



# STEAM Challenge Digital Storytelling Unit

## *Eco-Disruption Radio Drama*

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](mailto:info@meridianstories.com).

**Let's get started.**

## The Challenge

There has been a major disruption in one of Earth's ecosystems, *completely altering it*. Life as it was has been irrevocably changed, and your challenge is to create a radio program that effectively communicates this devastating information.

Here's what your team needs to do:

- Choose an existing ecosystem on Earth and a plausible physical or biological disturbance that could alter it so that it doesn't return to its original status.
- Research background information about the ecosystem, using at least two different media formats – the Internet, newspaper, magazine, or book.

- Try to determine what your ecosystem would be like once it has undergone the plausible, unstable disruption. Focus on one area in specific: e.g. insect life.
- Develop and produce a 3 – 4 minute radio drama about the effects of this change. These are just a few examples (not to be used).
  - What would happen if a meteor knocked the moon and moved it closer? What if a widespread plant mutation or a certain pesticide caused nectar to become scarce?
  - Be sure to specify the time frame of the change. Does it happen over the course of a day? Or over the course of three generations?
  - Your story should describe 3 consequences of ecosystem disruption.

**Deliverables include:**

- Radio Drama
- Idea Summary Paper (at teacher’s discretion)
- First Draft Script (at teacher’s discretion)

## Process

**During Phase I, student teams will:**

- Choose an ecosystem and do some preliminary background research.
- Based on that research, brainstorm a destabilizing disruption to the ecosystem - research the plausibility of the disruption.
- Then take that information and research possible consequences to this eco-disruption.
- As suggested above, it may be important to focus on one specific element of change that would occur: weather patterns, water supply, insect life, urban life, air quality, day length, etc. The more focused and specific you are about the ramifications – the more scientific and insightful you are, staying away from obvious conclusions – the better.
  - ***Teacher’s Option: Idea Summary Paper*** – Teachers may require that teams hand in a summary of their eco-disruption and their predicted consequences.
- With a general understanding of the plausibility and consequences of your select eco-disruption in hand, conduct in-depth research on the ecosystem, using a variety of sources, and keeping track of all the sources used for your Resource Citation Paper.

- Select three repercussions to focus upon. It can be useful to research if there is any historical precedent.

**During Phase II, student teams will:**

- Begin to brainstorm the creative format in which your team will want to present this information.

Radio Dramas have a rich history. The most famous example is the broadcast of an alien invasion on a radio program called, “War of the World” in 1938. There was apparently a coterie of listeners who didn’t know that this was a radio drama and panicked, thinking that there really was an alien attack.

Following that format, your radio drama could begin with your characters listening to a ‘Sudden Interruption Radio Report’ that reports this new eco-disruption and your drama can revolve around what your characters do in reaction.

The creative storytelling could be visitors from the future coming back to a devastated earth and through scientific exploration, they discover what happened.

In short, there are numerous creative dramatic approaches to how you want to tell this audio story; how you want to paint a clear picture of the visual nature of the disruption and the resulting behaviors of your main characters.

Researching some of the history of radio drama could provide you with some interesting models for the scene you are going to create.

- Outline the story or creative format that will be used to communicate the scientific information.
  - Keep in mind that these are characters we only hear and never see. So, keeping your characters down to a maximum of four is recommended.
  - In an audio story, we recommend keeping this to two locations. You can only deliver location via sound effects and verbal description. Taking your listener to two locations – two places for them to imagine in their heads – should be enough in the short time allotted.

- In the end, you have a) characters and their voices, b) sound effects and c) music to tell your dramatic story. Add to that pacing and rhythm and you have your full inventory of audio storytelling tools. Have fun making the most of them.
- Write the first draft of the script.
  - Read your script aloud several times with your team playing different characters. Often, it's only when you read the script aloud that you can discover what's working and what's not; what sounds like real conversation and what doesn't; whether a character sounds right or wrong.
  - **Teacher's Option: First Draft Script** – Teachers may require that teams hand in their first draft script to check for scientific accuracy and narrative cohesion.
- Finalize the scripting and voice casting.

**During Phase III, student teams will:**

- Rehearse then record the radio drama.
- Brainstorm the *sound* of this show. What does each location sound like and how you will create those sound effects? And will you underscore this with music, in order to build the dramatic tension?
  - Sound effects can be created and recorded by the team – this is called Foley – the art of reproducing every day sounds – or found online on royalty free sounds effects sites. Creating your own sound effects can be a lot of fun.
- Post-produce the radio drama by adding music and sound effects
- NB: Meridian Stories may only accept this as a YouTube video. So your audio format may need to be delivered inside of this video format. But no imagery necessary.

## Meridian Media Resources Support

**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 media professionals who offer important advice, specifically produced for Meridian Stories, in the areas of creativity and production.
2. Meridian Tips – These are short documents that offer student teams a few key tips in the areas of creativity and production.

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

<b>Meridian Innovators and Artists</b>	<b>Media Resource Collection</b>
<i>On Sound Design</i> – Chris Watkinson	“Creating Radio Stories”
<i>On Making Horror Films</i> – Aviva Briefel	“Sound Editing Basics”
<i>On Radio Plays</i> – Margaret Heffernan	“Creative Brainstorming Techniques”
<i>On Music in Film</i> – Mary Hunter	“Producing: Time Management”
	“Royalty Free Music”

## Evaluation Rubric – *Eco-Disruption Radio Drama*

<b>CONTENT COMMAND</b>			
<b>Criteria</b>	<b>1 - 3</b>	<b>4 - 7</b>	<b>8 - 10</b>
<b>Communication of Content - Ecosystem</b>	Understanding of the ecosystem is not evident	Some understanding of the ecosystem is evident	Thorough understanding of the ecosystem is evident
<b>Communication of Content – Disruption Consequences</b>	The disturbance consequences are missing or not presented clearly	The disturbance consequences are evident, but are not communicated clearly or consistently	The disturbance consequences are thoroughly developed, and clearly communicated
<b>Plausibility of Ramifications</b>	The ramifications are unlikely	The ramifications are somewhat plausible	The ramifications are plausible
<b>STORYTELLING COMMAND</b>			

<b>Criteria</b>	<b>1 - 3</b>	<b>4 - 7</b>	<b>8 - 10</b>
<b>Creative Approach</b>	The creative concept does not service the content clearly or appropriately	The creative approach does not consistently service the content	The creative approach services the content effectively and imaginatively
<b>Script</b>	The narrative is hard to follow and/or the scripting is lackluster and ineffective	The narrative is presented clearly, but the scripting is inconsistently engaging	The narrative is presented clearly and the scripting is engaging and effective
<b>Tone and Mood</b>	The tone and mood detract from the overall intent of the narrative	The tone and mood are interesting choices that match the content of the narrative	The tone and mood are well chosen and enhance the content of the narrative

### **MEDIA COMMAND**

<b>Criteria</b>	<b>1 - 3</b>	<b>4 - 7</b>	<b>8 - 10</b>
<b>Editing</b>	The piece feels patched together and the overall editing detracts from the narrative	The piece works, but there are occasional editing distractions	The piece is edited cleanly and effectively, resulting in a seamless audio experience
<b>Sound Effects to Create a Sense of Place</b>	The sound effects – or lack of them – do not enhance the overall listening experience	The sound effects help to enhance the overall listening experience	The sound effects effectively place the listener inside the moment
<b>Music</b>	The selective use of music detracts from the drama inherent in the scene	The selective use of music works inconsistently to enhance the overall listening experience	The selective use of music enhances the drama inherent in the scene

### **HUMAN SKILLS COMMAND**

<b>Criteria</b>	<b>1-3</b>	<b>4-7</b>	<b>8-10</b>
<b>Collaborative Thinking</b>	The group did not work together effectively and/or did not share the work equally	The group worked together effectively and had no major issues	The group demonstrated flexibility in making compromises and valued the contributions of each group member

<b>Creativity and Innovation</b>	The group did not make a solid effort to create anything new or innovative	The group was able to brainstorm new and inventive ideas, but was inconsistent in their realistic evaluation and implementation of those ideas.	The group brainstormed many inventive ideas and was able to evaluate, refine and implement them effectively
<b>Initiative and Self-Direction</b>	The group was unable to set attainable goals, work independently and manage their time effectively.	The group required some additional help, but was able to complete the project on time with few problems	The group set attainable goals, worked independently and managed their time effectively, demonstrating a disciplined commitment to the project

## Essential Questions

1. What aspects of an ecosystem lend it resilience? What aspects of an ecosystem make it tend towards instability?
  - a. Why do some disturbances cause an ecosystem to return to its more or less original status, whereas others result in the transformation to a very different ecosystem?
2. What is the nature of the relationship between organisms and the ecosystem in which they reside?
3. How do you know the ramifications and fluctuations caused by your physical or biological disturbance are plausible?
  - a. By imagining and elaborating upon the possible changes to an ecosystem, how has your understanding of the ecosystem changed or deepened?
4. What techniques did you use to make your story about the shifts in an ecosystem compelling and dramatic?
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

# Student Proficiencies

1. The student will gain a deeper understanding of the fragile dynamics of ecosystems and what happens when the environment changes.
  - a. The student will better understand how the ramifications in an ecosystem, due to a biological or physical disturbance, reflect its resilience.
2. The student will better understand how organisms interact with their environment and what the effects are of these interactions.
3. The student will understand the process by which one can accurately use data to project into the future to understand possible consequences.
4. The student will understand the power of narrative, and its constituent elements, to communicate effectively.
5. The student will utilize key 21<sup>st</sup> century skills, with a focus on creativity, critical thinking and digital literacy, in their process of translating STEAM content into a new narrative format.
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 21<sup>st</sup> century skills to develop in students as they prepare for life after secondary school.

## Curricular Correlations

The *Eco-Disruption Radio Drama Challenge* addresses a range of curricular objectives that are articulated in Next Generation Science Standards. Below please find the standards that are addressed, either wholly or in part, depending on the ‘eco-disruption’ the student teams choose.

### Middle School

**MS – ESS2 -2 Earth’s Systems** - Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

**MS - ESS2 – 6 Earth’s Systems** – Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

**MS – ESS3 – 3 Earth and Human Activity** – Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

**MS – ESS1 – 4 – Earth’s Place in the Universe** – Construct a scientific explanation based on evidence from rock strata for how geologic time scale is used to organize Earth’s 4.6 billion-year-old history.

**MS – LS2 – 1 - Matter and Energy in Organisms and Ecosystems** – Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

**MS – LS2 – 4 – Matter and Energy in Organisms and Ecosystems** - Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

## **High School**

**HS – LS2 – 6 – Ecosystems: Interactions, Energy and Dynamics** - Evaluate claims, evidence and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.