The Graphic Tale of an Environmental Law

STEAM Challenge

Due: April 7, 2023

Designed for Middle and High School Students

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• The Challenge • Assumptions and Logistics • Process • Meridian Support Resources • Presentation of Learning • Evaluation Rubric • Essential Questions • Student Proficiencies • Curricular Standards - **NGSS:** (MS–ESS3-1, 3,4; MS – LS2-3; HS–ESS3-3, LS2- 7) **Common Core**: (W3, W4, W5, RI1 RST7, RST8)	• Environmental Law Research • Originate New Environmental Law • Create Partial Graphic Novel Around Environmental Issue ◦ Use of words and images to tell science-based narrative • Digital Literacy Skills - Video - Pre-production, Production and Post-production • Human Skills: Creativity, Collaboration, Critical Thinking, Presentational Skills

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The Challenge

Graphic novels are a unique genre of literature. They are distinguished by the use of both words and images to convey meaning. In fact, in many graphic novels, it's the image that conveys more information than the words. No other literary genre works in this way. Secondarily, the images in question, generally speaking, are drawn very simply. This stems from the simple figures that adorned comic strips, from which this literary genre is derived. It's also a matter of economy: there is not a whole lot of space in a frame to put much detail. Simplicity becomes the driver of complex storytelling in this genre. Finally, graphic novels can be about …anything! Society, silliness, politics, teen angst, superheroes, science fiction…even, the environment!

In this Challenge, you will create a chapter of a graphic novel in which you feature a new environmental law and a character's adventures around that law. This chapter should run no more than 20 frames. With this limitation in mind, this challenge is asking you to present just a scene or two from a larger story. Your graphic novel chapter can be in color, or black and white: it's up to you. Your final deliverable is a frame by frame presentation with voice over and sound effects, including music if desired. But here is a small catch: the image of a bicycle must appear four times throughout your story. It can be obvious or partially hidden, but it must be there. Be creative and have fun with this!

Deliverables include:

- Graphic Novel Digital Story (this is the only Meridian Stories deliverable)
- New Environmental Law Outline (at teacher's discretion)
- Story Outline (at teacher's discretion)
- Rough Storyboard (at teacher's discretion)

Assumptions and Logistics

Time Frame - We recommend that this digital storytelling project takes place inside of a three to four-week time frame.

Length - All Meridian Stories submissions should be under 4 minutes in length, unless otherwise specified.

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Slate **- All digital storytelling projects must begin with a slate that provides:**

a) the title of the piece;
b) the name of the school submitting;
c) the wording 'Permission Granted' which gives Meridian Stories the right to a) publicly display the submission in question on, as linked from, related to or in support of Meridian Stories digital media; and b) use or reference it for educational purposes only, in any and all media; and
d) We strongly recommend that students do **not** put their last names on the piece either at the start or finish, during the credits.

Submissions - Keep in mind that each school can only submit three submissions per Competition (so while the entire class can participate in any given Challenge, only three can be submitted to Meridian Stories for Mentor review and scoring).

Teacher Reviews - All reviews by the teacher are at the discretion of the teacher and all suggested paper deliverables are due only to the teacher. The only deliverable to Meridian Stories is the digital storytelling project.

Teacher's Role and Technology Integrator - While it is helpful to have a Technology Integrator involved, they are not usually necessary: the students already know how to produce the digital storytelling project. And if they don't, part of their challenge is to figure it out. They will! ***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, while assisting them with time management issues. See the **Teachers Role** section of the site for further ideas about classroom guidance.

Digital Rules/Literacy - We strongly recommend that all students follow the rules of Digital Citizenry in their proper usage and/or citation of images, music and text taken from other sources. This recommendation includes producing a citations page at the end of your entry, if applicable. See the **Digital Rules** area in the **Meridian Stories Digital Resource Center** section of the site for guidance.

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Location – Try not to shoot in a classroom at your school. The classroom, no matter how you dress it up, looks like a classroom and can negatively impact the digital story you are trying to tell.

Collaboration - We strongly recommend that students work in teams of 3-4: part of the educational value is around building collaborative skill sets. But students may work individually.

Process

Below is a suggested breakdown for the students' work.

During Phase I, student teams will:

- Decide what your team is passionate about in terms of the environment (recycling, oceans, plastics, carbon sequestration, freshwater, etc.).
- Debate, as a team, the most important environmental laws (state or federal) that already exist within the environmental area your team has chosen, and then jot some notes down on these laws and why they are so important. Remember: the laws are defined by what they permit or don't permit. So, be sure to look for these elements and ask the question: what's not being addressed? Or, what has evolved environmentally with which the laws have not caught up?
- Create a new environmental law - keep it simple: statement of purpose along with three supporting points or directives - around which your team is passionate and about which you want to create your environmental graphic novel.
    - ***Teacher's Option* – New Environmental Law Outline** – The teacher may require teams to hand in a full articulation of their proposed environmental legislation. This can include the proposed law, as well as the scientific research (with citations) the team did to support the need for this proposed law.
- Lastly, decide whether the regulation will be a state or federal law, and do the proper research needed in order to understand the difference between the two. This will allow you to make the most informed decision.
- Finalize the details of your environmental law before moving on to the second phase.

During Phase II, student teams will:

- Create a brief statement about what your law is intended to do, along with two or three supporting points about how this law will be enforced or the science

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behind the law. This 'statement of the law' will introduce your digital story. It can look or sound like anything. Could be just text on screen with a voiceover …or not.

- Brainstorm your story. You have your law: what story about this new law do you want to tell? Is it focused on the formation of this law? The successful or failed implementation of this law? The consequences of this law …in the future? Or the repeal of this law …also in the future?
    - Outline the story that you want to tell. Remember, the full articulation of this law does not have to be included in this story – that will be detailed in your introduction to this Chapter referenced above.
    - ***Teacher's Option*** **– <u>Story Outline</u>** - The Teacher may require teams to hand in a two-page outline of their basic story for review and feedback.
- Once you have figured out the main story, focus on characters. Who is telling this story? Humans …or fish? Air molecules …or kids? This is a graphic novel. This is fiction. You can do anything you want!
- As your creative evolves, here are some questions to consider:
    - What will the characters look like? Talk like? Dress like?
    - Where will your narrative take place? By the ocean? In the city?
    - What is the graphic style of this narrative? Are you using existing digital apps to create the visuals, or your own hand-crafted art?
- Once you have a secure grasp of story, character and setting, you will want to storyboard your chapter: what happens in each frame? The storyboard should focus on both image and words. This rough storyboard is like your first draft script.
    - ***Teacher's Option*** **– <u>Rough Storyboard</u>** - The Teacher may require teams to hand in a rough storyboard that brings words and imagery together, for review and feedback.
- Identify key visuals, props, images and location details that you will want to include in each frame. Your narrative is going to be highly dependent on your visuals, so the things you choose for us to see are important.
    - Keep in mind: You are trying to get an important message across to the reader. How do you want to portray your character and the scenes in the graphic novel to get this message across?
    - Also …keep in mind that twist about the bicycle! Have fun with that.
- Finalize the art work on your frames and the language that helps to drive the story forward. Remember that this Environmental Graphic Novel is primarily visual. So, the words that do make the cut, need to be impactful and move the story along efficiently.
- Make a decision about whether your 'chapter' needs a preamble (in addition to your 'statement of your law') that brings the viewer to the start of your story. If

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so, decide how you want to communicate that. This portion can be produced in any way that you see fit.

- Once the frame by frame design is complete, decide ***how*** you want to present your Environmental Graphic Novel. Will each frame be the same size? How will you transition from one frame to the next in your final digital presentation?
- Discuss as a team what all this is going to ***sound*** like. Whose voice will we be hearing, if anyone's? Will you add special sound effects? Or is there a role that music can play to bring your scenes to life?
- By the end of Phase II, you have a clear sense of the look and details of your frames; you know how you will move your audience to and from these frames; and you know the words that you will use – most likely in voiceover – to narrate this graphic novel.

During Phase III, student teams will:

- Produce the introductory section, introducing us to the new environmental law.
- Create a video that takes us through your graphic novel, frame by frame.
- Add voice over narration
- Add music and sound effects to enhance the overall final product.

Meridian Support Resources

Meridian Stories provides two forms of support for the student teams:

1. Meridian 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. Media Resource Collection – These are short documents that offer student teams key tips in the areas of creativity, production, game design and digital citizenry.

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

Meridian Innovators and Artists	**Media Resource Collection**
On the Importance of Character in Storytelling – Scott Nash ***Fiction Writing*** - Lily King ***Character Design*** - Scott Nash ***Sound Design*** - Chris Watkinson	**Creating Storyboards, Framing a Shot** **Creative Brainstorming Techniques** **Building Characters**

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	Rendering and Animation Programs

Presentation of Learning

Meridian Stories is a proud partner of the non-profit ***Share Your Learning***, which is spearheading the movement of over **five million** students to publicly share their work as a meaningful part of their educational experience.

The workforce considers Presentational Skills to be a key asset and we encourage you to allow students to practice this skill set as often as possible. These digital storytelling projects provide a great opportunity for kids to practice their public presentational skills. ***This can be achieved in a remote learning environment by inviting parents to a Zoom/Google/Skype screening of the student's digital stories.***

According to *Share Your Learning*, Presentations of Learning (POL) promote...

- **Student Ownership, Responsibility & Engagement**. POLs can serve as a powerful *rite of passage* at the end of [a project]. By reflecting on their growth over time in relation to academic and character goals, grounded in evidence from their work, students are encouraged to take ownership of their learning. Just as an artist wants their portfolio to represent their best work, POLs encourage students to care deeply about the work they will share.
- **Community Pride & Involvement**. When peers, teachers and community members come together to engage with student work and provide authentic feedback, they become invested in students' growth and serve as active contributors to the school community.
- **Equity**. POLs ensure that all students are seen and provide insight into what learning experiences students find most meaningful and relevant to their lives.

Meridian Stories' own research indicates this to be a really useful exercise for one additional reason: Students actually learn from their peers' presentations – it is useful to hear a perspective that is not just the teacher's.

It is with this in mind that we you encourage you to plan an event – it could be just an end-of-the-week class or an event where parents, teachers and student peers are invited – to allow the students to showcase their Meridian Stories' digital storytelling projects. For more free resources that will support this planning, visit Share Your Learning.

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Evaluation Rubric – *The Graphic Tale of an Environmental Law*

CONTENT COMMAND	
Criteria	**1-10**
Environmental Context	The digital story reflects a clear understanding of the causes of the select environmental problem and its impact on earth and society
Environmental Law - I	The new law addresses the problem appropriately and intelligently.
Environmental Law - II	The details of the law, as presented in the Introduction, are thorough and shaped in the language of a law that is designed to regulate human behavior

STORYTELLING COMMAND	
Criteria	**1 - 10**
Clear Narrative	The overall narrative is clear and easy to understand. It has a powerful message that is evident in your storytelling
Frame Visuals	The visual depictions of your frames are compelling, thought provoking and reflect a solid understanding of the graphic novel genre
Frame Descriptors	Your accompanying text is concise and insightful and enhances our understanding of the scene and the science
The Bike Addition	The 'bike' aspect of this Challenge is imaginatively conceived and executed

MEDIA COMMAND	
Criteria	**1 - 10**
Voice and/or Perspective	The narrative perspective is brought to life in a visually and aurally compelling manner
Sound Design	The selective use of music and sound creates an atmosphere that enhances and enriches our understanding of your narrative

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Overall Visual Cohesion	The visual flow and presentation of the frames, from set up to conclusion, is clear and fluid.
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 effectively
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. How does looking at the environment through the eyes of the law change or alter your previous conceptions of this complex topic?
2. What is the value of creating your own environmental law based on what we know about the environment and our society?
3. What are some existing environmental laws and what is their impact?
4. What is the value of telling the story about the environment in a graphic novel format, where images, not words, are the leading narrative device?
5. 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?
6. How has working on a team – practicing one's collaborative skills - changed the learning experience?

Student Proficiencies

1. The student will understand that environmental laws greatly impact our society and that they have the power to change our world for the better.
2. The student will better understand what we, as the earth's caretakers, can and cannot do to change our environmental trajectory.
3. The student will understand the value of the environmental laws already in place and how they contribute to making meaningful environmental change.

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4. The student will gain an understanding of the challenges and rewards of communicating primarily through imagery and not words.
5. The student will utilize key Human Skills, with a focus on creativity, critical thinking and digital literacy, in their process of translating scientific content into a graphic novel.
6. 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 Human Skills to develop in students as they prepare for life after secondary school.

Curricular Correlations

The Graphic Tale of an Environmental Law Challenge addresses a range of curricular objectives that have been articulated by the Next Generation Science Standards and the Common Core**.** Below please find the standards that are addressed, either in whole or in part.

Next Generation Science Standards (NGSS)

Middle School

MS-ESS3 Earth and Human Activity

MS-ESS3-1

Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

MS-ESS3-3

Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-ESS3-4

Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

MS-LS2 Ecosystems: Interactions, Energy, and Dynamics

MS-LS2-3

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Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

High School

HS-ESS3 Earth and Human Activity

HS-ESS3-3

Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.

HS-LS2 Ecosystems: Interactions, Energy, and Dynamics

HS-LS2-7

Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

Common Core Curricular Standards – Language Arts and Science and Technical Literacy

	5th Grade	8th Grade	9th - 10th Grade	11th - 12th Grade
W3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	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 and organization	Produce clear and coherent writing in which the development and organization	Produce clear and coherent writing in which the development,	Produce clear and coherent writing in which the development,

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	are appropriate to task, purpose, and audience.	are appropriate to task, purpose, and audience.	organization, and style are appropriate to task, purpose, and audience.	organization, and style are appropriate to task, purpose, and audience.
W5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
RI1	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
RST7	N/A	Integrate quantitative or technical information expressed in words in a text with a version of that	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g.,

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		information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.	quantitative data, video, multimedia) in order to address a question or solve a problem.
RST8	N/A	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

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