COURSE TITLE: Computer Game and Simulation Programming

Course Description:

Computer Game and Simulation Programming standards are designed to equip students with the skills needed to prepare for higher education and for success in careers such as a computer game simulator, designer, programmer, or software developer. Interest and involvement in the gaming industry has grown substantially over the years. Professions in this industry require technical skill proficiency, competency-based applied learning, higher-order reasoning, teamwork, and problem-solving skills. The course integrates core academic subjects with elements of visual design, digital audio and video, storyboarding, and collaboration to attain the knowledge, skills, and attitudes necessary to compete successfully in the gaming production industry.

Potential Certifications/Credentials:

Adobe Certified Associate (ACA) – Photoshop / Dreamweaver / Premier Pro / InDesign / Illustrator, ASK Institute – Concepts of Entrepreneurship and Management / Fundamental Business Concepts, Certiport- Entrepreneurship and Small Business (must hold concentrator status), IC3 Global Standard 6 (or higher), Microsoft Office Expert 2019/365 - Access / Excel / Word, Microsoft Office Specialist 2019/365 (MOS) (Two of the following areas REQUIRED: Excel Associate / Outlook Associate / PowerPoint Associate / Word Associate)

Course Scope and Sequence

Unit #	Unit Title	Estimated Hours
1	Foundational Standards	
2	Pre-Production	
3	Game Platforms	
4	Game Design and Development Process	
5	Software Application	
6	Post-Production (Game Testing, Enhancement, and Release)	
7	Career Awareness	

Unit Plans of Instruction

Foundational Standards

Supporting–will be taught throughout the course as needed for the unit.

F1. Incorporate safety procedures in handling, operating, and maintaining tools and machinery; handling materials; utilizing personal protective equipment; maintaining a safe work area; and handling hazardous materials and forces.

F2. Demonstrate effective workplace and employability skills, including communication, awareness of diversity, positive work ethic, problem-solving, time management, and teamwork.

F3. Explore the range of careers available in the field and investigate their educational requirements, and demonstrate job-seeking skills including resume-writing and interviewing.

F4. Advocate and practice safe, legal, responsible, and ethical use of information and technology tools specific to the industry pathway.

F5. Participate in a Career and Technical Student Organization (CTSO) to increase knowledge and skills and to enhance leadership and teamwork.

F6. Discuss and demonstrate ways to value diversity.

Unit 2 Title: Pre-Production

Content Standards

1. Research and share information on the history of video games, including timelines of events, historical figures, and changes in generational game development.

2. Play a variety of games to research, collect, and analyze game play data.
   2a. Write a critical analysis of a current video game.

3. Research the methods used to create and sustain player immersion and explain why it is important.

Unpacked Learning Objectives

Students know:

- Historical information regarding gaming development and key events, figures and changes over the historical period of video games.
- Execute gaming software to study the data regarding video gaming.
- How to compare and contrast collected data from research.
- How to understand the effect of a gaming system on the user – actions and challenges.

Students are able to:

- Research information regarding video gaming historical figures and the development of the gaming process.
- Conduct a video games and gain knowledge to collect for future programming procedures
- Summarize and analyze the formal elements from researched data on video gaming development.
- To evaluate the game from a design perspective – feeling, emotions, and interest level.

Students understand that:

- The historical and framework behind video game design information is important to understanding the gaming building process.
- By playing a variety of video games, similarities and differences between different gaming software.
- There are eight stages of game development.
- The core of gaming and how different parts work.
- Player immersion is very important in determining how long the player will stay interested and invested in the game.

Unit Driving/Essential Question	What are the eight stages of game development?
Exemplar High Quality Unit Task	Students will create a KWL chart making a list of things you already know and what you want to know about game development..

Map of Student Learning by Learning Objective

Unpacked Learning Objective SWBAT	Potential Subtasks for Assessments Formative/Summative	Potential Learning Activities Learning Activity Checklist Link to Differentiation Examples	Integrated and Related Academic Content: ELA, Math, Science, and/or Social Studies Concepts & Activities	Equipment, Technology & Materials Equipment List by CTE Cluster Link to Helpful Tech Tools
Students can study and document\report on gaming history by creating a timeline and demonstrating knowledge gained regarding historical figures and gaming development.	Formative: Students will be assessed on their concept map.	Students will create a concept map outlining the gaming history and demonstrating knowledge gained on historical figures and gaming development.	MATH: Create a timeline by using tables and graphs to study and document on gaming history and predict the future gaming development based on the given historical data. SS: History of gaming, develop a presentation showing the impact of this history on modern gaming practices	Computer Printer Internet Interactive Board Code.org Software
Students can evaluate basic gameplay from an existing game.	Formative: Students will be assessed using an exit slip.	Students will work in groups of 3-4 people. Each group will select a game to play. They will evaluate the game and share their findings with the class.	SS: Evaluate how the gaming industry impacts the economy	Computer Printer Internet

				Interactive Board Code.org Software
Students can describe, discuss, and compare the game's formal elements.	Formative: Students will be assessed on their charts. Formative: Students will be assessed through observation	Students will complete a chart where they will describe, compare and contrast the game's formal elements. Students will discuss their charts with the class.	SS: Evaluate how the gaming industry impacts the economy	Computer Printer Internet Interactive Board Code.org Software
Students can study, develop and discuss methods of player personal gaming experiences.	Formative: Students will be assessed through observation.	Students will work in groups of 3-4 people. Each group will select a game to play. They will evaluate the game and discuss methods of players' personal gaming experiences with the class.	SS: Evaluate how the gaming industry impacts the economy	Computer Printer Internet Interactive Board Code.org Software

Key Vocabulary

What is a game?, video games, objectives (goals), concept, high concept, pitch, prototype, rules, conflicts, goals, decision making, artificial , voluntary, simulation, game genres, game elements, mechanics, dynamics, aesthetics framework, beta, game design, non digital game design, play structure, resources, gameplay, mechanics, 2d, 3d, gameplay, formal elements, game engine, game design, concentration, virtual reality, platform, design risk, implementation risk, cross platform, player motivation, theme (narrative, backstory, setting), goals, visual stimuli, non-trivial interaction

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

Students will learn how to assess a video game and gain knowledge to collect for future programming procedures

CTSO Connection:

FBLA: Digital Video Production, Business Communication, Video Game Design, Computer Game & Simulation Programming. DECA: 3-D Visualization & Animation ·

Certification/Credential Connection:

Certified Guest Services Gold, App Development, IC3, Python, Software Development, Introduction to programming.

Unit 3 Title: Game Platforms

Content Standards

4. Explain game ratings, genres, and types.

5. Research and share information on various computer and mobile game development platforms.

Unpacked Learning Objectives

Students know:

- How to summarize specific categories and gameplay characteristics.
- Understand different video game genres and types.
- Different gaming platforms on which videos are developed.
- The difference in pricing – free publishing, creator's licenses, and enterprise programs.

Students are able to:

- Identify and discuss the different types of video gaming ratings, genres, subgenres, and gaming types.
- Compare different video gaming platforms that are developed.
- Interpret different pricing plans for development platforms.

Students understand that:

- Video gaming ratings are meant to inform video game purchasing decisions and serve as a baseline for what to expect from a video game.
- User interaction is determined by different levels of gaming exposure.
- The different types of developmental software for computer and mobile gaming platforms and that some are free to develop.

Unit Driving/Essential Question	Students will identify the different steps in the design process for video gaming?
Exemplar High Quality Unit Task	Students will explain each step of the design process for video gaming.

Map of Student Learning by Learning Objective

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Students can evaluate and describe various 2D & 3D, single and multi-user genres in games (subgenres). Students can provide information about gaming rating categories, descriptors, and elements. Students can identify the categories and characteristics of video game types.	Summative: Students will be assessed on their rubric.	Students will create a PowerPoint presentation and using a rubric they will share their evaluation of 2D and 3D single and multi-user games, rate categories, descriptors, and elements. Identify the categories and characteristics of video games.	MATH: Use tables and graphs to rate different gaming categories by comparing their market shares using ratios and percentages. SS: Evaluate how the gaming industry impacts the economy	Computer Printer Internet Interactive Board Code.org Software
Students can explain and compare different development gaming platforms and the types of	Formative: Students will be assessed on their fact sheet.	Students will create a fact sheet to list and explain the different gaming platforms	MATH: Create a spreadsheet to compare pricing for different developing softwares. Use	Computer Printer

pricing for developing software.		and the pricing for developing software.	tables and graphs to demonstrate the advantage and the disadvantage of different gaming platforms. SS: Evaluate how the pricing of games change based on the current economy	Internet Interactive Board Code.org Software

Key Vocabulary

content descriptors, parental controls, ESRB (Entertainment Gaming Rating Board), rating types: (everyone, everyone 10+, teen, maturity 17+, adult only 18+, not rating), content descriptors (different types), real-time strategy (RTS), shooters (FPS and TPS), simulation and sports, puzzle, role playing, simulation, strategy, sports, MMO (massive multiplayer online game), action, action-adventure, survival and horror, platformer, platform game, action game, fighting game, browser game, mobile game, video game development, developer, supported platforms, iOS, Android, Windows phones/PC, Mac OS, Tixen OS, Fire OS, Linux, HTML5, Xbox, Playstations, VR Platforms, publishing, licenses

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

Students will be able to evaluate and rate games.

CTSO Connection:

FBLA: Digital Design & Promotion, Computer Game & Simulation Programming, 3D Animation.
DECA: Graphic Communications

Certification/Credential Connection:

Certified Guest Services Gold, App Development, IC3, Python, Software Development, Introduction to programming.

Unit 4 Title: Game Design and Development Process

Content Standards

6. Summarize the game design production cycle.

7. Define the roles and responsibilities of team members on a video game design team and identify their typical short- and long-term goals.

8. Demonstrate game concept development process and roles both independently and as part of a team.

9. Compare and contrast communication features and interface design.

10. Assess and apply strategies to prevent, debug, and eliminate problems.

11. Develop an end goal game strategy and feedback needed to progress through the game.

12. Incorporate a user friendly experience for design functionality which allows players to change movements, immerse themselves in the environment, and take control or drive on their own.

13. Include interface elements in game design.

14. Create an original game design which executes game concept development, communication features, interface design, game strategy, and immersification.
    14a. Create a title page for an original project with instructions, characters, levels, puzzles, art, graphics, animation, and clear navigation including start, pause, quit level, and end game.

Unpacked Learning Objectives

Students know:

- How to identify the different steps in the design process of video gaming.
- How to coordinate project activities with other team members.
- How to create a project timeline.
- What are the estimated costs to develop this game?

- Do we have the technological capabilities to build it?
- Concepts required for development.
- How big will our team need to be?
- What is our estimated timeframe and project timeline?
- What are the different user interfaces?
- The elements of different user interfaces.
- Design tools for building user interfaces.
- What a bug is.
- Types of bugs/errors.
- What debugging is.
- How to develop an end-goal game strategy.
- What are the elements of a strategy game?
- What are the different types of movement systems?
- How to create mechanical concepts when developing movement.
- What is User Interface?
- Difference between good and bad user interface.
- How to code all gaming concepts.
- Step-by-step procedures for coding and executing the title page.

Students are able to:

- Explain the different steps of the gaming design production cycle from start to finish.
- Create a plan of work for team members utilizing their skill set to fulfill the short- and long-term goals of video game design.
- Determine the cost of the development process.
- What concepts and game genres are used in development.
- Understand the features, descriptions, features, story, target audience, platform, timeline, and marketing, along with data analysis of the development process.
- Demonstrate an understanding of the components and features of the user interface.
- Demonstrate how to detect and debug gaming software.
- How to test along the way while developing software.
- Develop a strategy game and describe the step-by-step process of progressing throughout the game.
- Develop a game design that allows the player the ability to move in the game environment and control or drive.
- Determine the difference in creating a good and bad UI experience for the player.
- How to incorporate the correct elements for a good UI experience.
- Develop and execute all the elements of creating an immersive gaming experience using all the gaming concepts.
- Develop a title page that illustrates the instructions, characters, levels, puzzles, art, graphics, animation, and clear navigation, including start,

pause, quit level, and end game.

Students understand that:

- The actions that it takes to make a video game, from an idea to publishing.
- Utilizing strong project management techniques and understanding the skill set of the team members are essential to completing an effective team project.
- The game design concept will include all the information for producing the game from start to finish.
- All the elements and types of user interface needed in the design and development process.
- How to create error-free software applications
- The differences between strategy and luck-based games.
- How to develop an effective, user-friendly and functional game experience,where the player is immersed in the experience and controls their device.
- Creating a good user interface is very important to gaming design.
- The basics of creating and executing a complete game and simulation program.
- Game design provides the users a perspective and context for the game. It should provide a general flow from which you can explore different game ideas but should not include every option.

Unit Driving/Essential Question	What is the meaning of debugging?
Exemplar High Quality Unit Task	Students will demonstrate how to detect and debug gaming software.

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Students will demonstrate conceptual understanding of the game design process by identifying the primary steps in the design process.	Formative: Students will be assessed on their infographic.	Students will complete an infographic or poster illustrating their understanding of the primary steps in the design process. Students will write two sentences to explain each function.	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer Internet Interactive Board Code.org Software
Students can demonstrate the understanding of building a team and creating short- and long-term project goals.	Formative: Students will be assessed through observation.	Students will brainstorm with a peer and create a list of short-and long-term project goals.	MATH: Students will be able to estimate the costs to build a team with short- and long-term project goals. SS: Evaluate how the gaming designs can	Computer Printer Internet Interactive Board

			increase or decrease profitability	Code.org Software
Show proof of gaming concepts needed in the development process of the game design both independently and as part of a team.	Formative: Students will be assessed through observation.	Students will work in groups of 3-4 people. Each member of the team will develop a gaming concept individually, As a team, they will bring all of the components together to design the game.	SS: Examine the benefits and challenges of collaborating with others in the development process	Computer Printer Internet Interactive Board Code.org Software
Students can differentiate the components of a user interface.	Formative: Students will be assessed on their charts.	Students will research the components of a user interface and create a chart to differentiate between the different types of user interfaces.	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer Internet Interactive Board Code.org Software
Students can demonstrate techniques to reduce errors in the gaming design.	Formative: Students will be assessed through observation	Students will work with a game that has errors in the programming. Students will debug the game to correct errors.	SS: Evaluate how errors affect profitability	Computer Printer Internet Interactive Board Code.org Software

Students develop a strategy game. Students explains the step-by-step process to complete the game	Formative: Students will be assessed through their think-pair-share.	Students will do a think-pair-share, explaining the step-by-step process to complete a strategy game.	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer Internet Interactive Board Code.org Software
Students develop a good pace game design that gives players the ability to use movement and the ability to drive on their own.	Formative: Students will be assessed through observation.	Students will use the counter pattern to increase a car's position and increase a car's velocity. Students will discuss how using the counter pattern and velocity causes the car to move more quickly.	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer Internet Interactive Board Code.org Software
Students create interface elements that the user thinks they understand what to create and provide feedback on what the interface did.	Formative: Students will be assessed through observation.	Students have written many games so far that are written to run with input from the user. Students will discuss how adding a user interface makes the games more useful, effective, and entertaining.	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer Internet Interactive Board Code.org Software
Students design a game that incorporates game concept development, communication features,	Summative: Students will be assessed on their peer feedback forms, and a written test.	Students will plan and build an original game using the project guide from the instructor. Working in pairs,	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer

interface design, game strategy, and immersification.		students will plan, develop, and give feedback on the game. After incorporating the peer feedback, students will share the completed games.		Internet Interactive Board Code.org Software
Students design a title page that illustrates the following features: instructions, characters, levels, puzzles, art, graphics, animation, and clear navigation including start, pause, quit level, and end game information.	Formative: Students will be assessed on their title page.	Students will research title pages to view examples. Students will create a title page that includes: instructions, characters, levels, puzzles, art, graphics, animation, navigation, start, pause, quit, and end game.	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer Internet Interactive Board Code.org Software

Key Vocabulary

virtual characters, non-player characters, concept drawing, 2D/3D art, rigging, animation, conceptualize, rapid prototype, project planning, short-term goals, long-term goals, roles, responsibilities, producer, programmer, concept artist, level editor, animator, testes, script writer, level design, storytelling, animation, proof of concept, User Interface Design (UI), visual elements, UX design, color schemes, typography, input, controls, navigation components, informational components, design tools, debugging, building, bug, strategy gaming, character, skeletons, parenting, child, inverse kinematics, motion capture, run, speed, User Interface (UI), input, output, hotkeys, usability, user model, program model, immersification, title screen, loading screen, levels, puzzles, art, graphics, animation

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

Students will learn strong project management techniques.

CTSO Connection:

FBLA: Digital Video Production, Promotional Graphics, Computer Game & Simulation Programming, Mobile Application Development,. DECA: Advertising Design, Digital Cinema Production

Certification/Credential Connection:

Certified Guest Services Gold, App Development, IC3, Python, Software Development, Introduction to programming.

Unit 5 Title: Software Application

Content Standards

15. Identify tools and software commonly used in game development, including web page and graphic design, art, and animation.

16. Utilize vector, modeling, and paint programs used to make graphics and animation.
    16a. Explain the principles of 2D and 3D animation as they relate to game graphics

17. Explain the use of readme files and source codes, and demonstrate appropriate documentation for templates, libraries, and copyrighted materials used.

Unpacked Learning Objectives

Students know:

- What developing steps are needed in making games.
- What is included in the process of game design.
- What are web languages?
- Which software applications are needed to create vectors, modeling, and paint in gaming development.
- Differences in modeling applications.
- What kind of technology must be used to create 2D and 3D animation?
- How 3D animation works in a gaming engine.
- How to write a good readme file.
- Where needs to be included in a readme file.
- How readme files should be interpreted by the end user and developer.
- What are the different types of libraries?
- What is the intellectual property protection of video games?
- Components of a digital experience platform.

Students are able to:

- Describe the tools and software used for gaming development.
- Describe the tools and software applications needed to develop web pages, graphic designs, art, and animation for gaming development.
- Create vectors, modeling, and paint techniques to create graphics and animation in gaming software.

- How to demonstrate their understanding of 2D and 3D animation.
- Compare different animation principles.
- Create an effective readme file that can be understood by end users.
- Demonstrate how to create a readme template in gaming software.
- Explain the reasons for gaming libraries.
- Explain the different intellectual protections of video games.

Students understand:

- How to code in several programming languages.
- How to code animation and game engines.
- The different kinds of playtesting.
- How to get constructive feedback.
- Gained knowledge of techniques to implement game mechanics, game play, flow and game design.
- The elements to retain player interest.
- The techniques for maintaining play interest.

Unit Driving/Essential Question	What is the appropriate documentation for templates, libraries, and copyrighted materials.
Exemplar High Quality Unit Task	Students will explain the need for gaming libraries.

Map of Student Learning by Learning Objective

Unpacked Learning Objective SWBAT	Potential Subtasks for Assessments Formative/Summative	Potential Learning Activities Learning Activity Checklist Link to Differentiation Examples	Integrated and Related Academic Content: ELA, Math, Science, and/or Social Studies Concepts & Activities	Equipment, Technology & Materials Equipment List by CTE Cluster Link to Helpful Tech Tools
Students can list the video gaming software.	Formative: Students will be assessed on their fact sheets.	Students will create a fact sheet to list all the gaming software.	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer Internet Interactive Board Code.org Software
Students can demonstrate how to use vectors, modeling, and paint techniques in creating elements in gaming software.	Formative: Students will be assessed through observation.	Students should brainstorm quietly and write down how to use vectors, modeling, and paint techniques to create elements in gaming software. Afterward, the instructor will lead a share-out discussion.	MATH: Students will be able to do basic operations with vectors and use vectors in gaming software, such as representing the velocity of players, controlling where they are aiming, or what they can	Computer Printer Internet Interactive Board

			see (where they are facing) and etc. SS: Evaluate how the gaming designs can increase or decrease profitability	Code.org Software
Students can explain the difference in 2D and 3D gaming graphic features.	Formative: Students will be assessed on their charts.	Students will complete a chart where they will compare and contrast the differences in 2D and 3D gaming graphic features. Students will discuss their charts with the class.	MATH: Compare 2D and 3D gaming graphic features by their numerical data to demonstrate the differences using quantitative analysis. SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer Internet Interactive Board Code.org Software
Students can describe the differences and functions of readme and source code for gaming. Students can list the fields that should be in the readme template, how to create the syntax, and how to interpret the code. Students can explain the reason for building libraries. Explain the intellectual protection of video games.	Summative: Students will be assessed on their rubric.	Students will create a PowerPoint presentation and using a rubric they will describe the differences and functions of readme and source code for gaming. List the fields that should be in the readme template, explain how to create the syntax, and how to interpret the code. Explain the need for building libraries. Explain the intellectual protection of video games.	SS: Examine copyright laws for video games	Computer Printer Internet Interactive Board Code.org Software

Key Vocabulary

game development, game mechanics, core game concept, character design, narrative and plot, level design, Integrated Developer Environment (IDE), digital art, Photoshop, C++, Java, open source, user interface, raster, vector, modeling, game artist, concept artist, game animators, illustrator, 2D, 3D, keyframes, GPU, vertex weights, Digital Asset Exporter (DAE), animation, game graphic, object, squash and stretch, anticipation, staging, straight ahead action and pose-to-pose, follow through and overlapping action, ease in, ease out, arcs, secondary action timing, exaggeration, solid drawing, appeal, readme file, source code, patches, updates, project title, motivation, build status, code style, tech and framework, features, API reference, credit, license, syntax, markdown documentation, dynamic Link Libraries (DLL), executables, intellectual, property, copyright, patent, trademark

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

Students will learn how to use vectors, modeling, and paint techniques to create elements in gaming software.

CTSO Connection:

FBLA: Digital Stories, Computer Game & Simulation Programming, 3D Animation, Data Analysis, Data Design 7 Application.
DECA: 3-D Visualization and Animation, Audio/Radio Production

Certification/Credential Connection:

Certified Guest Services Gold, App Development, IC3, Python, Software Development, Introduction to programming.

Unit 6 Title: Post-Production (Game Testing, Enhancement, and Release)

Content Standards

18. Enhance or upgrade an original stand-alone or online game using various computer programming languages or game/animation engines to write code and implement programming skills.
    18a. Integrate created assets into a functional digital platform with a logical theme or concept.

19. Execute an original game and implement game testing.
    19a. Demonstrate an understanding of the techniques used to evaluate game mechanics, game play, flow, and game design.
    19b. Analyze design elements that maintain player interest and vary the degree of challenge.

20. Demonstrate project management skills, utilize feedback data to improve an original game, and add advanced features.

Unpacked Learning Objectives

Students know:

- Code in various programming languages.
- Code animation and game engines.
- Code themes and concepts in a digital platform.
- Execute an original game utilizing gaming elements.
- Execute an effective playtesting environment for game testing.
- Execute the gaming mechanics and techniques gained throughout the course.
- Develop design elements that retain players interest.
- Create different degree challenges that will enhance player interest.

Students are able to:

- Understand that previously gained knowledge of programming languages and game animation techniques will allow them to upgrade, modify, and update gaming programs.
- Understand that a digital experience platform delivers a customer experience by bridging the gaps between various technological layers.
- Understand that creating an original game will allow them to begin to understand the full scope of building gaming software.
- Understand that techniques learned throughout the course will allow them to develop an original game with specific gaming mechanics and

techniques.
- Understand that simple steps can boost player engagement and retention to retain player interest.

Students understand that:
- How to research and look for industry jobs.
- What skills are needed.
- What kind of training is needed and where that training can be received.
- How to develop a career plan
- What is needed to gain sufficient training in gaming and simulation programming.
- The necessary skills needed to gain additional knowledge in the gaming field.
- The difference between a game and a simulation.

Unit Driving/Essential Question	What is the difference between a game and a simulation?
Exemplar High Quality Unit Task	Students will create a KWL chart making a list of the differences between a game and a simulation. What you already know and what you want to know about gaming and simulation.

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Students will demonstrate the ability to utilize several different programming languages by modifying or enhancing code or writing code for game animation.	Formative: Students will be assessed on a fact sheet.	Students will create a fact sheet to list several different programming languages.	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer Internet Interactive Board Code.org Software
Students can implement themes and concepts in a functional digital platform.	Formative: Students will be assessed through observation.	Students will implement themes and concepts into the game they have created.	SS: Compare and contrast profitability of digital vs. typical games	Computer Printer Internet Interactive Board

				Code.org Software
Students can create a plan of work for creating an original game. Students can develop a solid game – building, versioning, debugging, and optimization. Students can coordinate and produce a game with design elements.	Summative: Students will be assessed on their google slide presentation using a rubric.	Students will create a google slides presentation to design a video game. They create a title, main character names, main character designs, scene descriptions, music compositions by Mario paint composer, and explanations for how the music fits into the scene. Students will develop different versions of the game, debugging, and optimization.	SS: Conduct a study to predict future profit of game	Computer Printer Internet Interactive Board Code.org Software
Students will execute the techniques used to evaluate game mechanics, game play, flow, and game design.	Formative: Students will be assessed through observation.	Students will evaluate a game that they have created and determine the mechanics, gameplay, flow, and game design.	SS: Design improvements to increase profitability	Computer Printer Internet Interactive Board Code.org Software
Students will demonstrate a full understanding of the important elements of player interest.	Formative: Students will be assessed through observation.	Students will share tricks they learned as they went through game levels in a class discussion.	SS: Evaluate how the gaming designs can increase or decrease profitability	Computer Printer

				Internet Interactive Board Code.org Software
Students demonstrate the ability to create a plan, meet targets/deadlines, while managing a team of students. Students will demonstrate use of feedback and play testing to modify gaming applications. Students will implement advanced features in the game.	Formative: Students will be assessed through observation.	Students will combine the constructs that they have learned to program more complex movements and collisions in their games. As they create more complex programs, they begin to use functions to organize their code. In the end, students use a design process to create an original game. Students will work individually or in pairs, to plan, develop, and give feedback on the game.	SS: Work collegiately with others, use leadership skills to manage team	Computer Printer Internet Interactive Board Code.org Software

Key Vocabulary

stand-alone game, online games, attract, engage, convert, support, retain, content management, web experience, management, e-commerce, playtesting, non-designer playtester, feedback, quality assurance, order of effects, time barter systems, blindtesting, contingency planning, engagement, rewards, atmospheric changes, plotline

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

Students will evaluate a game that they have created and determine the mechanics.

CTSO Connection:

FBLA: Business Ethics, Cyber Security, E-Business, Computer Problem Solving, Computer Game & Simulation Programming, 3D Animation. DECA: Business Law, Ethics, Team Decision Making

Certification/Credential Connection:

Certified Guest Services Gold, App Development, IC3, Python, Software Development, Introduction to programming.

Unit 7 Title: Career Awareness

Content Standards

21. Gather information on the gaming industry, including career opportunities and training in game design and production.
    21a. Connect information to personal interests and develop a plan for a possible future career in the field of computer gaming and simulation programming.

22. Develop a plan to identify and enhance any workplace skills needing improvement in the computer game field.
    22a. Create a computer game or simulation designed to improve workplace skills.

Unpacked Learning Objectives

Students know:

- Explain career opportunities in the gaming and simulation field and what training is needed.
- Outline a career plan aligned with personal interest to determine the ability to receive training in gaming and simulation programming.
- List workplace skills that will improve their success in computer gaming.
- Develop either a game or simulation that describes the workplace skills needed for computer gaming.

Students are able to:

- Understand that there are many possible fields in gaming and simulation, what training is needed, where to get training and an estimate of the time, and cost to get trained.
- Understand that thorough career research and planning can allow a student a successful pathway in a career.
- Understand that additional workplace skills are necessary for success in gaming and any field they are seeking.
- Understand that creating a simulation or game that provides workplace and soft skills can help them prepare for their post-secondary careers.

Students understand that:

- There are many possible fields in gaming and simulation, what training is needed, where to get training, and an estimate of the time and cost to get trained.
- Thorough career research and planning can allow a student a successful pathway in a career.
- Additional workplace skills are necessary for success in gaming and any field they are seeking.
- Creating a simulation or game that provides workplace and soft skills can help them prepare for their post-secondary careers.

Unit Driving/Essential Question	Students will list three soft skills and three workplace skills for a simulation or gaming career.
Exemplar High Quality Unit Task	Students will create a career plan.

Map of Student Learning by Learning Objective

Unpacked Learning Objective SWBAT	Potential Subtasks for Assessments Formative/Summative	Potential Learning Activities Learning Activity Checklist Link to Differentiation Examples	Integrated and Related Academic Content: ELA, Math, Science, and/or Social Studies Concepts & Activities	Equipment, Technology & Materials Equipment List by CTE Cluster Link to Helpful Tech Tools
Students demonstrate knowledge of the gaming industry. Students can explain career opportunities in the gaming industry. Students can explain what training is available in game design and production.	Summative: Students will be assessed through a rubric.	Students will create a PowerPoint presentation and using a rubric they will demonstrate knowledge of the gaming industry, explain career opportunities in the gaming industry, and explain what training is available in game design and production.	MATH: Project: Students will research different careers in the gaming industry by comparing their average starting salary along with the costs to achieve the minimum employment requirement, such as education, certification, professional training, and etc. SS: Evaluate how the gaming industry impacts the economy	Computer Printer Internet Interactive Board Code.org Software
Students can relate their interests and create a plan for dual enrollment and/or post-secondary training in	Formative: Students will be assessed through observation.	Students will create a plan by researching post-secondary gaming and simulation programs.	SS: Research the career aspects of the gaming industry including salary, expenses, and benefits	Computer Printer

gaming and simulation programming.		Students will start applying to these schools for admission.		Internet Interactive Board Code.org Software
Students will create a plan outlining workplace skills that will improve their success in the computer gaming field.	Formative: Students will be assessed through a fact sheet.	Students will create a fact sheet and outline workplace skills to improve their success in the computer gaming field.	SS: Work collegiately with others, use leadership skills to manage team	Computer Printer Internet Interactive Board Code.org Software
Students will program a game simulation that relates to workplace skills.	Formative: Students will be assessed through observation.	Students will program a game simulation to demonstrate workplace skills to future employees.	SS: Work collegiately with others, use leadership skills to manage team	Computer Printer Internet Interactive Board Code.org Software

Key Vocabulary

games designer, software developer and game programmer, audio engineer, games animator, games artist, interpreters and translators, game play tester, professional gamer, career interest profile, workplace skills, soft skills, deep learning, critical thinking, scientific reasoning, action-directed learning, transformative learning, decision-making skills, problem-solving skills, soft skills, post-secondary

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

Students will program a game simulation to demonstrate workplace skills to future employees.

CTSO Connection:

FBLA: Digital Video Production, Business Communication, Computer Game & Simulation Programming. DECA: 3-D Visualization, Animation, Photography

Certification/Credential Connection:

Certified Guest Services Gold, App Development, IC3, Python, Software Development, Introduction to programming.