

**Syracuse City School District
Career and Technical Education Program
Course Syllabus
7th Grade CTE: Game Design**



Course Description

Students in 7th grade Career and Technical Education: Game Design continue to develop the computational thinking and design skills introduced in 6th grade Career and Technical Education. During this 10-week course students actively work through a design process as they design, create and test a computer-based product, specifically a game developed within parameters for a specific audience and outcomes. Project based learning is employed enabling students to learn key skills as they work through the design process in a guided fashion. A key component embedded within the course is an introduction to careers related to the broader field of computer science.

AVID (Advancement Via Individual Determination)

SCSD is an AVID school district. AVID is a college and career readiness system whose mission is to close the opportunity gap by preparing all students for college readiness and success in a global society. Part of the AVID system is focused on instruction which is centered around WICOR (Writing, Inquiry, Collaboration, Organization and Reading). WICOR strategies are designed to help students engage with content, take ownership of their learning, and become independent learners. WICOR strategies are incorporated into each unit.

Work-Based Learning

- Students will be exposed to a wide variety of applications for computational thinking skills and practices.
- Students will interview working professionals from different careers and occupations demonstrating application of computational skills and practices through Career Coaching.
- Students will participate in field trips to high school CTE Pathway programs and local workplaces to broaden their ideas about application of computational skills and practices.
- Students will be mentored by current high school CTE students and will create and maintain a portfolio of their work-based learning experiences throughout the course.

Course Objectives

Students will be able to:

- Create a computer game using a specific programming language.
- Implement a design process to organize and plan for programming work.
- Apply story mapping and flowcharts to organize thoughts and plan ideas prior to coding their design.
- Gather information through surveys to obtain user feedback.
- Implement on-line survey tools recognizing that data collection tools can be both quantitative and qualitative.
- Evaluate results of survey data to determine and evaluate next steps in the design process.
- Articulate key aspects of a broad sampling of careers and educational pathways within the field of computer science such as: computer forensics, cyber security, computer information systems, geospatial technology, health information technology, electrical technology, mechanical technology, media communication, and remotely piloted aircraft systems.
- Explain and demonstrate the CCTC Career Ready Practices.
- Assess and describe their own strengths and abilities and areas where they need to grow and develop.
- Explain and demonstrate what professionalism looks like at school and in the workplace.
- Explain and demonstrate effective communication and teamwork skills.
- Demonstrate creativity, collaboration, and perseverance.

Equipment and Supplies

- **School will provide:** All required materials.
- **Student will provide:** NA

Textbook

N/A

Grading

- 40% Class Work Assignments, and Assessments
- 60% Projects, Presentations

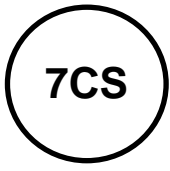
Additional Course Policies

Students are expected to:

- Be on time for class.
- Produce their best work, including being prepared for in-class presentations.
- Participate in class including contributing to discussions and critiquing their own and others' work, as well as diligently working on their own projects during the class period.
- Seek help when needed.
- Be attentive during class, ask questions if they do not understand something, and offer their opinions.

Course Calendar

Quarter	Units of Study
1	<p>Class Expectations</p> <p>Project Launch: Ask Phase</p> <p>Exploration of Careers in Computer Science</p> <p>Project: Imagine Phase</p> <p>Career Exploration: Self-Reflection</p> <p>Project: Plan and Create Phase</p> <p>Career Exploration: Interviews and Shadowing to Broaden Understanding</p> <p>Project: Evaluate and Improve</p> <p>Career Exploration: Related Careers and Applied Skills</p> <p>Project: Reflect and Communicate (Product and Process)</p> <p>Career Exploration: Reflection on career ready standards</p> <p>Share Career Interests</p>



**Syracuse City School District
Career and Technical Education Program
Scope and Sequence
7th Grade Game Design**



Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	Possible Projects/Activities	CCTC and NYS Standards
<p>Week 1</p> <p>Class Expectations</p> <p>Project Launch: Ask Phase</p> <p>Exploration of Careers in Computer Science</p>	<ul style="list-style-type: none"> • What are the expectations for students in the 7th grade CTE class? • Why is it important to know about your classmates? • What is the difference between collaboration, working together, and teamwork? • How do teams work together? • How do I work within a team? • What is computational thinking and the design process? • What is game design? • How will we design a game for an end-user? • How does a design journal support development of a project? • What information do we need to know to understand the project? • How can literacy strategies support comprehension of technical reading? • What does an end-user need in a game? • What type of game will we be designing? • What criteria and constraints will our game need to satisfy? 	<ul style="list-style-type: none"> • Identify and describe classroom policies and procedures. • Explain and demonstrate different ways to collaborate, work together, and function as a team. • Articulate skills and attributes that make a good team member (career ready skills). • Explain how a design process is used to organize and plan for programming work. • Describe basic steps required to design a game. • Articulate that computer games are created using specific programming languages. • Create a design journal. • Create questions to guide individual learning. • Synthesis information from a technical article and summarize relevant information. • Describe what might engage an end-user. • Name constraints and criteria specific to this project. • Develop a problem statement identifying audience, game focus, constraints and criteria. • Name careers within game design and related fields. • Explain what skills, experiences and interests are required within the field of computer science. • Create a professional portfolio. • Define career ready skills. 	<p>Written</p> <ul style="list-style-type: none"> • Assignments • Self-Assessment • Design Journal <p>Performance</p> <ul style="list-style-type: none"> • Teacher Observation • Personal portfolio on careers and career ready skills • Completion of project launch to include development of know and need to know chart, initial research, and initial problem statement 	<ul style="list-style-type: none"> • See attached resource: Game Design Unit 1-2 	<p>Career Ready Practices CRP 1,11,12</p> <hr/> <p>ELA 7R1 7SL 1,2,4,6 7L 1,3,4,6</p> <hr/> <p>Literacy 6-8 RST 1,2,4,5</p> <hr/> <p>CSDF 7-8.IC.7 7-8.CT.10 7-8.DL.2</p>

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	Possible Projects/Activities	CCTC and NYS Standards
	<ul style="list-style-type: none"> • How does a problem state guide a project? • What are some careers related to game design within computer science career pathways? • What are key skills and traits needed by successful game developers? • What does it mean to be career ready? 				
<p>Week 2</p> <p>Project: Imagine Phase</p> <p>Career Exploration: Self-Reflection</p>	<ul style="list-style-type: none"> • What elements make a game fun? • How is a survey designed? • How is a survey shared and data collected? • What is a histogram? • How does a histogram assist in analysis of data? • How do we incorporate ideas to appeal to our end-user (interests, supports, focus, types of game)? • What are the basic categories of games and key characteristics of each type? • How do we generate ideas for our game? • What skills and traits do I demonstrate that support success for career readiness? • What are my interests, skills and traits related to game design and computer science careers? 	<ul style="list-style-type: none"> • Name how games are fun and why responses will differ from person to person. • Demonstrate how surveys are used to gather information about participants' opinions. • Demonstrate how surveys can be delivered using online survey tools to gather both quantitative and qualitative data. • Create or select questions to build a survey. • Collect data and produce a histogram. • Analyze a histogram to develop criteria and constraints for the game. • Articulate what may need to be included in the game to engage the intended audience. • Generate broad and inclusive elements for games. • Evaluate questions to answer, refine or reformat in need-to-know statements as information and personal experiences build. • Revise initial problem statement as needed to refine focus of project. • Document progress in design journal. • Record personal assessment of skills and strengths. • Create personal growth goal for career ready skills. 	<p>Written</p> <ul style="list-style-type: none"> • Assignments • Design Journal • Personal portfolio on careers and career ready skills <p>Performance</p> <ul style="list-style-type: none"> • Teacher Observation • Class participation • Class participation in discussions- small group and whole group and chart creation 	<ul style="list-style-type: none"> • See attached resource: Game Design Unit 1-2 	<p>Career Ready Practices CRP 1,2,4,7,8, 10,12</p> <p>ELA 7SL 1,2,4,5,6 7L 1,3,4,6</p> <p>Literacy 6-8 RST 2 6-8 WHST 2</p> <p>CSDF 7-8.IC.7 7-8.CT.10 7-8.DL.2</p>

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	Possible Projects/Activities	CCTC and NYS Standards
<p>Week 3-6</p> <p>Project: Plan and Create Phase</p> <p>Career Exploration: Interviews and Shadowing to Broaden Understanding</p>	<ul style="list-style-type: none"> How can we narrow a game down to its essential elements? How can we develop and test a minimally viable project for our game design? How can group members support each other in an efficient and effective manner? How does a storyboard support game development? How is a storyboard created? How are relevant questions developed for a survey to test audience reaction? How does data inform revisions? How is Scratch organized and accessed? What coding skills are required for my design? How are loops incorporated into code? What is a prototype and how is it developed? Why is the game design document important? What are opportunities within the school district to pursue careers in computer science? What does a career in computer science related fields look like? What do professionals and others pursuing this career pathway do and what are educational requirements? 	<ul style="list-style-type: none"> Evaluate questions to add, refine or reformat in need-to-know statements as information and personal experiences build. Determine essential elements for the project game. Determine what is a minimally viable product for the project game. Determine team roles and responsibilities. Demonstrate team members taking individual responsibility, demonstrating good communication skills and striving towards common goals (career readiness skills). Evaluate why game designers and coders use story mapping and flowcharts to organize their thoughts and plan out their ideas before coding their design. Create a storyboard for the game. Develop a survey to gather data regarding intended audience receptivity. Evaluate and incorporate feedback into the design process. Demonstrate use of tutorials to learn, review or augment coding skills. Create a prototype of design (initial steps). Create/revise a game design document. Identify district pathways and opportunities related to computer science. Develop questions to interview professionals and upper-level students. Summarize information from visits and interviews. 	<p>Written</p> <ul style="list-style-type: none"> Assignments Design Journal Personal portfolio on careers and career ready skills <p>Performance</p> <ul style="list-style-type: none"> Teacher Observation Team products and process 	<ul style="list-style-type: none"> See attached resource: Game Design Unit 1-3 	<p>Career Ready Practices CRP 1,2,4,6,7,8,12</p> <p>ELA 7SL 1,2,4,5,6 7L 1,3,4,6</p> <p>Literacy 6-8 RST 2 6-8 WHST 2</p> <p>CSDF 7-8.IC.7 7-8.CT.4 7-8.CT.5 7-8.CT.6 7-8.CT.8 7-8.CT.9 7-8.CT.10 7-8.DL.2</p>

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	Possible Projects/Activities	CCTC and NYS Standards
<p>Weeks 7-8</p> <p>Project: Evaluate and Improve</p> <p>Career Exploration: Related Careers and Applied Skills</p>	<ul style="list-style-type: none"> How is a product tested? What does feedback indicate regarding audience engagement and interest? How can survey data be used to determine next steps for design? How is feedback incorporated into future designs? What are the strengths of our design? What are areas needed to revise in the next iteration? What are other careers related to game design? What are key skills and traits needed by successful game developers? How are skills used by game developers also necessary for success in other careers? 	<ul style="list-style-type: none"> Participate in the test protocol for the game. Define test audience and data collection tool (survey). Summarize results from testing protocol by creating a histogram. Compose an analysis of feedback data. Propose improvements based on testing feedback. Integrate improvements into the game (as time allows). Name careers related to game design. Describe skills employed in game design and how such skills apply to broader careers. 	<p>Written</p> <ul style="list-style-type: none"> Assignments Design Journal Self-Assessments Personal portfolio on careers and career ready skills <p>Performance</p> <ul style="list-style-type: none"> Team Presentations Teacher Observation Development of project 	<ul style="list-style-type: none"> See attached resource: Game Design Unit 1-4 	<p>Career Ready Practices CRP 1,2,4,6,7,8,12</p> <p>ELA 7SL 1,2,4,5,6 7L 1,3,4,6</p> <p>Literacy 6-8 RST 2 6-8 WHST 2</p> <p>CSDf 7-8.IC.7 7-8.CT.6 7-8.CT.8 7-8.CT.9 7-8.CT.10 7-8.DL.2</p>
<p>Weeks 9</p> <p>Project: Reflect and Communicate (Product and Process)</p> <p>Career Exploration: Reflection on career ready standards</p>	<ul style="list-style-type: none"> How is a game marketed to an intended audience? What supporting documents need to be developed? How can team projects (product and reflection) be communicated and shared with others? How did the team function? What personal skills were developed? What does it mean to be Career Ready? What career ready skills did the team and individuals demonstrate? 	<ul style="list-style-type: none"> Identify needed supporting documents (such as marketing flier, game FAQ, poster or visual aids for presentation). Create supporting documents. Evaluate team process. Reflect on personal learning. Evaluate project and process. Communicate scope and progress of project (product and process). Identify progress on career ready skills. 	<p>Written</p> <ul style="list-style-type: none"> Assignments Design Journal Personal portfolio on careers and career ready skills <p>Performance</p> <ul style="list-style-type: none"> Teacher Observation Presentation to share product and process (game) 	<ul style="list-style-type: none"> See attached resource: Game Design Unit 1-5 	<p>Career Ready Practices CRP 1,2,4,6,7,8,12</p> <p>ELA 7W 2 7SL 1,2,4,5,6 7L 1,3,4,6</p> <p>Literacy 6-8 WHST 1, 2</p> <p>CSDf 7-8. DL.2 7-8.DL.4 7-8.IC.7</p>

Time Frame Unit of Study	Key Questions	Key Learning Targets (Students will know and be able to)	Assessment Evidence of Learning	Possible Projects/Activities	CCTC and NYS Standards
Week 10 Share Career Interests	<ul style="list-style-type: none"> • What are potential career interests? • What skills, education and experience is required for careers of interest? • What skills does a person need to be successful in a career of interest? • How might game design skills support other computer science careers? • How does personal traits, skills and interests relate to computer science? 	<ul style="list-style-type: none"> • Articulate potential careers of interest and district pathways possibilities. • Articulate skills, education and experiences required for a specific career. • Articulate skills needed for success within a given field. • Communicate information about a career of interest to others. • Explain how game design skills relate to other careers. • Evaluate personal skills, attributes and interests. 	Written <ul style="list-style-type: none"> • Assignments • Self-Assessment • Personal portfolio on careers and career ready skills Performance <ul style="list-style-type: none"> • Class Presentations on careers • Teacher observation 	<ul style="list-style-type: none"> • See attached resource: Game Design Unit 1-5 	Career Ready Practices CRP 1,2,4,10 ELA 7SL 1,2,4,5,6 7L 1,3,4,6 Literacy 6-8 WHST 2,5 CSDF 7-8. DL.2 7-8.DL.4 7-8.IC.7

DRAFT

Standards

CCTC: Common Career and Technical Core

Career Ready Practices

1	Act as a responsible and contributing citizen and employee.
2	Apply appropriate academic and technical skills.
3	Attend to personal health and financial well-being.
4	Communicate clearly and effectively and with reason.
5	Consider the environmental, social, and economic impacts of decisions.
6	Demonstrate creativity and innovation.
7	Employ valid and reliable research strategies.
8	Utilize critical thinking to make sense of problems and persevere in solving them.
9	Model integrity, ethical leadership, and effective management.
10	Plan education and career paths aligned to personal goals.
11	Use technology to enhance productivity.
12	Work productively in teams while using cultural global competence.

Full Text: [Career Ready Practices](#)

NYS ELA Standards: 7th Grade Reading Standards (Literary and Informational Text)

Key Ideas and Details	
7R1	Cite textual evidence to support an analysis of what the text says explicitly/implicitly and make logical inferences. (RI&RL)
7R2	Determine a theme or central idea of a text and analyze its development over the course of the text; summarize a text. (RI&RL)
7R3	In literary texts, analyze how elements of plot are related, affect one another, and contribute to meaning. (RL) In informational texts, analyze how individuals, events, and ideas are introduced, relate to each other, and are developed. (RI)
Craft and Structure	
7R4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings. Analyze the impact of specific word choices on meaning, tone, and mood, including words with multiple meanings. (RI&RL)
7R5	In literary texts, analyze how structure, including genre-specific features, contributes to the development of themes or central ideas. (RL) In informational texts, analyze the structure an author uses to organize a text, including how the sections contribute to the whole and to the development of themes or central ideas. (RI)
7R6	In literary texts, analyze how an author develops and contrasts the point of view and the perspectives of different characters or narrators. (RL) In informational texts, analyze how the author distinguishes his or her position from that of others. (RI)
Integration of Knowledge and Ideas	
7R7	Compare and contrast a written text with audio, filmed, staged, or digital versions in order to analyze the effects of techniques unique to each media and each format's portrayal of a subject. (RI&RL)
7R8	Trace and evaluate the development of an argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient and recognizing when irrelevant evidence is introduced. (RI&RL)
7R9	Use established criteria in order to evaluate the quality of texts. Make connections to other texts, ideas, cultural perspectives, eras, and personal experiences. (RI&RL)

7th Grade Writing Standards

Text Types and Purposes	
7W1	Write arguments to support claims with clear reasons and relevant evidence.
7W1a	Introduce a precise claim, acknowledge and distinguish the claim from a counterclaim, and organize the reasons and evidence logically.
7W1b	Support claim(s) with logical reasoning and relevant evidence, using credible sources while demonstrating an understanding of the topic or text.
7W1c	Use precise language and content-specific vocabulary to argue a claim.
7W1d	Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts.
7W1e	Provide a concluding statement or section that explains the significance of the argument presented.
7W1f	Maintain a style and tone appropriate to the writing task.
7W2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
7W2a	Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast and cause/effect.
7W2b	Develop a topic with relevant facts, definitions, concrete details, quotations, or other information and examples; include formatting, graphics, and multimedia when useful to aid comprehension.
7W2c	Use precise language and content-specific vocabulary to explain a topic.
7W2d	Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts.
7W2e	Provide a concluding statement or section that explains the significance of the information presented.
7W2f	Establish and maintain a style appropriate to the writing task.
7W3	Write narratives to develop real or imagined experiences or events using effective techniques, descriptive details and clear sequencing.

7W3a	Engage the reader by establishing a point of view and introducing a narrator and/or characters.
7W3b	Use narrative techniques, such as dialogue and description, to develop experiences, events, and/or characters.
7W3c	Use a variety of transitional words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.
7W3d	Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.
7W3e	Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.
7W4	Create a poem, story, play, artwork, or other response to a text, author, theme, or personal experience.
7W5	Draw evidence from literary or informational texts to support analysis, reflection, and research. Apply the grade 7 Reading Standards to both literary and informational text, where applicable.
Research to Build and Present Knowledge	
7W6	Conduct research to answer questions, including self-generated questions, drawing on multiple sources and refocusing the inquiry when appropriate. Generate additional related questions for further research and investigation.
7W7	Gather relevant information from multiple sources; assess the credibility and accuracy of each source; quote or paraphrase the data and conclusions of others; avoid plagiarism and follow a standard format for citation

7th Grade Speaking and Listening

Comprehension and Collaboration	
7SL1	Engage effectively in a range of collaborative discussions with diverse partners; express ideas clearly and persuasively, and build on those of others.
7LS1a	Come to discussions prepared, having read or researched material under study; draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
7SL1b	Follow norms for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed
7SL1c	Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.
7SL1d	Acknowledge new information expressed by others and, when warranted, modify personal views.
7SL2	Analyze the central ideas and supporting details presented in diverse formats (e.g., including visual, quantitative, and oral) and explain how the ideas clarify and/or contribute to a topic, text, or issue under study.
7SL3	Delineate a speaker's argument and specific claims, evaluating for sound reasoning, and the relevance and sufficiency of the evidence.
Presentation of Knowledge and Ideas	
7SL4	Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear enunciation.
7SL5	Include digital media and/or visual displays in presentations to clarify claims and findings and emphasize salient points.
7SL6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

7th Grade Language Standards

Conventions of Academic English	
7L1	Demonstrate command of the conventions of academic English grammar and usage when writing or speaking*.
7L2	Demonstrate command of the conventions of academic English capitalization, punctuation, and spelling when writing*.
Knowledge of Language	
7L3	Use knowledge of language and its conventions when writing, speaking, reading, or listening
7L3a	Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.
Vocabulary Acquisition and Use	
7L4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies.

7L4a	Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
7L4b	Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., belligerent, bellicose, rebel).
7L4c	Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.
7L4d	Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
7L5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
7L5a	Interpret figurative language, including allusions, in context.
7L5b	Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words.
7L5c	Distinguish among the connotations of words with similar denotations (e.g., refined, respectful, polite, diplomatic, condescending).
7L6	Acquire and accurately use general academic and content-specific words and phrases; apply vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Core Conventions Skills for Grades 6-8

- Ensure that pronouns are in the proper case (subjective, objective, and possessive).
- Recognize and correct inappropriate shifts in pronoun number and person.
- Recognize and correct pronouns that have unclear or ambiguous antecedents.
- Explain the function of phrases and clauses in general, as well as in specific sentences.
- Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.
- Use simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.
- Explain the function of verbals (gerunds, participles, infinitives).
- Form and use verbs in the active and passive voice.
- Recognize and correct inappropriate verb shifts.

Core Punctuation and Spelling Skills for Grades 6-8

- Use punctuation (commas, parentheses, dashes, hyphens) to clarify and enhance writing.
- Use punctuation (comma, ellipsis, dash) to indicate a pause or break.
- Use an ellipsis to indicate an omission.

Full text found at [NYS ELA Standards](#).

NYS Literacy Standards: NYS Next Generation 6-12 Literacy Standards in History/Social Studies, Science, and Technical Subjects

Reading Standards for Literacy in Science and Technical Subjects 6	
6-8RST 1	Cite specific evidence to support analysis of scientific and technical texts, charts, graphs, diagrams, etc. Understand and follow a detailed set of directions.
6-8RST 2	Determine the central ideas or conclusions of a source; provide an accurate, objective summary of the source distinct from prior knowledge or opinions.
6-8RST 3	Describe how and why scientific ideas and reasoning are developed and modified over the course of a text, source, argument, etc.
6-8RST 4	Determine the meaning of symbols, key terms, and other content-specific words and phrases as they are used in scientific or technical sources.
6-8RST 5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
6-8RST 6	Identify purpose and/or point of view when an author is presenting information, describing a procedure, discussing an experiment, etc. Compare and contrast the information gained from two or more experiments, simulations, videos, multimedia sources, readings from texts, graphs, charts, etc. on the same topic.
6-8RST 7	Identify and match scientific or technical information presented as text with a version of that information presented visually (e.g., in a flowchart, diagram, model, graph, or table).
6-8RST 8	For scientific sources, distinguish between observation and inference-based judgments, and reasoned judgment and opinion. For technical sources, distinguish between facts and reasoned judgment.
6-8RST 9	Compare and contrast the information gained from two or more experiments, simulations, videos, multimedia sources, readings from texts, graphs, charts, etc. on the same topic.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6	
6-8WHST 1	Write arguments focused on discipline-specific content.
6-8WHST 2	Write informative/explanatory text focused on discipline-specific content.
6-8WHST 3	Write narratives to understand an event or topic, appropriate to discipline-specific norms, conventions, and tasks.
6-8WHST 4	Write responses to texts and to events (past and present), ideas, and theories that include personal, cultural, and thematic connections.
6-8WHST 5	Conduct short research projects to answer a question (including a self-generated question by the end of grade 8), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6-8WHST 6	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source by applying discipline-specific criteria used in the social sciences or sciences; and quote or paraphrase the data/accounts and conclusions of others while avoiding plagiarism and following a standard format for citation.
6-8WHST 7	Draw evidence from informational texts to support analysis, reflection, and research.

Full Text: [New York State 6-8 Next Generation ELA Standards at a Glance](#)

NYS K-12 Computer Science and Digital Fluency Learning Standards: Grade Band 7-8

Subconcept	Standard	
Impacts of Computing		
Society	7-8.IC.1	Compare and contrast tradeoffs associated with computing technologies that affect individuals and society.
	7-8.IC.2	Evaluate the impact of laws or regulations on the development and use of computing technologies and digital information.
Ethics	7-8.IC.3	Identify and discuss issues of ethics surrounding computing technologies and current events.
	7-8.IC.4	Identify and discuss issues related to the collection and use of public and private data.
	7-8.IC.5	Analyze potential sources of bias that could be introduced to complex computer systems and the potential impact of these biases on individuals.
Accessibility	7-8.IC.6	Assess the accessibility of a computing device or software application in terms of user needs.
Career Paths	7-8.IC.7	Explore a range of computer science related career paths.
Computational Thinking		
Modeling and Simulation	7-8.CT.1	Compare the results of alternative models or simulations to determine and evaluate how the input data and assumptions change the results.
Data Analysis and Visualization	7-8.CT.2	Collect and use digital data in a computational artifact.
	7-8.CT.3	Refine and visualize a data set in order to persuade an audience.
Abstraction and Decomposition	7-8.CT.4	Write a program using functions or procedures whose names or other documentation convey their purpose within the larger task.
	7-8.CT.5	Identify multiple similar concrete computations in a program, then create a function to generalize over them using parameters to accommodate their differences.
Algorithms and Programming	7-8.CT.6	Design, compare and refine algorithms for a specific task or within a program.
	7-8.CT.7	Design or remix a program that uses a variable to maintain the current value of a key piece of information.
	7-8.CT.8	Develop or remix a program that effectively combines one or more control structures for creative expression or to solve a problem.
	7-8.CT.9	Read and interpret code to predict the outcome of various programs that involve conditionals and repetition for the purposes of debugging.
	7-8.CT.10	Document the iterative design process of developing a computational artifact that incorporates user feedback and preferences.
Network and System Design		
Hardware and Software	7-8.NSD.1	Design a user interface for a computing technology that considers usability, accessibility, and desirability.
	7-8.NSD.2	Design a project that combines hardware and software components.
	7-8.NSD.3	Identify and fix problems with computing devices and their components using a systematic troubleshooting method or guide.
Networks and the Internet	7-8.NSD.4	Design a protocol for transmitting data through a multi-point network.
	7-8.NSD.5	Summarize how remote data is stored and accessed in a network.
Cybersecurity		
Risks	7-8.CY.1	Determine the types of personal information and digital resources that an individual may have access to that needs to be protected.
Safeguards	7-8.CY.2	Describe physical, digital, and behavioral safeguards that can be employed in different situations.
	7-8.CY.3	Describe trade-offs of implementing specific security safeguards.
	7-8.CY.4	Describe the limitations of cryptographic methods.
Response	7-8.CY.5	Describe actions to be taken before and after an application or device reports a security problem or performs unexpectedly.
Digital Literacy		
Digital Use	7-8.DL.1	Type on a keyboard while demonstrating proper keyboarding technique, with increased speed and accuracy.
	7-8.DL.2	Communicate and collaborate with others using a variety of digital tools to create and revise a collaborative product.

	7-8.DL.3	Compare types of search tools, choose a search tool for effectiveness and efficiency, and evaluate the quality of search tools based on returned results.
	7-8.DL.4	Select and use digital tools to create, revise, and publish digital artifacts.
	7-8.DL.5	Transfer knowledge of technology in order to explore new technologies.
Digital Citizenship	7-8.DL.6	Explain the connection between the persistence of data on the Internet, personal online identity, and personal privacy.
	7-8.DL.7	Describe safe, appropriate, positive, and responsible online behavior and identify strategies to combat negative online behavior.

Full Text: [New York State 7-8 Computer Science and Digital Fluency Learning Standards](#)

DRAFT

SCSD Grade 7

Unit 1 - 1: Game Design – Ask Phase

CTE Content Focus: Computer Science

3 INSTRUCTIONAL DAYS

Unit Focus	Unit Text Set
<p>This is part 1 of a 5 part project-based learning (PBL) unit on game design. Students will be solving the problem of designing a game using scratch that appeals to middle school students. By the end of this unit they will need to prepare:</p> <ul style="list-style-type: none">• Marketing Materials (Flyer and/or Commercial)• Gam FAQ• Poster presentation documenting their use of the engineering design process. <p>In this phase, students will be introduced to the problem, start their know/need-to-knows, conduct some initial reading and research on game design, and develop a problem statement for the type of game they want to design.</p>	<p>Project Scenario</p> <p>Article 1: Game Design Basics</p> <p>Article 2: What is Coding and How Does it Work?</p> <p>Article 3: 4 Major Reasons You Need Coding Skills</p>
Unit Anchor Charts/Instructional Tools	
<p>Project Scenario</p> <p>Design Journal – students will keep a design journal throughout the project.</p> <p>Know/Need-to-Knows</p> <p>Say-Mean-Matter chart</p> <p>Empathy Map</p> <p>Problem Statement</p>	

Guiding Questions & Big Ideas

Essential Question: How can we design, create, and test a basic computer game for a specific demographic group?

Ask/Inquire Questions:

- What is game design?
- How will we design a game for an end-user?
- What information do we need to know to understand the project?
- What does our end-user need in a game?
- What type of game will we be designing?
- What criteria and constraints will our game need to satisfy?

Final Tasks

By the end of this phase students will have a problem statement for their intended game design

Culturally and Historically Responsive Framework

Identity: How will the unit help students to learn something about themselves and/or others?

Students will work in teams. Part of this phase asks students to complete an empathy map on their end-user, a middle grades student.

Skills: How will the unit build students' skills in the content area?
Intellect: How will the unit build students' knowledge and mental powers?

Students will be asked to read and discuss to gain knowledge on game design (reading for learning and communication skills). Students will collaborate to establish a direction for their game designs. Each team will have the same end-user and work together, while each student may do a different game product.

Essential Learning Concepts

- Computer games are created using specific programming languages. (We will be using Scratch)
- A design process is used to organize and plan for programming work.
- Game designers and coders use story mapping and flowcharts to organize their thoughts and plan out their ideas before coding their design.
- Surveys are used to gather information about participants' opinions.
- Surveys can be delivered using online survey tools. (data collection tool both quantitative and qualitative)
- Basic statistics can be used to evaluate the results of surveys. (math connection)

Criticality: How will the unit engage students' thinking about power and equity and the disruption of oppression?

Not sure this unit will lend itself to this; however, use of discussion protocols and a group contract will help to ensure equity of voice and ensure that one student does not dominate the group.

Joy: How will the unit allow students to experience joy through their learning?

The unit starts with playing of some example games to spark excitement. Throughout the project, it is essential to give students the freedom to make this project their own. In this phase, having students develop their own problem statement and claim their specific outcome for this project helps to bring their Joy and voice to this work.

SEL Benchmarks

Integrated Standards

NY Digital Literacy Standards:

- 7-8.IC.7 (Career Paths) Explore a range of computer science related career paths
- 7-8.CT.10 (Algorithms and Programming) Document the iterative design process of developing a computational artifact that incorporates user feedback and preferences.
- 7-8.DL.2 (Digital Use) Communicate and collaborate with others using a variety of digital tools to create and revise a collaborative product.

Game Design: Ask & Inquire Phase

Key Vocabulary		Oral Language	Writing
Computer science	Problem statement	<ul style="list-style-type: none"> • Say, Mean, Matter Discussion Protocol • Empathy Map - Collaboration • Problem Statement - Consensus 	<ul style="list-style-type: none"> • Know/Need-to-Know Chart • Say-Mean-Matter Notes • Design Journal Documentation • Write the initial problem statement in sentence form (a skeleton sentence is given for a starting point as needed)
Game Design	Criteria		
Program	Constraints		
Coding			

Teacher Preparation

Determine how you want students to keep track and document their process. It is recommended they have a composition notebook that they will write in each day and tape or paste in graphic organizers or other helpful details throughout the project. To support this, we have included in this unit **design journal Instructions**, a **self-check list for students**, and a **teacher checklist** that can be used for journal checks. Other options could include loose leaf with binders, student or team folders kept in the class, or a digital journal (however you will need a way to take and upload pictures for students to track their sketching and/or prototypes).

Determine how you want students to team up. For this project, students can do thinking work within a team of 2-4 students but still do their own game design.

Test game choices to make sure they work with the computers in your classroom and students have access to them. If the game links provided don't work (or you want to tailor the project to what is of interest to your students), feel free to have some other game options for them.

Day	Learning Targets & Standards	Texts & Tasks	Supports
1	<p>Launch Project</p> <p>I can set up and use my design journal.</p>	<p>Launch: Let's play a game – Starting with a selection of simple online games, students play the game/s for 15-minutes or so. After students have played the games, the teacher leads them in a whole-class discussion on “What makes games fun? – chart their thinking in a central</p>	<p>Launch</p> <p>Project Scenario</p> <p>Know-NTK Chart</p>

	<p>I can develop questions based to guide my research.</p>	<p>location you can refer to later. Then introduce that they are going to be designing their own.</p> <p>Task Analysis & K/NTK</p> <ul style="list-style-type: none"> • Introduce the goal of this phase of the project is to understand the problem they will be solving, develop questions to guide their thinking, and develop a problem statement for the game they will be designing in their team. • Give students the project scenario • Have them individually read the scenario and highlight key facts they will need for this project. • Either give each student a copy of the Know/NTK chart or have them copy the chart into their design journals. • Teams will complete the K-NTK charts as a team, but everyone should write their information individually on their chart. • Student teams first complete the Know column, “What do you know that will be helpful in solving this problem?” First start by sharing important facts from the project scenario, then add in their own personal background knowledge about the topic. • You may want to pause and have each student group share one thing on their KNOW column that gets collected on a class K-NTK Chart • Student teams then develop questions for their project, “What will you need to know to solve this project?” <ul style="list-style-type: none"> ○ If students struggle with developing questions, you can use a question chart to support them to develop questions (see optional lesson below) • Ask students to go through their questions and pick out the top three questions that will need to be answered right away. • Have each group share one question. If their top question was answered, they share their 2nd most important questions and so on. • After each group has shared one question, opened it up for anyone to share questions relating to the project. 	<p>Question Builder Chart</p>
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		<ul style="list-style-type: none"> • Ask students to write any questions they didn't consider on their NTK chart. <p>Question Chart Activity (Optional – for student teams who are struggling to develop questions on their NTK portion of the project)</p> <ul style="list-style-type: none"> • Give each student group a question chart. • Have them brainstorm questions that relate to this project with the goal to have at least one question in each box. • Then have them pick the most relevant questions for this project and put them in the NTK column. 	
2	<p>I can describe the basic steps I will need to do to design our game.</p> <p>I can define game design and coding.</p> <p>I can read a technical article and pull-out important information.</p>	<p>How to start your first game:</p> <ul style="list-style-type: none"> • As a class, students watch this video and take notes on basic game design tips. • After the video, students TPS what tips they learned, what questions were answered, and what (if any new questions surfaced) <ul style="list-style-type: none"> ○ T – write 2-3 basic tips you learned from the video about game design. ○ P – have teams go back to their K-NTK chart, what did they learn? – capture in the KNOW column. What new questions do they have about game design? (Capture in the NTK column) ○ S – invite student teams to share something they learned (to capture on the class Know chart) and a new question they have (to capture on the NTK chart) <p>Initial Reading & Discussion</p> <ul style="list-style-type: none"> • Assign each person in the team to read one of the article choices below. You may also decide for each student to read the same article, in which case, have them all read article 1: <ul style="list-style-type: none"> ○ Article 1: Game Design Basics ○ Article 2: What is Coding and How Does it Work? ○ Article 3: 4 Major Reasons You Need Coding Skills • Either give each student a copy of the Say-Mean-Matter Chart or 	<p>Video: Game Design Basics</p> <p>Think-Pair-Share (TPS)</p> <p>Say-Mean-Matter Chart and discussion</p> <p>Article 1: Game Design Basics</p> <p>Article 2: What is Coding and How Does it Work?</p> <p>Article 3: 4 Major Reasons You Need Coding Skills</p>

have them reproduce the chart in their design journals or have them collaboratively take notes in a shared digital chart.

- Each student reads their assigned article (or portion of the article if using the same article) and pulls out 2 – 3 important bits of information from the article. They write or copy these into the “say” column.
- After reading, for each “say” students rephrase into their own words in the “Mean” column and write how this will help them in their project work in the “Matter” Column.
- Discussion – Each student has 3-5 minutes (teacher choice) to share their “Say-Mean-Matter with their team. To facilitate, have students close out any technology or windows except their notes. Tell students they will each have 3 minutes to share what they learned from their article by sharing their “Say-Mean-Matter”. (You may have to model this for students). Discussion rules: when it is one student’s turn to speak, they are the only ones speaking. You will time, so when you call time, that student needs to stop talking and move to the next student. If you haven’t used all your time, sit in silence until I call time and it is the next person’s turn. When you are not speaking, you can write notes of what you are hearing in your design journal. Have students determine the order.
 - Round 1: Person 1 shares their say-mean-matter
 - Round 2: Person 2 shares their say-mean-matter
 - Round 3: Person 3 shares their say-mean-matter
 - Round 4: team discussion – revisit their K-NTK and consider what information is helpful for the project, what questions have been answered, and if there are any new questions, we need to document under our NTK column.

Ticket out the door: In your design journals (or on a separate slip of paper), based on your reading and discussion:

- How would you define game design?
- How would you define coding?
- Why is knowing how to code important?

3	<p>I can determine the needs of an end-user.</p> <p>I can write a problem statement for my game design.</p>	<p>Empathy Map – Students will create an empathy map and use it to determine their problem statement for their game design. (Note: While each student may have a different game they are designing, it is recommended students team up together as a design team. This design team may develop different games to solve the same problem statement)</p> <ul style="list-style-type: none"> • Prior to the empathy map lesson, have student groups determine whom they wish to target their game design. While this is for middle-grade students, they will want to narrow the focus a bit. For example, they may want to design a game for pre-teens that love horses, or for pre-teens to better engage in a math lesson. The more detailed they can be on who the game is for, the easier it will be for them to do the empathy map and ultimately their problem statement • Use this lesson on empathy maps as a guide for the process. There is a teacher version and a student version (here is an editable word version). The student version can be given to students to guide them through the process. • Alternative: Instead of having students watch the Empathy Map video independently, you may have them watch it as a class prior to developing their own map. <p>Problem statement</p> <ul style="list-style-type: none"> • Step 5 in the lesson on empathy maps asks students to develop their problem statements. • Prior to working on their problem statements, introduce the concept of criteria and constraints <ul style="list-style-type: none"> ○ Criteria – requirements that must be met. (for example, game must be easy to play) ○ Constraints – defined limitations (for example, must be designed in Scratch) • Prior to working on their problem statements remind them about the original “What makes a game fun?” brainstorm from day 1. • Students may need sentence starters for cleaning up the language. Below is some starting language you may wish to give 	<p>Empathy Map Student Version</p> <p>Problem statement sentence starter</p>
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		<p>students on a slide or the board.</p> <ul style="list-style-type: none">○ We plan to design a game for <describe end-user>. They need a game that.... So they can ... Our game will include the following elements <constraints and criteria>.● Help students claim the criteria and constraints for their game design. These can always change, but it is helpful for them to think in as many details for what they want to include in their game design.● As they are working, this is a good time to give them one-on-one feedback on their problem statements.● Once they come to a consensus, students should have the final problem statement documented in their design journals.● Have students share their problem statements.● Have students submit their problem statements to you for feedback and to hold on to them because they will come back to these to refine them as they plan their games.	
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SCSD Grade 7

Unit 1 - 2: Game Design – Imagine Phase

CTE Content Focus: Computer Science

5 INSTRUCTIONAL DAYS

Unit Focus	Unit Text Set
<p>This is part 2 of a 5 part project-based learning (PBL) unit on game design. Students will be solving the problem of designing a game using scratch that appeals to middle school students. By the end of this unit they will need to prepare:</p> <ul style="list-style-type: none">• Marketing Materials (Flyer and/or Commercial)• Gam FAQ• Poster presentation documenting their use of the engineering design process. <p>In this phase, students will continue their research for designing their game and brainstorm ideas they would like to put into their game.</p>	<p>Reading, “How to Design a Survey”</p> <p>Selection of games to play</p>
Unit Anchor Charts/Instructional Tools	
<p>Histogram Pre-Assessment Example Survey Question Chart Brainstorming Practice</p>	

Guiding Questions & Big Ideas

Essential Question: How can we design, create, and test a basic computer game for a specific demographic group?

Imagine Questions:

- What elements will make our game fun?
- How do we incorporate ideas that are appealing for our end-user?
- How do we generate a lot of ideas for our game?

Final Tasks

By the end of this phase, students will have a list of ideas for their game. These will be narrowed down and used in the next phase.

Culturally and Historically Responsive Framework

Identity: How will the unit help students to learn something about themselves and/or others?

Students will be playing a series of fun games on scratch and completing surveys. It may be interesting to see how different groupings of students answered the survey differently. For example, is there a difference between genders in the type of games they like to play or the features they want in their game?

Skills: How will the unit build students' skills in the content area?

Intellect: How will the unit build students' knowledge and mental powers?

Students will be asked to learn information from reading and discussing before input from the teacher. Students will collaborate with their design teams regularly to share knowledge and support each other in developing and analyzing histograms.

Essential Learning Concepts

- Computer games are created using specific programming languages. (We will be using Scratch)
- A design process is used to organize and plan for programming work.
- Game designers and coders use story mapping and flowcharts to organize their thoughts and plan out their ideas before coding their design.
- Surveys are used to gather information about participants' opinions.
- Surveys can be delivered using online survey tools. (data collection tool both quantitative and qualitative)
- Basic statistics can be used to evaluate the results of surveys. (math connection)

Criticality: How will the unit engage students' thinking about power and equity and the disruption of oppression?

See comment about identity. At the discretion of the teacher, you may want to include other forms of gender identity on the survey such as trans, and/or see how the survey information confirms or detracts from gender norms about gaming. (Note: there is a whole sub-culture on girls in gaming, this could be a whole class discussion area to delve into if time permits)

Joy: How will the unit allow students to experience joy through their learning?

Students will be playing games as part of this lesson to learn more about collecting and analyzing data. In the brainstorming section of this unit, students are asked to bring in their own creativity and ideas to design their game.

SEL Benchmarks

Integrated Standards

NY Digital Literacy Standards:

- 7-8.IC.7 (Career Paths) Explore a range of computer science related career paths
- 7-8.CT.10 (Algorithms and Programming) Document the iterative design process of developing a computational artifact that incorporates user feedback and preferences.
- 7-8.DL.2 (Digital Use) Communicate and collaborate with others using a variety of digital tools to create and revise a collaborative product.

Game Design: Imagine Phase

Key Vocabulary		Oral Language	Writing
Brainstorming Ideation Survey Histogram	sketching	<ul style="list-style-type: none"> • Small group discussions • Informal presentations to the class based on analyzing survey results • Brainstorming Protocol 	<ul style="list-style-type: none"> • Brainstormed list and sketches • Documenting their process in their design journals.

Teacher Preparation & Notes

Eventually, students will be creating a survey for their game and they will eventually be designing their game in Scratch. This phase of the unit will start with students playing different games in Scratch to learn more about the possibilities of scratch. A selection of games has been provided but you will need to check if the links still work or see if there are other games that might be of more interest to students. In this phase, we will also be laying the groundwork for students to develop a survey and analyze the results of their survey using a histogram. The directions below will lead the class to develop a survey before trying out some games; however, if time is a concern, you may wish to develop your own survey for students to use when trying out the games (or use this one provided for you).

Day	Learning Targets & Standards	Texts & Tasks	Supports
1	Warm-up for developing/use a survey. See options below Option 1: Develop a class survey Option 2: Use a pre-written survey	Histogram Warm-up: <ul style="list-style-type: none"> • Give students the pre-assessment histogram problems. They can work in pairs or teams. • As they are working, rotate and take note of where students are struggling or succeeding. • As they finish, invite different students (individuals, pairs or teams) to share their work and lead a discussion on how we can use histograms to understand what makes a game fun. • Introduce that we will use surveys in two ways. First, we will explore different games developed using Scratch. This will help us 	Pre-assessment histogram problems

		<p>to explore possibilities of what we can do on Scratch and use surveys to learn from our classmates what makes a game fun.</p> <ul style="list-style-type: none"> • Later on, you will create a survey for your game to give to people who will play your game, to see what they like and what they didn't like about your game so you can make improvements. 	
1 - 2	<p>Optional: Students develop a class survey to better understand what makes a game fun</p> <p>I can develop questions for surveys to collect data from my classmates.</p> <p>If you are not doing this, jump to the next row.</p>	<p>Part 1: Reading and Discussion</p> <ul style="list-style-type: none"> • Tell students that we will be creating a class survey. To better understand how to create a survey we will read and discuss the article, "How to Design a Survey Questionnaire." • Tell students to mark up the text as they read with the following code. <ul style="list-style-type: none"> ○ ! – Important fact to remember ○ ? – I have a question about this or I don't understand what it means ○ Circle unfamiliar words ○ * - Connection to prior knowledge – then right in the margin a note about the connection. (For Example: In math, we talked about this) • Students individually read and mark up the text, then in small groups, they share their important facts and connections. • As a whole class, have students share important facts and connections, then lead into what questions students have relating to the text. <p>Part 2 – Develop a class survey</p> <ul style="list-style-type: none"> • In their design teams, based on their reading have students brainstorm questions for a potential survey. Have them consider <ul style="list-style-type: none"> ○ What information do you want to collect from the survey taker? (age, gender, etc.) ○ What structured questions might we ask? (These will lead to a histogram) ○ What unstructured questions might we ask? (To get more details on what a person likes and why) ○ As students are working in teams, rotate around and help 	<p>Text coding strategy</p> <p>Small group discussion</p> <p>Question Chart</p>

		<p>push their thinking on the types of questions.</p> <ul style="list-style-type: none"> ▪ For groups doing all unstructured questions which would take a long time to take, ask them how we can turn an unstructured question to a structured question with options to choose from. ▪ For some groups doing all structured questions, ask them to develop a question that helps get more detailed information. ▪ If needed, have them pull out the Question Chart to help form questions. <p>○ As a whole class, have students share their questions and come to a consensus as a class what questions will be best for the survey.</p>	
1 - 2	<p>I can collect data from a survey and produce a histogram.</p>	<p>Distribute the survey (The class survey, this pre-made survey or one you have created). Students may need more than one copy of the survey if they are playing more than one game.</p> <p>Below is a selection of games from Scratch that students can play. Feel free to use a selection of these games or others that you or your students choose. Determine how you want to divide which games students will play:</p> <ul style="list-style-type: none"> • Complete student choice • Students choose based on the type of game they want to design, or • Assign different groupings of students to play specific games. <p>Game Choices:</p> <ul style="list-style-type: none"> • Adventure/Running: https://scratch.mit.edu/projects/318985274/ • Adventure/Combat: https://scratch.mit.edu/projects/321905306/ • Arcade/Puzzle: https://scratch.mit.edu/projects/321647882/ • Flying/Running: https://scratch.mit.edu/projects/319918034/ 	<p>Class Survey</p> <p>Small group workshops as needed</p> <p>Design Journals</p>

		<ul style="list-style-type: none"> • Educational/Word Search: https://scratch.mit.edu/projects/320955955/ • Puzzle: https://scratch.mit.edu/projects/317500445/ • Racing: https://scratch.mit.edu/projects/317500445/ • Dress up game: https://scratch.mit.edu/projects/80773948/ • Simulation: https://scratch.mit.edu/projects/135860284/ <p>Students play games and take the survey.</p> <p>Determine how you want to collect and distribute the survey data. One option is to have different student teams compile the survey data for different types of games. For example, one team and examine the data for adventure and running games while another may compile the data for flying/running games.</p>	
3 - 4	<p>I can collect data from a survey and produce a histogram.</p> <p>I can analyze a histogram and other data to develop criteria and constraints for my game design.</p>	<p>Distribute the raw surveys back to the students.</p> <p>Working in teams, students develop an informal report (on chart paper) to analyze and present what they learned from their surveys to the class. Tell students that they need to have at least one histogram and give a summary of details from the unstructured.</p> <p>As students are working, rotate around and help teams determine the best way to present their data. If one or more teams are struggling, you may need to hold a workshop with small groups of students to remind them how to graph a histogram.</p> <p>Students present their work to the class using their chart paper while students take notes in their design journals of the most helpful data they will need for their game design.</p> <p>After the presentations, students meet in their design teams and refine the criteria and constraints for their game design based on the survey data.</p>	Design Journal

		<p>They are seeking to answer the question, “What do our games need to include to engage our intended audience?” (note: This is a refinement of their problem statement from the end of the Ask phase and should be documented in their design journals)</p>	
4 - 5	<p>I can brainstorm with my teammates to determine all we want our game to include</p>	<p>Introduce the rules for brainstorming</p> <ul style="list-style-type: none"> • All ideas on paper (yes, even the silly, outrageous ideas) • Everyone contributes <p>If needed, practice brainstorming as a class. Choose a problem that students know well such as, “How can we improve student lunches?” and have the students brainstorm as a class with you writing all ideas on the board. If needed, insert your own “crazy” idea.</p> <p>Team Brainstorming</p> <ul style="list-style-type: none"> • This is best done out of their seat with either post-it notes (one idea per note) or chart paper with one student being the recorder. • Students should brainstorm for about 15 minutes or so on all they would like to include in their game if time and money were unlimited. • After the allotted brainstorming, ask students to review their list and rank them in order of importance. “What are the most essential elements to put in our game to the least essential elements?” • Have students record this list in their design journals. This will be used in the planning phase. • Rotate and encourage students to get creative and encourage students who seem to be more silent to share their thinking with their group. <p>Students may wish to review their problem statement with criteria and constraints one more time to ensure it captures the direction they want their game to take.</p> <p>Students should get final approval from their teacher on the brainstormed list (are there enough ideas for students to draw from) and their problem</p>	<p>Practice brainstorming</p>

		statement (does it capture all the thinking work they have done and give them a direction to plan towards).	
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SCSD Grade 7

Unit 1 - 3: Game Design – Plan & Create Phases

CTE Content Focus: Computer Science

15 INSTRUCTIONAL DAYS

Unit Focus	Unit Text Set
<p>This is part 3 of a 5 part project-based learning (PBL) unit on game design. Students will be solving the problem of designing a game using scratch that appeals to middle school students. By the end of this unit they will need to prepare:</p> <ul style="list-style-type: none">• Marketing Materials (Flyer and/or Commercial)• Gam FAQ• Poster presentation documenting their use of the engineering design process. <p>This part of the unit includes the Plan and Create phases of the engineering design process. In the plan section, students will develop a game design document to develop the “minimally viable product” for their intended game and create a storyboard of their individual portion of their team’s game design. In the create section, students will learn Scratch and develop a prototype for their game.</p>	<p>Minimally viable product video</p> <p>Video on Storyboarding</p> <p>Scratch Tutorials</p> <p>Resource: How to Write a Game Design Document (optional)</p>
Unit Anchor Charts/Instructional Tools	
<p>Storyboard Graphic Organizer Team Meetings Highlighting text reading strategy CUPS peer editing strategy Informal peer feedback Teacher informal feedback Mini revision cycle with storyboard Know/Need-to-Know (K/NTK) chart Learning Log Peer tutorials</p>	

Guiding Questions & Big Ideas

Essential Question: How can we design, create, and test a basic computer game for a specific demographic group?

Imagine Questions:

- How can narrow our game down to its essential elements?
- How can we develop and test a minimally viable product for our game design?

Final Tasks

By the end of the plan phase, students will have a storyboard, a game design document, and a survey for their game. By the end of the create phase, students will have a minimally viable game that can be tested with fellow students.

Culturally and Historically Responsive Framework

Identity: How will the unit help students to learn something about themselves and/or others?

Students will be working in teams and have multiple team meetings. This will allow them to learn how they work within a team.

Skills: How will the unit build students' skills in the content area?
Intellect: How will the unit build students' knowledge and mental powers?

Students will build the skills of time and project management as they work to create a prototype of their game design. They will learn how to communicate within a team.

Criticality: How will the unit engage students' thinking about power and equity and the disruption of oppression?

N/A for this phase of the unit

Joy: How will the unit allow students to experience joy through their learning?

Essential Learning Concepts

- Computer games are created using specific programming languages. (We will be using Scratch)
- A design process is used to organize and plan for programming work.
- Game designers and coders use story mapping and flowcharts to organize their thoughts and plan out their ideas before coding their design.
- Surveys are used to gather information about participants' opinions.
- Surveys can be delivered using online survey tools. (data collection tool both quantitative and qualitative)
- Basic statistics can be used to evaluate the results of surveys. (math connection)

Students are designing a game based on their interests. As we work through this phase students will have multiple opportunities to find joy in the creativity experience (when in doubt, have students use colored markers or pencils to sketch and plan out their ideas).

SEL Benchmarks

Integrated Standards

NY Digital Literacy Standards:

- 7-8.IC.7 (Career Paths) Explore a range of computer science related career paths
- 7-8.CT.4 (Abstraction and Decomposition) Write a program using functions or procedures whose names or other documentation convey their purpose within the larger task.
- 7-8.CT.5 (Abstraction and Decomposition) Identify multiple similar concrete computations in a program, then create a function to generalize over them using parameters to accommodate their differences.
- 7-8.CT.6 (Algorithms and Programming) Design, compare and refine algorithms for a specific task or within a program.
- 7-8.CT.8 (Algorithms and Programming) Develop or remix a program that effectively combines one or more control structures for creative expression or to solve a problem
- 7-8.CT.9 (Algorithms and Programming) Read and interpret code to predict the outcome of various programs that involve conditionals and repetition for the purposes of debugging.
- 7-8.CT.10 (Algorithms and Programming) Document the iterative design process of developing a computational artifact that incorporates user feedback and preferences.
- 7-8.DL.2 (Digital Use) Communicate and collaborate with others using a variety of digital tools to create and revise a collaborative product.

Game Design: Plan Phase

Key Vocabulary		Oral Language	Writing
Minimally Viable Product Code Debug Program	Storyboard Loops	<ul style="list-style-type: none"> • Small group collaboration to learn how to code in Scratch • Small group discussions to plan their approach 	<ul style="list-style-type: none"> • Game design document. • Storyboard • Learning Log • Documenting their process in their design journals

Teacher Preparation & Notes

In these phases and beyond, some teams may begin to go at different paces. As a teacher, we will be shifting more into a facilitator/manager role. You may wish to set up small group meetings with individual design teams or find this is a great time to have workshops with students who may be struggling with various aspects of the process. As with any phase, it is hard to put a concrete time on how long each phase will take. Use your best judgment and be easy on yourself and your students should you “get off pace”. The important idea is for students to experience what it feels like to be a program within a design team that models what real-life computer scientists may do.

Day	Learning Targets & Standards	Texts & Tasks	Supports
1	<p>I can determine the essential elements for a minimally viable product of my game</p> <p>I can plan an approach for our game design with my team.</p>	<p>As we move from the imagine section to the plan/create phase, we move to more professional team meetings. If you feel students are ready you may want to start each day with team meetings where you post an agenda of topics they need to discuss before we jump into lessons or teamwork. These are meant to also teach project and time management skills with teacher support. This is a good time to set up expectations for these team meetings, remind them about taking notes in their design journal, and remind them how they planned to operate as a team in their team contracts.</p> <p>Team Meeting: Revisit K/NTK chart</p> <ul style="list-style-type: none"> • Students look back at their K/NTK chart. 	<p>K/NTK Chart</p> <p>Minimally viable product video</p> <p>Team Meetings</p>

- Based on the last few lessons, what do they now know that is helpful for their game design? (KNOW)
- What questions have been answered (places answers in the KNOW column)?
- What new questions or needs do they have? (NEED-TO-KNOW)
- Teacher Note: As students work rotate around (It may be helpful to keep a chart and indicate who is working with their team and who is not)
- Teacher Note: Invite a few student groups to share any new KNOWs and NEED-To-KNOWS that can be added to the class chart.

How do we get started with our game design?

- Possible introduction to the video: At this point, you have lots of ideas for your video games; however, to try and do all the ideas at once can be overwhelming. When looking to test a concept and get something out there quickly, game designers start with developing a minimally viable product. This video will tell us what that means.
- Share with students the Video, [Minimally viable product video](#)

Team Meeting: Planning for minimally viable product and who will do what
 Students need to look back at their design ideas and determine what the minimally viable product game will be/include based on the tips from the game.

- It will be helpful for each student in the group to have a separate part of the game to design or possibly different directions of the same game (that way each student will have something to code and test). For example: If their game has many levels, maybe each person takes a different level to code. Or if they have a lot of cool elements or different directions they want to pursue, each person can take a different direction on the same game.
- Students need to assign who will do what
- Teacher Note: It might be helpful for students to have this

		<p>conversation around some chart or banner paper where they can sketch or draw ideas using colored pencils or markers. (Anything that helps them get into that creative space)</p> <ul style="list-style-type: none"> • Teacher Note: Rotate and encourage groups or help groups with their communication as needed. If they have trouble coming to a consensus, have them go back to their team contract and do what they said they would do to come to a consensus. 	
2	<p>I can develop a storyboard for my portion of the game.</p>	<p>Storyboard Introduction</p> <ul style="list-style-type: none"> • Note: If you feel students need some guidance on creating their game storyboards. Here is a quick lesson. Skip it if students already know how to create a storyboard or use it with a small group of students who may need some help to get started. • Show this video (or similar) on Storyboarding (note: this is a 13-minute video, but I think you can stop it about 7 minutes) • Ask students to write three things they need to remember when creating their storyboard. Ask a few to share with the whole class. • If you need it, here is another reference to support students with their storyboard including other storyboard templates. <p>Developing their Game Storyboard</p> <ul style="list-style-type: none"> • Give students the storyboard graphic organizer or they can recreate it in their design journals. • Each student creates the storyboard for their portion game. • As they work or after they finish, they need to switch with a partner (ideally a teammate). Explain their design and get feedback with their storyboard. • Students incorporate their peer feedback, then get approval from the teacher. • Teacher Note: As students come to you for approval, this is a good time to give them feedback or ask questions about their game to help students think through their ideas. This is a great chance for some small iterative design loops. 	<p>Video on Storyboarding</p> <p>Storyboard Graphic Organizer</p> <p>Peer Feedback</p> <p>Teacher Feedback & Approval</p>

<p>3 - 4</p>	<p>I can develop a survey to test my game.</p> <p>I can write a game design document that outlines what will be included in our game.</p>	<p>Survey development</p> <ul style="list-style-type: none"> • Have students review their notes from the “How to Design a Survey” article from the last phase and from when they created and tested the class survey. • In their design team, have students brainstorm questions for their survey and create their survey using a tool such as google forms. Some questions to guide the process: <ul style="list-style-type: none"> ○ What demographic information will be helpful to create? ○ What information do you want to collect about their gameplay experience? (Hint: These should come from your problem statement and criteria and constraints) • Teacher Note: you may need to give a brief lesson on creating a survey in teams when they are ready. • Teacher Note: I recommend one survey per group, even though they are doing their own games. This will help them determine <p>Write a game design document</p> <ul style="list-style-type: none"> • After students complete their storyboard, they will need to write a Game Design Document. This can be an individual assignment, or each team member can write a different section (especially if they are doing elements of the same game) • Give them the Game Design Document Graphic Organizer – this can be taped or glued into their design journal and students bullet key points they want to make. • Have students turn their Game Design Document notes into paragraph form. In the left-hand column is the subheadings, they will turn their notes into paragraph under each subheading. • Teacher Note: the graphic organizer and design document template were adapted and simplified from this resource. • Teacher Note: To help with grammar, you may have students switch their writing with another student to correct minor mistakes, such as the CUPS strategy. A lesson on how to teach the CUPS strategy is in the Student Resources. Students read through and first correct Capitalizations, then Usage (verbs, change text speak 	<p>Game Design Document Graphic Organizer</p> <p>Resource: How to Write a Game Design Document</p> <p>CUPS strategy</p>
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		<p>to words, etc), then punctuation, and finally spelling.</p> <ul style="list-style-type: none"> • Students turn in their game design document for final approval from the teacher. 	
5 – 9	<p>I can write code using scratch.</p> <p>I can incorporate loops within my code.</p>	<p>Scratch Tutorials</p> <ul style="list-style-type: none"> • Teacher Note: Students will need to have logins for https://scratch.mit.edu/. • Lead students through this Lesson on Coding in Scratch. All students will be doing the general tutorial. Then, as a team, they will decide on what other tutorials they will need to learn to create their game. They will each do different tutorials and then teach their teammates the skill they learned. • The lesson gives a pdf version of the learning log which helps students to summarize what they learned from the tutorial. Here is an alternate word version in case you need to make adaptations. • After learning what scratch has to offer, they may want to go back and revise their storyboards. Design questions to consider: <ul style="list-style-type: none"> ○ Does Scratch have the capabilities to do what I need? If not, what edits do I need to make to my vision? ○ Do I still have too many components to my minimally viable product? Can I simplify? • If students don't see a tutorial for what they need to do, have them search YouTube for Tutorial videos on scratch. A good starting search string is, "Scratch Tutorial, <skill needed>" <p>After the scratch tutorials and before students go into coding their game, they should go back to their Know/Need-to-Know document and update with their new KNOWs and NEED-TO-KNOWs and mark off questions that have been answered.</p> <p>Teacher Note: As students engage in the tutorials, they will learn how to create loops in code. This will be essential in their game design process. When they get there, call it to their attention and have them write some notes to themselves about how loops in code help to write code.</p>	<p>Scratch Tutorials</p> <p>Learning Log</p> <p>K/NTK Chart</p> <p>Peer Tutorials</p>

<p>10 - 15</p>	<p>I can code a prototype of my game design in Scratch.</p>	<p>This is time for students to work on their code. As students work, help as needed. Use questions to guide their thinking, then provide some solutions. Possible questions:</p> <ul style="list-style-type: none"> • How can you find that answer? • What do you know that can be helpful here? (Go back to their K/NTK chart) <p>At the beginning of each class day, have students meet in their design teams to give progress reports to each other.</p> <p>At the end of each class, have students write a sentence or two on what they learned and accomplished that day and what they want to accomplish the next day.</p>	<p>K/NTK Chart</p>
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SCSD Grade 7

Unit 1 - 4: Game Design – Evaluate and Improve

CTE Content Focus: Computer Science

5 INSTRUCTIONAL DAYS

Unit Focus	Unit Text Set
<p>This is part 4 of a 5 part project-based learning (PBL) unit on game design. Students will be solving the problem of designing a game using scratch that appeals to middle school students. By the end of this unit they will need to prepare:</p> <ul style="list-style-type: none">• Marketing Materials (Flyer and/or Commercial)• Gam FAQ• Poster presentation documenting their use of the engineering design process. <p>In this phase, students will test their game with their target audience, administer and analyze their surveys, and improve their game design.</p>	N/A
Unit Anchor Charts/Instructional Tools	
<p>Surveys – Student Created Great Game Off – students test each other’s games – organized by the teacher Peer Feedback through surveys</p>	

Culturally and Historically Responsive Framework	Essential Learning Concepts
<p>Identity: How will the unit help students to learn something about themselves and/or others? Students continue their collaboration and work with a team.</p> <p>Skills: How will the unit build students' skills in the content area? Intellect: How will the unit build students' knowledge and mental powers? Students will be learning about the iterative process within the design process. Design (and most work in professional settings) are created by iterating based on feedback and testing.</p> <p>Criticality: How will the unit engage students' thinking about power and equity and the disruption of oppression? N/A</p> <p>Joy: How will the unit allow students to experience joy through their learning? There is a sense of joy that happens by engaging in a difficult task and having other people try it instills a sense of pride and joy.</p>	<ul style="list-style-type: none"> • Computer games are created using specific programming languages. (We will be using Scratch) • A design process is used to organize and plan for programming work. • Game designers and coders use story mapping and flowcharts to organize their thoughts and plan their ideas before coding their designs. • Surveys are used to gather information about participants' opinions. • Surveys can be delivered using online survey tools. (data collection tool both quantitative and qualitative) • Basic statistics can be used to evaluate the results of surveys. (math connection)
SEL Benchmarks	Integrated Standards
	<p>NY Digital Literacy Standards:</p> <ul style="list-style-type: none"> • 7-8.CT.6 (Algorithms and Programming) Design, compare and refine algorithms for a specific task or within a program. • 7-8.CT.8 (Algorithms and Programming) Develop or remix a program that effectively combines one or more control structures for creative expression or to solve a problem • 7-8.CT.9 (Algorithms and Programming) Read and interpret code to predict the outcome of various programs that involve conditionals and repetition for the purposes of debugging.

- 7-8.CT.10 (Algorithms and Programming) Document the iterative design process of developing a computational artifact that incorporates user feedback and preferences.
- 7-8.DL.2 (Digital Use) Communicate and collaborate with others using a variety of digital tools to create and revise a collaborative product.

Guiding Questions & Big Ideas

Essential Question: How can we design, create, and test a basic computer game for a specific demographic group?

Evaluate & Improve Questions:

- How does our intended audience like our product?
- What are the strengths of our design?
- What are areas we need to tweak in our next iteration?
- How can we use survey data to determine next steps for our design?

Final Tasks

In the evaluation phase, students will have an analysis of their survey data and at least one histogram from the data. In the Improve phase, students will have an improved prototype for their game and notes on what they did to improve the game.

Game Design: Evaluate & Improve Phase

Key Vocabulary		Oral Language	Writing
Survey	Quantitative Data	<ul style="list-style-type: none"> • Small group meetings/discussions • Potentially explaining their game to a person who will test their game. 	<ul style="list-style-type: none"> • Survey analysis paragraph (or bullet points) • Histogram • Notes on what they did to improve their game.
Iterate	Analysis		
Histogram	Improve		
Qualitative data			

Teacher Preparation & Notes

You will need to consider how you want students to test their game design and with whom. Ideally, students will be able to get at least 10 people that are their target audience to try their game (more if possible). Written in the lesson plans is a way for the class to do. Other ideas could be game stations at lunch, push into another classroom where those students test out the games, have students test friends and family out home, or put links to games and their surveys on a class website that can be sent to parents to try out.

In the prior phase, we recommended students put their survey on a digital tool such as google forms or survey monkey. You will need to consider how best students can share the link to their survey. If you had them create their survey using word, students will need enough copies of their survey so other students can test it out.

The “Great Game Off” should be a bit of a celebration and add in some fun as students are playing and testing out their games.

Day	Learning Targets & Standards	Texts & Tasks	Supports
1	I can administer a survey to an intended audience.	<p>Team Meeting – preparing for the “Great Game Off”</p> <ul style="list-style-type: none"> • Before to the “Great Game Off”, students meet to make sure they have copies of surveys or can easily share the survey with people who will be testing their game. • This is a good time to tweak their survey questions to make sure they will collect the information they need. There should be at least 2 questions that provide some type of qualitative data (such as from a rating scale). <p>Great Game Off</p> <ul style="list-style-type: none"> • The teacher will need to develop a schedule for different student groups to test games and take each other’s surveys. For example, you may have groups A, B & C playing the games for groups D, E & F, and visa versa or links to the games and surveys are placed on a class webpage and you assign three games for each student to try and tell them to try at least 2 more of their choosing. • Students test each other’s games and take their surveys. • Make this a bit of a celebration to honor the hard work students put into designing their games. 	

<p>2 - 3</p>	<p>I can develop a histogram for qualitative data from my survey.</p> <p>I can summarize quantitative data from the survey.</p> <p>I can write an analysis of my survey data.</p> <p>I can determine next steps for our game.</p>	<p>Team Meeting</p> <ul style="list-style-type: none"> • Students discuss what they noticed in general by watching people test their games or by testing the games themselves. These ideas should be noted in their design journals. • Working with their teammates, students organize the surveys and start notes on their findings. • Students their open-ended questions and first pull out any strengths and drawbacks to their games. <p>Preparing histograms</p> <ul style="list-style-type: none"> • Based on the rating questions, students will produce histograms. Since they all did different portions of the same game or different takes on the same idea, they can each produce 1 – 2 histograms from the data they collected from their surveys. • Show students this video on Making Histograms from Excel. • Depending on their comfortability with excel, you may need to work with students in small groups to show them how to input their data in excel, then make a histogram chart. <p>Analysis</p> <ul style="list-style-type: none"> • Have students write observational statements about their data in their design journals. You may need to give them some sentence starters such as: <ul style="list-style-type: none"> ○ “X number of people rated our game... x out of y.” ○ “Of the comments, we received X% were positive as opposed to negative.” • Have them go back to their lessons learned from their team meetings and put bullet notes into sentence form. • Have students meet in their design teams to discuss the next steps for their game. <ul style="list-style-type: none"> ○ Are we ready to build on our minimally viable product? ○ Are we ready to combine our games into one game? ○ Do we need to do more tweaking to get the game mechanics correct? 	<p>Making Histograms from Excel</p>
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		<ul style="list-style-type: none"> ○ Who will do what? ● Each student will write a paragraph or two: <ul style="list-style-type: none"> ○ Describing what they learned from the surveys including adding their histograms to their word document. ○ A sample of comments from their surveys. ○ What they plan to do to improve their game. ● Students turn in their write-up to the teacher (time allowing students switch papers before turning to do a CUPS check). 	
4 – 5	I can improve my game based on information learned from testing	<p>Students work to improve their game designs based on testing.</p> <p>Teacher Note: As students are finished, you may want to start planning their final presentation as outlined in the next phases.</p>	

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SCSD Grade 7

Unit 1 - 5: Game Design – Communicate

CTE Content Focus: Computer Science

5 INSTRUCTIONAL DAYS

Unit Focus	Unit Text Set
<p>This is part 5 of a 5 part project-based learning (PBL) unit on game design. Students will be solving the problem of designing a game using scratch that appeals to middle school students. By the end of this unit they will need to prepare:</p> <ul style="list-style-type: none">• Marketing Materials (Flyer and/or Commercial)• Gam FAQ• Poster presentation documenting their use of the engineering design process. <p>In this phase, students will continue their research for designing their game and brainstorm ideas they would like to put into their game.</p>	N/A
Unit Anchor Charts/Instructional Tools	
<p>Canva or similar to create a marketing flyer and career infographic (examples) Question Brainstorming to help create Game FAQ Poster Presentation guide List of related careers</p>	

Culturally and Historically Responsive Framework	Essential Learning Concepts
<p>Identity: How will the unit help students to learn something about themselves and/or others? Students will explore career options related to the work they did through this project. They will be asked to choose a career related to this work that interests them and determine whether it may be an option they want to explore further.</p> <p>Skills: How will the unit build students' skills in the content area? Intellect: How will the unit build students' knowledge and mental powers? Students will prepare several authentic written products to market their game design.</p> <p>Criticality: How will the unit engage students' thinking about power and equity and the disruption of oppression? N/A</p> <p>Joy: How will the unit allow students to experience joy through their learning? Students will celebrate the hard work they put into this project at the end.</p>	<ul style="list-style-type: none"> • Computer games are created using specific programming languages. (We will be using Scratch) • A design process is used to organize and plan for programming work. • Game designers and coders use story mapping and flowcharts to organize their thoughts and plan out their ideas before coding their design. • Surveys are used to gather information about participants' opinions. • Surveys can be delivered using online survey tools. (data collection tool both quantitative and qualitative) • Basic statistics can be used to evaluate the results of surveys. (math connection)
SEL Benchmarks	Integrated Standards
	<p>NY Digital Literacy Standards:</p> <ul style="list-style-type: none"> • 7-8.DL.2 (Digital Use) Communicate and collaborate with others using a variety of digital tools to create and revise a collaborative product. • 7-8.DL.4 (Digital Use) Select and use digital tools to create, revise, and publish digital artifacts.

Guiding Questions & Big Ideas

Essential Question: How can we design, create, and test a basic computer game for a specific demographic group?

Communicate Questions:

- How do I market our game to our intended audience?
- What is a career I might be interested related to this work?
- What skills would I need to be successful in that career?

Final Tasks

Depending on time, you can determine what final products you may require your students to do; however, do have them do at least 1 written product and the career reflection. Final written products include: Marketing Flyer or Video, Game FAQ, and Poster Presentation. Students will also create a career reflection infographic they can keep in their portfolio to help them when deciding on a High School Pathway.

Game Design: Communicate Phase

Key Vocabulary		Oral Language	Writing
Marketing		<ul style="list-style-type: none"> • Poster Presentation in front of an outside audience (optional) • Working as part of a team to produce written products and game documentation 	<ul style="list-style-type: none"> • Marketing Flyer • Game FAQ • Poster Presentation • Career Reflection Infographic
Infographic			
FAQ			

Teacher Preparation & Notes

This phase wraps up the unit and helps students complete a written product, presentation, and career reflection on their work through this project. Big picture is to have students communicate their final designs in an as authentic way as possible. Depending on the number of students per group, you may want to add or delete one of the final written product options. Do have students complete the career reflection to support the career exploration nature of this course. A list has been advised of careers related to this project. Feel free to add to this list. The lesson notes reference using Canva an online graphic tool for creating posters, flyers, and infographics. Students will need an account for this. If this is not available, MS Publisher or MS Sway are similar programs within the Microsoft Suite of tools.

If you will have students present their poster presentations, you will need to have them printed out so they can be displayed. If they are using Poster Presentation Templates, this will require printing in color on a poster maker or plotter. If students do them on PPT, the individual slides will need to be printed out and students glue their slides to tri-folds or poster paper or chart paper provided by the school.

Day	Learning Targets & Standards	Texts & Tasks	Supports
1 - 3	I can communicate my final game to my intended audience.	<p>Game Design Documentation</p> <ul style="list-style-type: none"> • The project scenario gives students several options for communicating their design to their intended audience. It is recommended that each student in a team take a different option to develop. This allows each student to own a written product to sharpen their writing skills. <ul style="list-style-type: none"> ○ Options: Marketing Flyer, Marketing Video (with script), Game FAQ, and Poster Presentation on their design process. • While they are together as a team, have the team brainstorm ideas that will help each other with their individual products. <ul style="list-style-type: none"> ○ Marketing Flyer and Video – brainstorm ideas to put in the flyer and/or video – what will entice our intended audience to play our game? ○ Game FAQ – brainstorm questions – What are some questions that people would have about our name? ○ Poster Presentation – What did we do during each phase of the design process? (Ask & Inquire, Imagine, Plan & Create, Evaluated & Improve, Communicate) (The student resources has a handout to start preparing their poster presentation) 	<p>Storyboard organizer</p> <p>Storyboard Literacy Lesson</p> <p>CUPS</p> <p>Preparing your Poster Presentation Handout</p>

		<p>Planning their written products</p> <ul style="list-style-type: none"> • Students can use the same Storyboard tool we used in planning their games to plan their written products. As they plan their ideas, it is helpful to do this away from the computer. Encourage the use of colored pencils, markers or highlighters. If you need it, a lesson on using Storyboards for Planning Literacy Tasks is included in the student resources. • Give each student a couple of the storyboard graphic organizers (and have a few on hand should students need more than one page). Ask them to consider the main topics for their written assignment. Each frame will present a different topic. • Students use the boxes to consider what type of visual or picture they want to visualize their point. In the accompanying lines, students bullet the information they want to include. • For the Game FAQ, they can use the boxes for each question and write the answer to the question in the lines below. <p>Peer Feedback</p> <ul style="list-style-type: none"> • As students complete their written product, they should share it with another group member. • Students can use the same CUPS strategy we used earlier. <p>Students turn work into the teacher for grading when completed.</p>	
4 - 6	I can explore a career of interest related to this project.	<p>Throughout this project, beyond the obvious computer programmer, students were exposed to possible careers in the IT pathway. This is a chance for students to pick a career that they might be interested in learning more about.</p> <p>Career List (feel free to add others - Reference)</p> <ul style="list-style-type: none"> • Computer programmer • Computer engineer • Cybersecurity specialist • Computer scientist • Game designer • Graphic designer 	<p>https://www.mynextmove.org/</p> <p>example career-related infographics.</p> <p>Storyboard Organizer</p>

- Software engineering/designer
- Technical writer
- Project manager
- Marketing manager
- Market research analyst
- Animator
- Audio engineer
- Storywriter
- Video game tester
- Technical support specialist
- Sales representatives

Introduce what information students will need to include in their infographic:

- Must-haves:
 - Title with the name of career (or job)
 - Brief description
 - Salary information
 - Education needed
 - Skills needed
 - Exciting visuals
 - Summary of what makes this an exciting career choice
- Recommended-haves
 - Job growth - will there be jobs in this career in the future?
 - Career pathway - how do I grow in this career?

Career Research

- Have students visit <https://www.mynextmove.org/> to get basic information about their chosen career.
- Have students search for at least one example job entry for their chosen career using a job search engine such as Indeed.com or similar. Have them note the salary information, skills and education needed, and generally, what would a person do in this job.
- If they need more information, guide them to research using google.

		<p>Career Infographic</p> <ul style="list-style-type: none"> • Students can plan their infographic using the same Storyboard technique they used to plan their written product and design their game. • To plan their layout, students can cut out the individual sections of the storyboard organizer and arrange them on a blank sheet of paper or in their design journal to get a general idea of how they want their infographic to look. • If they need ideas, here is a resource with example career-related infographics. • Have students use an online tool such as Canva or MS Publisher or MS Sway. To help kids become familiar with the program, you may want to plan for some “play and exploration time” with the software before diving into producing their infographic. 	
7 - 10	Presentations & Celebration	<p>Consider how you will have students present their work. A typical poster presentation is where students gather around their poster, and audience members rotate from poster to poster as they wish. Students prepare and deliver a quick intro as audience members visit their poster. The audience can ask questions as they wish.</p> <p>Students will need a class day to print and prepare their posters.</p> <p>On presentation day: Students set up their posters. Audience members visit different posters and ask questions about their produce. It is also recommended that each student team has a computer up so audience members can play the game/s developed by the students</p> <p>Wrap-up: Students have worked hard through this project. Plan a day for them to showcase their posters to each other and celebrate their hard work. This is also a good time to have students share feedback on the project. What worked for them? What did not work for them?</p>	

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