

Survive

STEAM (Science / Technology / Engineering / Art / Math)

Middle School - Grades 6 / 7/ 8

Students explore the biological and psychological origins of fear, create strategies to survive in a chaotic environment, and investigate the connection between fear, society, and the horror genre throughout human history through project based learning (PBL) during their experience in *Survive*.

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Montclair Public School Elective Overview

Instructional Plan

Course: STEAM: Survive

Marking Period or Trimester: Semester (two marking periods - 1/2 year)

Pacing: # of weeks: 20

NJSLS

Next Generation Science Standards (NGSS):

MS-PS2-3: Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.

MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

MS-LS1-2: Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.

MS.LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

MS-LS1-8: Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

NJSLS cont.

NJSLS Mathematics:

- 6.RP.A: Understand ratio concepts and use ratio reasoning to solve problems.
- 6.NS.C: Apply and extend previous understandings of numbers to the system of rational numbers.
- 6.EE.C: Represent and analyze quantitative relationships between dependent and independent variables.
- 6.G.A: Solve real-world and mathematical problems involving area, surface area, and volume.
- 6.SP.A: Develop understanding of statistical variability.
- 7.RP.A: Analyze proportional relationships and use them to solve real-world and mathematical problems.
- 7.EE.B: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
- 7.G.A: Draw, construct, and describe geometrical figures and describe the relationships between them.
- 7.SP.B: Draw informal comparative inferences about two populations.
- 7.SP.C: Investigate chance processes and develop, use, and evaluate probability models.
- 8.SP.A: Investigate patterns of association in bivariate data.

NJSLS for English Language Arts (ELA):

- R1: Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
- R4: Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- R7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- R8: Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
- R9: Analyze and reflect on how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.
- W1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W2: Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
- W3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
- W4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W6: Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
- W7: Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.
- SL1: Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others’ ideas and expressing their own clearly and persuasively.
- SL2: Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
- SL5: Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

NJSLS cont.

NJSLS for Technology:

- 8.1.8.A.1: Demonstrate knowledge of a real world problem using digital tools.
- 8.1.8.A.2: Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.
- 8.1.8.A.3: Use and/or develop a simulation that provides an environment to solve a real world problem or theory.

NJSLS for Visual and Performing Arts:

- 1.1.8.D.1: Describe the intellectual and emotional significance conveyed by the application of the elements of art and principles of design in different historical eras and cultures.
- 1.3.8.D.1: Incorporate various art elements and the principles of balance, harmony, unity, emphasis, proportion, and rhythm/movement in the creation of two- and three dimensional artworks, using a broad array of art media and art mediums to enhance the expression of creative ideas.
- 1.3.8.D.2: Apply various art media, art mediums, technologies, and processes in the creation of allegorical, theme-based, two- and three-dimensional works of art, using tools and technologies that are appropriate to the theme and goals.
- 1.3.8.D.6: Synthesize the physical properties, processes, and techniques for visual communication in multiple art media (including digital media), and apply this knowledge to the creation of original artworks.
- 1.4.8.A.7: Analyze the form, function, craftsmanship, and originality of representative works of dance, music, theatre, and visual art.

Framing the Learning

Timeframe	Big Ideas	Essential Questions	Enduring Understandings
<p>Unit 1: Fear and the History of Horror</p> <p>4 weeks (~seven 80 min. periods)</p>	<ul style="list-style-type: none"> • Fear is a biological and emotional response to a perceived danger or threat. Fear is not entirely automatic, but it can dictate a course of action. • Fear can be shared. Shared fear in modern society can lead to actions that are not rational, based on fact, or kind. • Artists, writers, and filmmakers working in the horror genre represent the fears of their society in various ways. One can experience historical societal fear by experiencing their work. 	<ul style="list-style-type: none"> • What is fear? • Why do we fear? • How does fear affect our behavior? • What fears does our society have? What evidence is there of these fears? • How do artists represent the fears of their society? 	<ul style="list-style-type: none"> • Fear is valuable, but it needs to be mastered. • Some people profit from the fears of others and purposely spread misinformation to generate fear in a population. This is not a recent trend, and there is no reason to believe that people will stop capitalizing on fear. The best way to avoid societal fear is through education.
<p>Unit 2: Monsters</p> <p>3 weeks (~five 80 min. periods)</p>	<ul style="list-style-type: none"> • Monsters found their way into stories and art throughout the entire history of humanity. Monsters usually take on some aspect of societal, cultural, political, or morality-based fear • Monster constructs vary according to region. • Monsters usually have characteristics of real living things, but have some kind of (usually dangerous) mythical or exaggerated power. 	<ul style="list-style-type: none"> • What are monsters? • Why do humans create monsters? • How do monsters represent reality? 	<ul style="list-style-type: none"> • Monsters are as real as the fear they create. Humans have a long history of creating monsters and altering their behavior to appease or avoid them.
<p>Unit 3: Ghosts and Zombies and Vampires, Undead!</p> <p>3 weeks (~five 80 min. periods)</p>	<ul style="list-style-type: none"> • We create ghosts, zombies, vampires, and other undead to help us process death. We fear the undead because we fear death. • Ghost constructs tend to reflect individual personalities rather than societal fears. Ghosts are personal horrors. • Zombies reflect our fear of losing our ability to control our actions. • Vampires represent our fear of choosing to become a monster. • Undead constructs, like monsters, vary between cultures and regions. 	<ul style="list-style-type: none"> • How do undead constructs reflect our fear of death? How might they help us process death? • What are some differences and similarities between various undead constructs? 	<ul style="list-style-type: none"> • Death causes us to feel many different emotions. We might fear death because we are worried about an end or have religious beliefs that involve an afterlife. Death is inevitable, and should not affect one's life by becoming a source of fear.

<p>Unit 4: Aliens and Robots...Space is Scary!</p> <p>3 weeks (~five 80 min. periods)</p>	<ul style="list-style-type: none"> • We are just beginning to explore space. We create terrible monsters that live in an unexplored environment to represent our fear of the unknown. However, aliens and robots are more based in reality than any other genre of horror. • Extraterrestrials are represented in a variety of ways in media. • Robots are real, and we use them with increasing frequency to fulfill more and more functions. We fear their malfunction. 	<ul style="list-style-type: none"> • Are extraterrestrials real? If so, how would we process an encounter with extraterrestrials? • How do we use robots now? How might we use robots in the future? • How do aliens and robots reflect our fear of the unknown? 	<ul style="list-style-type: none"> • Fear of the unknown is natural and can be productive when use it to drive the creation of plans. This type of fear can be very dangerous when we use it to fuel prejudice.
<p>Unit 5: The Horrors of the Nuclear Age</p> <p>3 weeks (~five 80 min. periods)</p>	<ul style="list-style-type: none"> • The development of nuclear technology and weaponry during the 20th century created an entire genre of horror: fear of a human-made apocalypse. We fear the consequences of our own actions. • We know what a nuclear apocalypse looks like due to America's use of nuclear weaponry against Japan during WWII and the Fukushima and Chernobyl disasters and we have created plans to survive similar events. • Certain monster constructs were created through nuclear means. 	<ul style="list-style-type: none"> • What is nuclear energy? How do we use it to create electricity? How do we use it to make weaponry? • What are the short term and long term effects of nuclear pollution on an area? • How can we contend with nuclear pollution? 	<ul style="list-style-type: none"> • The most damaging and most productive fear we experience is the fear of consequences for our actions. It is productive when it causes us to carefully consider our actions before committing them. It is damaging when it prevents us from acting at all.
<p>Unit 6:Put a Face on your Own Monster</p> <p>4 weeks (~ seven 80 min. periods)</p>	<ul style="list-style-type: none"> • Fear can be damaging or productive. It can be shared or only felt by one individual. It is important to recognize the factors that cause fear so it does not produce negative effects. • Humans have created forms representing many different fears for as long as we have existed. • We have also come up with strategies for contending with, or defeating our monsters. 	<ul style="list-style-type: none"> • What are my personal fears? How could I represent them? • What plans can I make to contend with, or defeat, the representation of my fears? • How can I master my own fears? 	<ul style="list-style-type: none"> • Fear is natural and comes in many different forms. When fear is recognized and analyzed it can be overcome.

Evidence of Learning

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| <ul style="list-style-type: none"> Fulfillment of criteria listed on project-specific rubrics Ability to comfortably discuss topics and work Score comparison between pre and final assessment | <ul style="list-style-type: none"> Completion of assigned projects Performance during presentation |
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Activities

Unit 1: Fear and the History of Horror	<p><u>Leading Activities:</u> Create a cause and effect fear pop-up book, conduct research about a modern event that was based on generated group fear and compare to a similar historical event, add pages to the pop-up book about conquering the fears listed in it</p> <p><u>Final Project:</u> Create 5 slides describing works of literature, movies, or art that document societal fear; Create a timeline of historical events juxtaposed with these examples</p>
Unit 2: Monsters	<p><u>Leading Activities:</u> Create a monster costume for a small human figurine based on a historical monster; create a slideshow about this monster; Generate a regional map of monsters and create a button-based (circuit) game based on this information</p> <p><u>Final Project:</u> Create a 3d model of a modern American monster using cad software; The monster should not be based on existing monsters</p>
Unit 3: Ghosts and Zombies and Vampires, Undead!	<p><u>Leading Activities:</u> Create a poster describing a version of a ghost, zombie, or vampire from a non-western culture; Tie this information into regional death-related beliefs, Conduct research related to a ghost story and deliver this story to the class</p> <p><u>Final Project:</u> Design a kit that would be used to get rid of a ghost, zombie, or vampire; Explain how each element works and what its significance might be</p>
Unit 4: Aliens and Robots...Space is Scary!	<p><u>Leading Activities:</u> Create an "Area 51" news article about what the crowds found when they stormed the facility (create an alien story), develop a plan to stay alive in a small town with limited resources if aliens invaded</p> <p><u>Final Project:</u> Conduct research about AI and why we fear it; Create a presentation about one form of AI that is in development now and what measures are being taken to ensure that it will not harm humans</p>
Unit 5: The Horrors of the Nuclear Age	<p><u>Leading Activities:</u> Research project about nuclear disasters and how they affect our planet; Create a children's book about mutation</p> <p><u>Final Project:</u> Create a model of a shelter one would use to withstand an atomic disaster using cad software</p>
Unit 6: Put a face on your Own Monster	<p><u>Final Project:</u> Create a wearable mask using casting techniques that exemplifies a fear that is present in your life</p>

DIFFERENTIATION

Special Education	ELL	Intervention	Acceleration
<ul style="list-style-type: none"> ● Modify and accommodate as listed in student’s IEP or 504 plan ● Prioritize instruction ● Utilize wait-time ● Ensure directions are clear and concise ● Utilize probing and clarifying questions ● Support instruction with scaffolding ● Model (provide step by step instructions) use of learning strategies ● Provide extended time for practice and review of learning strategies ● Create rubrics to develop assessments ● Vary assessments ● Provide individual help to all students ● Create opportunities for/Monitor peer collaboration ● Monitor student progress frequently ● Utilize flexible/cooperative grouping based on instructional goals ● Prioritize and chunk lengthy assignments ● Utilize assistive technology, when appropriate ● Provide ongoing, effective, specific feedback ● Model/Utilize graphic organizers ● Utilize visual aids and props (flashcards, pictures, symbols) when possible ● Utilize a multi-sensory approach to new topics 	<ul style="list-style-type: none"> ● Get to know student ● Set high expectations ● Allow electronic translator ● Reword, repeat, and clarify directions ● Determine student knowledge and level of understanding ● Research instruction that best matches student need ● Utilize ongoing informal assessments ● Refer to NJDOE Resources: https://www.state.nj.us/education/bilingual/resources/ ● NJDOE ELL Support Descriptions: https://www.state.nj.us/education/modelcurriculum/ela/ELLSupport.pdf <p>*Review Special Education list for additional recommendations.*</p>	<ul style="list-style-type: none"> ● Tiered Interventions following RtI framework ● RtI Intervention Bank ● Foundations Double-Dose (Tier II) ● LLI (Tier III) ● FFI Skill Report: DRA On-Line ● enVision intervention supports NJDOE resources 	<ul style="list-style-type: none"> ● Process should be modified: higher order thinking skills, open-ended thinking, discovery ● Utilize project-based learning for greater depth of knowledge ● Utilize exploratory connections to higher grade concepts ● Contents should be modified: abstraction, complexity, variety, organization ● Products should be modified: real world problems, audiences, deadlines, evaluation, transformations ● Learning environment should be modified: student-centered learning, independence, openness, complexity, groups varied