STEAM Challenge
Digital Storytelling Unit

Green Monsters

Designed for Middle and High School Students

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Introduction

This Digital Story Telling Challenge will take two to four weeks to complete. This Challenge targets key Human Life Skills – creativity, collaboration, critical thinking, digital literacy, and presentational skills – in equal measure with the curricular content. Delivering on all those learning goals requires student immersion and time. The results, as based on our research, are a high level of student engagement, deep learning, and 100% teacher endorsement.

The following Challenge:

- Should be completed by collaborative teams of two to four students but can be completed independently, if desired.
- Is aligned to nationally recognized Curricular Standards.
- Contains an Evaluation Rubric that allows the teacher to clearly score and appraise the students' work.
- Is designed to be integrated into the classroom in alignment with existing curricula.
- Can be assigned as an extra credit project to teams of students that you think would benefit from this kind of immersive, deep learning experience. Additionally, will work well in informal educational settings.
- Should follow the rules of Digital Citizenry in their proper usage and/or citation of images, music and text taken from other sources. See the Digital Rules area in the free Media Resources section of the Meridian Stories site for guidance.

The **Media Resources** section also contains many other **free support materials** from short videos featuring professionals in the field – Artists and Innovators– to short written documents that cover everything from storyboarding to creative brainstorming, interviewing techniques to game design.

While it is helpful to have a Technology Integrator involved, they are not usually necessary: the students already know how to produce the media. ***The teacher's primary function in these Challenges is to guide the students as they engage with the content. You don't need to know editing, sound design, shooting or storyboarding: you just need to know your content area.***

At the end of the Challenge, it is often fun and useful to have a screening of all the

media productions – they are all designed to run under 4 minutes each. Students can vote for their favorite videos that can then be screened in a larger assembly-like setting for the whole grade to see. Or this work can be presented as part of a student showcase for parents and friends. Presentational Skills is another Human Life Skill that this project enables.

Our research indicates this to be a really useful exercise for two additional reasons:
1. Students actually learn from their peers' presentations – it is useful to hear a perspective that is not just the teacher's; and
2. The public setting – painful as it is for some students – provides them with an opportunity to 'own' their work and to be more accountable.

Finally, if you are interested to learn more about the community of schools who annually participate in the **Meridian Stories Competitions** – a community that is characterized by a friendly competitive spirit; feedback from Mentors on each submission; and the rewarding of digital badges in content, storytelling and digital literacy – please return to the Competitions section of the website or inquire at info@meridianstories.com.

Let's get started.

The Challenge

Climate change is a very real issue facing our world today, but it seems like not enough people are doing their part to help combat rising carbon emissions and other pollutants plaguing our ecosystems. How do we get people to start caring—to start doing their part? Well, one way is to start introducing the ideas of climate stewardship to a young age, like 6 to 10-year olds. What if we were able to frame the perpetrators and combatants of climate change as antagonists and protagonists? As bad guys vs. good guys? This frame of reference is something young kids are able to understand.

Your task is to research what everyday items are causing significant harm to the environment. Specifically, you are looking to discover which facets of everyday life use the largest amount of energy, release the most carbon into the atmosphere, or produce the most waste—it's up to you to decide which one of these factors of human resource usage you want to focus on. Once you create a list and identify these items, brainstorm and research ways to cut back on the problem by providing alternatives or solutions.

Your job is to create a short film, 2-4 minutes long, that shows a younger audience what items in their lives are the "bad guys" and how to switch them out for "good guys." This film will need to be visually appealing, rhetorically convincing, and have a strong storyline. Ever watch *Scooby-Doo* where the bad guys were always easily identifiable and there was always something being done to catch them? Consider using similar methods as a guide while creating your film.

Deliverables include:
- Green Monsters Video
- List of Culprits (at teacher's discretion)
- Storyboard/Story Outline (at teacher's discretion)
- Final Script (at teacher's discretion)

Process
Below is a suggested breakdown for the students' work.

During <u>Phase I</u>, student teams will:
- Begin research to discover which facets of everyday life use the largest amount of energy, release the most carbon into the atmosphere, or produce the most waste—it's up to you to decide what factors of human resource usage you want to focus on.
  - Make sure you stay within the realm of what items, appliances, or utilities you see every day or are exposed to frequently, such as automobiles, plastic cups, or air conditioning.
  - The context for this – 'facets of everyday life' – can be applied loosely. You can contextualize this by looking at your home, your school, your local grocery store, your community or general humanity.
- Come up with a bulleted list of ideas on what everyday topics/environmental threats you find most important and compelling.
  - *Teachers Option*: **List of Culprits** - Teachers may require the teams to hand in a list and short description of five topics/environmental threats that play a significant role in humanity's impact on the Earth within a local context.
- Choose a few topics/environmental threats (1-3) that you want to further develop as characters in your short film.

- Once you find a few topics with which you're happy, start researching more sustainable options/alternatives available to save on energy or waste.
  - Lean towards alternatives that you can find adequately available in your life. This should be a realistic switch that can be made, such as switching out traditional incandescent light bulbs with halogen incandescent light bulbs, compact florescent lamps (CFLs), or light emitting diodes (LEDs), which use 25%-85% less energy than their traditional alternative.
  - Correlatively, think like a detective: try to find problems and solutions of which the public may not be that aware.

By the end of Phase I, your team should have a clear sense of what characters and their alternatives (and why) are going to be developed in your short film. You will want to have a clear sense of the science and facts behind the bad and good guys, which you will translate into characters during Phase II.

During <u>Phase II</u>, student teams will:
- Character Development and Media Formatting – Now that you have identified the bad science and the good science, you have to turn that information into characters. But before you do that, your team needs to decide what this film actually looks like. Is it a film where people are playing the bad and good guys? Is it a stop motion film? Animation? A Minecraft world? Or is it mixed media where you mix your own shots with existing footage and imagery? Decide what this short film is going to look like. And then, decide what and who your good and bad characters are. And remember: your target age is 6 – 10-year olds. What do they like?
- Brainstorm what basic plotline the film will have—nothing needs to be set in stone yet. You just need to start having some direction about what types of shots, dialogue, costume, or effects will be used in the film. The result of this step should be a story outline.
  - Keep in mind that this is a good guys vs. bad guys story. For this age group, that kind of story might involve…comedy! So, feel free to make it funny.
  - Consider creating a storyboard of key scenes of what you want the film to look like. This can be done with computer software or by hand. Ask an art teacher or IT for help!
- *Teacher Option*: **Storyboard/Story Outline** - Teachers may require the teams to hand in either a written story outline or a storyboard of key scenes.

- Finalize your initial brainstorm and lock what your protagonist(s) and antagonist(s) look and sound like. How can you harness their good or bad environmental impact to create lively action or dialogue between the two?
- Draft the script. Two important questions to keep in mind as you are drafting the script include: How are you going to present your findings on environmental impacts to an audience of 6 – 10-year olds? How will you convince a younger population that making more sustainable decisions is a better idea than continuing to use wasteful technology?
- Finalize a script for your film.
    - *Teacher Option*: **Final Script** - Teachers may require the teams to hand in a final script for feedback prior to shooting.
- Pre-produce the video:
    - Scout locations for shooting (if this is being shot on location);
    - Research, as necessary, the still images that you will integrate into your video;
    - Prepare the logistics for the actual shooting of the video; and
    - Rehearse the scenes that will comprise the video.

During Phase III, student teams will:
- Shoot (or animate!) the video.
- Edit the video, adding stills and graphics as desired.
- Post-produce the video, adding music and sound effects as desired.

Meridian Support Resources

Meridian Stories provides two forms of support for the student teams.
1. Media Innovators and Artists – This is a series of three to four-minute videos featuring artists and innovative professionals who offer important advice, specifically for Meridian Stories, in the areas of creativity and production.
2. Meridian Resources – These are short documents that offer student teams a few key tips in the areas of creativity, production, game design and digital citizenry.

Recommended review, as a team, for this Challenge include:

Media Innovators and Artists	Meridian Resources

On Photography – Michael Kolster ***On the Importance of Character in Storytelling*** – Scott Nash ***On Character Design*** – Scott Nash ***On Script Writing and Comedy*** — Kent Pierce	"Creative Brainstorming Techniques" "Video Editing Basics" "Creating Storyboards, Framing the Shot" "Three Free Rendering and Animation Programs: Scratch, Geogebra, and Sketch Up"

Evaluation Rubric – *Green Monsters*

CONTENT COMMAND	
Criteria	**1 - 10**
Environmental 'Bad Guys' Content	The environmental 'bad guys' content is presented clearly and compellingly
Environmental Alternatives Research (The Good Guys)	The research and presentation of environmental alternatives is substantive and persuasive
Resulting Ideas About Humanity's Everyday Environmental Impact	The final set of ideas are thoughtful, authentic, and well executed

STORYTELLING COMMAND	
Criteria	**1 - 10**
Narrative Clarity	The story effectively and creatively communicates the ideas on which it is premised
Target Audience Appropriateness	The short film produced is ideal for engaging and educating young viewers
Character Development	The protagonists and antagonists are engaging and well developed

MEDIA COMMAND	
Criteria	**1 - 10**
Mixed Visual Media	The use of video, stills, graphics and/or text was engaging, visually interesting and well matched to the goals of the video
Sound Design	The mix of music and sound greatly enhanced the goals of the video
Editing	The video is edited cleanly and effectively, resulting in an engaging video experience

HUMAN SKILLS COMMAND	
Criteria	**1 - 10**
Collaborative Thinking	The group demonstrated flexibility in making compromises and valued the contributions of each group member.
Creativity and Innovation	The group brainstormed many inventive ideas and was able to evaluate, refine and implement them effectivel
Initiative and Self-Direction	The group set attainable goals, worked independently and managed their time effectively, demonstrating a disciplined commitment to the project

Essential Questions

1. What do we know or understand about sustainable energy usage and waste, and how it is different from unsustainable energy usage and waste?
   a) What around us – in our own daily lives – is actively contributing negatively and positively to this issue?
2. What is the status of availability for sustainable alternatives to facets of everyday life that require excessive energy consumption or produce excessive polluting emissions or waste?
3. What analytical skills were necessary to distill somewhat complex scientific information down to what a younger audience can conceive?
   a) How has incorporating scientific research into the production of a short narrative that is intended to educate and persuade, changed your understanding of the science?
4. How has immersion in the creation of original content and the production of digital media—exercising one's creativity, critical thinking and digital literacy skills—deepened the overall educational experience?

5. How has working in a team—practicing one's collaborative skills—changed the learning experience?

Student Proficiencies

1. The student will have researched and explored the core meanings behind sustainable and unsustainable energy usage/waste practices, and how it relates to their own daily lives.
2. The student will learn about what types of resources are available to themselves, their families, or communities that demand less energy/produce less pollutants or waste.
3. The student will master the content in order to translate this information into a narrative that a younger audience can understand.
   a. The student will know the basic constructs of using video media to effectively communicate content, character, and story for the purposes of educating.
4. The student will utilize key 21st century skills, with a focus on creativity, critical thinking, and digital literacy, in their process of translating scientific content into a story.
5. The student will have an increased awareness of the challenges and rewards of team collaboration. Collaboration—the ability to work with others—is considered one of the most important 21st century skills to develop in students and they prepare for life after secondary school.

NGSS Curricular Correlations

The *Green Monsters* Challenge addresses a range of curricular objectives that have been articulated by the **Next Generation Science Standards.**

Below please find the standards that are addressed, either wholly or in part.

Next Generation Science Standards (NGSS)

High School

Students who demonstrate understanding can:

- Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. (HS-ESS3-2)

- Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. (HS-ESS3-4)
- Design, evaluate, and refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations. (HS-LS2-7)
- Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants. (HS-ETS1-1)
- Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. (HS-ESS3-4)

Middle School
Students who demonstrate understanding can:
- Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. (MS-ESS3-3)
- Undertake a design project, engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints. (MS-PS1-6)
- Ask questions that can be investigated within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources and, when appropriate, frame a hypothesis based on observations and scientific principles. (MS-PS2-3)
- Apply scientific ideas or principles to design an object, tool, process or system. (MS-PS2-1)
- Science knowledge is based upon logical and conceptual connections between evidence and explanations (MS-PS3-4),(MS-PS3-5)
- Integrate qualitative scientific and technical information in written text with that contained in media and visual displays to clarify claims and findings. (MS-PS4-3)