small teams to solve problems and create and/or revise multipage documents for a professional audience. 8.1.12.A.2; 8.1.12.C.CS4

Students will be able to use a programming language to design and create a prototype using a design process, identifying constraints addressed during creation, updates made, and present final product for peer review. 8.2.12.D.1; 8.2.12.E.3

Relevant Content Standards:	Learning Objectives/Topics and Skills (Identify the DOK Level)
TECH.8.2.12.D.3 Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system. 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). 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.CS4 - Contribute to project teams to produce original works or solve problems. TECH.8.2.12.D.1 - Design and create a prototype to solve a real world problem using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.	Establish, list, and manage activities to complete a project. (DOK 1-3) Students will work in small groups to identify a common idea for the final capstone project. (DOK 1) Students will be able to demonstrate a working knowledge of game development tools. (DOK 1) Students will modify the game design document to accurately reflect the team idea. (DOK 2) The student will be able to verbally summarize the important considerations in game design. (DOK 2) Student will be able to integrate the principles of project management toward the completion of a basic project charter for the capstone project. (DOK 3) Students will be able to create a thorough and detailed written design document for the capstone project. (DOK 3) Students will critique the work of their peers. In small groups, students will apply concepts learned in previous units to create a working video game for final submission. (DOK 3) Students will create a 15 minute presentation illustrating the final game design document and working copy of game. (DOK 3)

	Create and control elements and simple scripts to perform specific actions within the Unity editor. (DOK 3)
	Within the Unity Editor, the students will be able to create basic structures for fully functioning discrete code. (DOK 4)
	Students will be able to create manipulate and transform animation controllers. (DOK 4)
	Unit Terms: Students will be able to identify the meanings of the following: Pre-alpha, Alpha, Beta, Release candidate, versioning numbers, commercial distribution, shareware, constant shorthand code, batching, switch platform, player settings, Target platform, architecture, development build, web build settings, monetization

Essential Questions:	Enduring Understandings:
What documentation is critical to the proper management of a technology team project?	Planning and written documentation or central for completion of technology team project
How are characters created to match the theme and mood of a story?	Interactive storytelling is highly dependent on developing rich characters and archetypes.
How are multimedia components created and stored?	Problem solvings incorporated into gameplay through integrated puzzles.
What is the importance of using a debugger?	Use of multimedia components and hands to quality, mood and feel of a game.
What are the major concepts related to game versioning?	Describe the basic logic, concepts and key structures behind computer programming languages.
	Use various techniques for effectively animating objects & component properties.
	Demonstrate the use of a debugger to inspect code at runtime.

Unit Learning Scale	
Unit Learning Goal: Students will work together in small teams to solve problems and create and/or revise multipage documents for a professional audience.	
4	In addition to score 3 performances The student can: ● Design a solution to a complex problem by breaking it down into smaller more manageable problems that can be solved through engineering.

3	The student can: ● Students will create a 15 minute presentation illustrating the final game design document and working copy of game. ● Student will be able to integrate the principles of project management toward the completion of a basic project charter for the capstone project. ● Students will work together in small teams to solve problems and be able to create a thorough and detailed written design document for the capstone project.
2	The student sometimes needs assistance from the teacher, makes minor mistakes, and/or can do the majority of score 3 performances. The student can: ● The student will be able to verbally summarize the important considerations in game design.
1	The student needs assistance or make multiple errors in attempting to reach score 3 performance. The student can: ● Establish, list, and manage activities to complete a project.
0	Even with help, the student does not exhibit understanding of performance listed in score 3.

Unit Learning Scale
Unit Learning Goal: Students will be able to use a programming language to design and create a prototype using the design process, identifying constraints addressed during creation, updates made, and present final product for peer review.

4	In addition to score 3 performances The student can: ● Within the Unity Editor, the students will be able to create basic structures for fully functioning discrete code. ● Students will be able to create, manipulate and transform animation controllers.
3	Students will be able to use a programming language to design and create a prototype using a design process, identifying constraints addressed during creation, updates made, and present final product for peer review. ● Students will critique the work of their peers. ● In small groups, students will apply concepts learned in previous units to create a working video game for final submission. ● Create and control elements and simple scripts to perform specific actions within the Unity editor. ● Perform successful debugging and troubleshooting activities within a game environment.
2	The student sometimes needs assistance from the teacher, makes minor mistakes, and/or can do the majority of score 3 performances. The student can: ● Students will modify the game design document to accurately reflect the team idea. ● Explain the importance of testing and describe basic troubleshooting strategies.
1	The student needs assistance or make multiple errors in attempting to reach score 3 performance. The student can: ● Students will work in small groups to identify a common idea for the final capstone project.
0	Even with help, the student does not exhibit understanding of performance listed in score 3.

Pre-Assessments (Diagnostic)	Secondary Assessments (Formative)	Primary Assessments (Summative)
KWL chart Google form assessing unit's essential question components prior to topic exposure Use of a video with anticipatory questions	Quiz relative to student learning activities Responses to discussion questions Exit tickets Guided notes Internet research Oral Presentation Game versioning narrative Animation in game development essay	Game Pitch Proposal Game Design document Capstone Project: Final Game Product Unit based projects

Week(s)	Student Learning Activities	Differentiated Learning Strategies (**by readiness, interest, learning profile**)	Resources
1	Exploring the Unity Editor Chapters 1 jigsaw of terms. complete peer review study guide. Chapter 2 Asset creation Chapter 3 Creating 2D Sprites	**Readiness**: adjust the degree of difficulty of a task to provide an appropriate level of challenge	Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to Game Creation
2	Chapter 4 Building the Game World Chapter 5 The Basics of Movement & Player Control	add or remove teacher or peer coaching, use 'hands-on' tasks, presence or absence of models for a task (scaffolding)	Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to Game Creation
3	Chapter 6 Adding Animations to our Scene Chapter 7 Setting up Player Physics and Colliders	vary direct instruction by small group need	Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to Game Creation
4	Chapter 8 Creating & Applying Gameplay Systems Chapter 9 Creating Hazards and Crafting Difficulty	**Interest**: provide a variety of avenues for student exploration of a topic or expression of learning	Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to Game Creation
5	Chapter 10 Creating menus and Interface Elements Chapter 11 Applying Effects to the GameObjects	offer a choice of tasks and products,	Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to

		including student-designed options	Game Creation
6	Chapter 12 Organizing and Optimization Chapter 13 Bringing it All Together	use jigsaw groups **Learning Profiles**:	Textbook: Learning 2D Game Development with Unity; A Hands-On Guide to Game Creation
7	Ruby 2D Adventure Lessons: 2 Main Character & First script 3 Character controller & keyboard input 4 World Design - tilemaps	create a learning environment with flexible spaces and learning options encourage students to explore	Unity tutorial: https://learn.unity.com/project/ruby-s-2d-rpg
8	Ruby 2D Adventure Lessons: 5 Decorating the World 6 World Interactions - Blocking Movement 7 World Interactions - Collectibles	information and ideas through auditory, visual and kinesthetic modes	Ruby's Adventure: 2D Beginner https://learn.unity.com/project/ruby-s-2d-rpg
9	Ruby 2D Adventure Lessons: 8 World Interactions - Damage Zones and Enemies 9 Sprite Animation 10 World Interactions - Projectiles	allow students to work alone or with peers	Ruby's Adventure: 2D Beginner https://learn.unity.com/project/ruby-s-2d-rpg
10	Ruby 2D Adventure Lessons: 11 Camera - Cinemachine 12 Visual Styling - Particles 13 Visual Styling - User Interface - Heads Up Display		Ruby's Adventure: 2D Beginner https://learn.unity.com/project/ruby-s-2d-rpg
11	Ruby 2D Adventure Lessons: 14 World Interactions - Dialog Raycast 15 Audio 16 Build, Run Distribute		Ruby's Adventure: 2D Beginner https://learn.unity.com/project/ruby-s-2d-rpg

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- *CORE AREA CONNECTIONS*

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