`

Unit 3: Gaming

Learning Target Topics
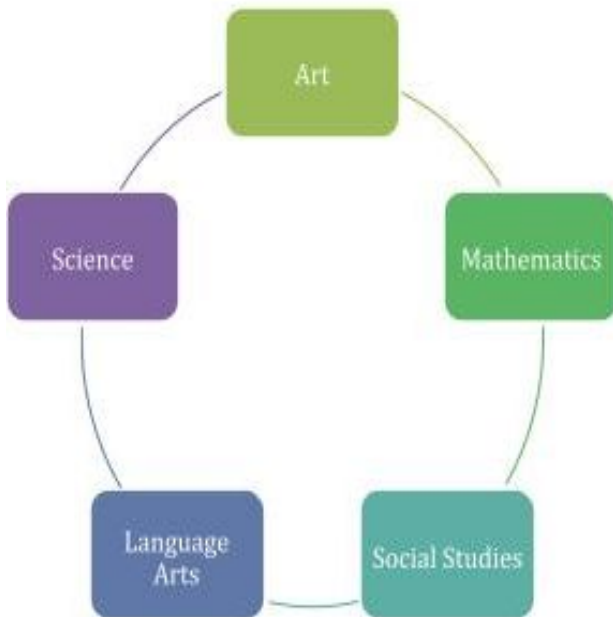
Art I: Choose and apply subject matter and symbols to communicate an idea.

Algebra I: Experiment with linear functions that can be used to create images related to your game.

Geometry: Experiment with transformations in the coordinate plane.

English I: Determine meanings of words and phrases. Produce writing appropriate to audience, task, and purpose. Use technology to produce writing and display information.

Physical World Concepts: Define, describe and calculate energy. Describe and distinguish among the behaviors of energy as waves. Explain the observable phenomena of light and sound energy.

World History: Organize a report that both informs and persuades while using formal language. Three aspects of the report will include the game's innovative features, the story line's background, and a release day reflection.

Grade Level	9th Grade		Unit Length	4 Weeks
Unit Overview	The Unit 3 PBL on Gaming will introduce students to the essential concepts underlying the principles of light, sound, and electromagnetic waves. Along with the study of various types of waves, students will apply creativity and critical thinking to collaboratively design and develop an original video game using an approved platform. Within the game, students will create movement through the use of various transformations and will represent the movement in a graphical and tabular format. Students will then market their original video game through a promotional video trailer and group presentation. Students will also analyze the efficiency of the game design through their group marketing presentation and a report that both informs and persuades both management and the media on the innovative and creative nature of their game.			
Unit Essential Issue	**Problem:** Develop a new platform for gaming in the future through the creation of an original video game.			
Culminating Events	For the Unit 3 PBL, the students will work collaboratively in groups of 4. Student teams will design and develop an original video game, using an approved choice of game creation platform. They will also create a video trailer to promote their new game and market the game, including an evaluation of the design and efficiency of the game, through their group marketing presentation and business report. **Presentations** – December 14-15			

The culminating event for this PBL is a 3-5 minute presentation where students will market their design for their original video game, including original game footage and their promotional trailer. The following items will be turned in as part of the presentation:
- Video Game Promotional Trailer
- Original Video Game
- Engineer Design Report
- Marketing Business Report
- Storyboard for the Video Game

The following items will be assessed by the appropriate content area teacher:
- Math (Algebra I and Geometry): Learning Targets will be assessed both within the presentation and submitted on graph paper with accompanying equations or notations.
- Physical World Concepts: Learning Targets will be assessed within the EDR.
- English I: Use of literary devices and propaganda techniques in the video trailer and the explanation of these elements in the Business Report.
- Art: Storyboard to develop the characters, scene, and plot.
- History: Use of marketing strategies and persuasive techniques in the Business Report.

Creation of an original video game using one of two approved game creation software options:
- Unity
- Scratch

*Any other game creation software choices must be approved by Mr. Otero.

	STEM School Chattanooga	STEM PBL Rubric		PBL Unit 3 - Gaming Student: _____ Date: _____
		Advanced	**Proficient**	**Needs Improvement**
Math Components: **Algebra I**		• Students will determine the domains for each of the lines in their graphs. • Students will apply the domains to their graph in Desmos.	• Students will create a two dimensional drawing of a figure from their game using only lines. • Students will create a table of values that represents the slope, y intercept and equation of the lines.	
Math Components: **Geometry**		• Students will create a perspective drawing of one background of their game.	• Students will classify a three dimensional figure from their game and describe the shape that makes up the faces of the figure and draw a net for the figure. •	
Science Components: **Physical World Concepts**		• Students can describe the changes in pitch of their instrument using harmonics and frequency. • Students can explain the behavior of light waves in their game using a calculation for red light, green light, and blue light.	• Students will design a theme song using their instrument, and a 3-color logo for their video game. • Students can explain the movement of sound waves using principles of reflection, refraction, and diffusion.. • Students can explain the behavior of light waves using principles of waves and particles..	
Language Arts Components: **English I**		• Students use the developed tone in the trailer to create a specific mood and emotional response in the intended audience for the purpose of marketing the video game.	• Students use figurative language in the text, lyrics, or narration to develop the tone and mood of the game trailer through specific word choice. • Students use effective persuasive techniques to create	

		• Students successfully highlight the most desirable elements of the video game through the use of persuasive techniques and game play footage. • Students utilize entertaining and innovative video and sound techniques in the video trailer. • Students evaluate the effectiveness of the figurative language and persuasive techniques used in marketing the game to the intended audience in the Business Report.	a desire for the product in the identified audience. • Students include game play and original elements to make the trailer interesting and engaging. • Students identify the propaganda techniques and literary devices used to create tone and mood in the trailer in the Business Report.
	Social Studies Components: **World History**	• A clear explanation of why the target audience is the ideal consumer for the product is given in the report. • The business report is informative and creative, plus there is a memorable marketing element that creates a lasting impression. • Language creates a marketable strategy that builds throughout report and is innovative in delivery.	• The target audience for the game and/or gaming platform is identified and appropriate for the game developed. • The business report is informative and creative. • Language creates a marketable strategy that is consistent throughout the report.
	Art Components: **Art I**	• Students develop a storyboard that highlights the major visual details of the characters and scenes. • The storyboard also contains a written explanation of the roles of the images in the video game.	• Students sketch characters and scenes in detail with the symbols and ideas demonstrated through accessories and props used by the characters in the game.
	Minimum Requirement Components: **Must be included to be graded**	Algebra I: • Sketch must be on graph paper and must include a labeled x and y axis . • Provided Linear Equations table must be completed and submitted. Geometry: • Drawings must be precise, labeled and completed on graph paper. English I: • Video trailer must be at least 30-60 seconds long and be included in the marketing presentation. • Video trailer must include original poetry or slogan with at least 1 example each of both a persuasive technique and figurative language. Art: • Storyboard must include at least 3 frames for the game. World History: • Report must be divided in three sections: Innovation, Backstory, Release Day Recap. • Report must be organized in a way that is both appealing and easy to read. • Report must contain formal language. • Report must be submitted through Google Docs with Mrs. Bolus/Mr. Evans by the due date. PWC: • Students must have a theme song. • Students must have a logo with at least 3 colors. • Students must have a written, completed EDR.	
Unit Learning Targets	Algebra 1: • I can interpret functions that arise in the context of a problem or a situation. Geometry: • I can identify the shapes of two dimensional cross sections of three dimensional objects, and identify three dimensional objects from generated by rotations of two dimensional objects. PWC:		

	● I can define, describe and calculate energy. ● I can describe and distinguish among the behaviors of energy as waves. ● I can explain the observable phenomena of light and sound energy. **English I:** ● I can determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings and analyze the cumulative impact of specific word choices on meaning and tone. ● I can produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. ● I can use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically. **Art:** ● I can choose and apply subject matter and symbols to communicate an idea. **World History:** ● I can present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. ● I can make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. ● I can adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate.
Vocabulary	

Math: Algebra I	1. Function 2. Slope 3. Discrete Graph 4. Continuous Graph
Math: Geometry	1. Nets 2. Cross Sections 3. Perspective drawings 4. Faces
Science: Physical World Concepts	1. Reflection 2. Refraction 3. Diffraction 4. Harmonics 5. Electromagnetic 6. Photons 7. Transverse 8. Longitudinal
Language Arts: English I	1. Persuasive techniques 2. Tone and Mood 3. Figurative Language 4. Word Choice
Social Studies: World History	1. Marketing 2. Persuasive Techniques 3. Formal Language
Art: Art I	1. POV - Point of View Shot 2. Master Shot 3. Long Shot