What Is The Impact Of Altering A Dynamic Ecosystem?

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Supporting Questions

1. What is a wetland?
2. What is the Grand Kankakee Marsh?
3. Why are wetlands important?

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Inquiry Standard	**Geographic Representations: Spatial Views of the World** **D2.Geo.2.6-8.** Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions, and changes in their environmental characteristics. (C3 Framework)
Staging the Compelling Question	*What is the impact of altering a dynamic ecosystem?*

Supporting Question 1	Supporting Question 2	Supporting Question 3
What is a wetland?	What is the Grand Kankakee Marsh?	Why are wetlands important?
Formative Performance Task	**Formative Performance Task**	**Formative Performance Task**
Read the background material provided on wetland characteristics and types, and complete a wetlands identification worksheet.	Students will discuss and apply what they have learned about the setting and First Peoples in Grand Kankakee Marsh as a class or in small groups.	Brainstorm **5** reasons why wetlands are important, and students each share one. Complete background reading on wetlands' role in flooding mitigation. Interpret USGS stream gauge data from the Kankakee River since 1926 in order to recognize the effect draining the Grand Kankakee Marsh has had downstream. Discuss scenarios of what the data and landscape might look like if the GKM were still intact.
Featured Sources	**Featured Sources**	**Featured Sources**

Summative Performance Task	**ARGUMENT** Using what you have learned from the Grand Kankakee Marsh system, research and develop a report on another natural land that has been changed by humans. Develop an argument either for or against development in that region. Cite similarities, differences and key points from what you have learned. A grading rubric is provided to guide students and teachers.
	EXTENSION Develop a classroom presentation on human impacts to a dynamic ecosystem.
Taking Informed Action	**UNDERSTAND** Through background content provided in this inquiry, students build their knowledge of the Grand Kankakee Marsh and the impact of humans on complex, biodiverse ecosystems. Topics included span human history and impact, biodiversity, flooding impacts to communities, and restoration processes. **ASSESS** Several discussions and leading questions about humans' role in nature are built into the inquiry where students hear different viewpoints, questioning and honing their own perspective. Students will research and present a rare species native to the Grand Kankakee Marsh, expanding their knowledge of the area's biodiversity in their own research and hearing from their peers. In the Summative Performative Task, students are asked to apply what they have learned to another ecosystem that has undergone human alteration. **ACTION** Students will choose a dynamic ecosystem for their research report in the Summative Performative Task.

Overview

Inquiry Description

Students learning from this inquiry will be investigating the environmental, social, and economic impacts of past decisions to alter the Grand Kankakee Marsh. Students will begin to develop an understanding of the acquisitive nature of humans. They will endure introspective analysis and learn to question themselves.

Structure

Students will be working through four supporting questions that are designed to give them the tools to begin to answer the compelling question. This along with the formative performance tasks and featured sources will give the student a solid base to stand on while constructing the final paper.

Staging the Compelling Question	
Compelling Question	What Is The Impact Of Altering A Dynamic Ecosystem?

Staging the compelling question

Students will be working through four supporting questions that are designed to give them the tools to begin to answer the compelling question. This along with the formative performance tasks and featured sources will give the student a solid base to stand on while constructing the final paper.

Using the well-known story of wolf reintroduction to Yellowstone National Park, students will clearly see how removing even one species from an area can have dire results on an ecosystem, and the concept of a trophic cascade. These concepts will be applied to the primary focus of this inquiry, which is the Grand Kankakee Marsh ecosystem in northwestern Indiana.

Supporting Question 1	
Supporting Question	What is a wetland?
Formative Performance Task	Read the background material provided on wetland characteristics and types, and complete a wetlands identification worksheet.
Additional Materials	• WetlandBackground.pdf (https://s3.amazonaws.com/idm-generator/u/d/c/e/7/10696/dce7057a329fd86832d4cbf123b31b6d8469b384.pdf) • WetlandsWorksheet.pdf (https://s3.amazonaws.com/idm-generator/u/2/3/6/1/10696/2361853b780e8e3a15ff04fa10559d866c04c8e2.pdf)

Formative Performance Task

Students will gain the confidence to be able to distinguish between wetlands.

Supporting Question 2	
Supporting Question	What is the Grand Kankakee Marsh?
Formative Performance Task	Students will discuss and apply what they have learned about the setting and First Peoples in Grand Kankakee Marsh as a class or in small groups.
Additional Materials	• WhatIsGKM_Discussion.docx (https://s3.amazonaws.com/idm-generator/u/0/8/0/1/10696/080154402ba77a0b3d9cdeff9db0a477ff025a0b.docx)

Formative Performance Task

Students will watch a 5 min video and read the provided background on the Grand Kankakee Marsh, the Potawatomi people, and Euro-American colonization. The discussion questions attached can be done as a class or in small groups, challeging students to engage in social decision making and their own ethics.

Supporting Question 3	
Supporting Question	Why are wetlands important?
Formative Performance Task	Brainstorm **5** reasons why wetlands are important, and students each share one. Complete background reading on wetlands' role in flooding mitigation. Interpret USGS stream gauge data from the Kankakee River since 1926 in order to recognize the effect draining the Grand Kankakee Marsh has had downstream. Discuss scenarios of what the data and landscape might look like if the GKM were still intact.
Additional Materials	• EnvEconImportance_Wetlands.docx (https://s3.amazonaws.com/idm-generator/u/c/4/2/1/10696/c421b19ccda1be08c022b8a07eaccb10870d834b.docx)

Formative Performance Task

Students will gain an understanding of the economic cost of flooding induced by alterations to the environment upstream. Students will also recognize the effect that draining the marsh has had on the area and will be able to determine what the graph may look like if the marsh was still around.

Summative Performance Task	
Compelling Question	**What Is The Impact Of Altering A Dynamic Ecosystem?**
Argument	Using what you have learned from the Grand Kankakee Marsh system, research and develop a report on another natural land that has been changed by humans. Develop an argument either for or against development in that region. Cite similarities, differences and key points from what you have learned. A grading rubric is provided to guide students and teachers.
Extension	Develop a classroom presentation on human impacts to a dynamic ecosystem.
Additional Materials	• DynEcosysRubric.docx (https://s3.amazonaws.com/idm-generator/u/3/a/0/5/10696/3a05644cc0d664030b1386d8eaf2a84502c25ba4.docx)

Argument

Extension

Students can use content from the Summative Performance Task research report to create a classroom presentation. This reinforces other interaction throughout the inquiry to discuss with peers, and provides an opportunity for students to strengthen oral communication skills.

Taking Informed Action	
Understand	Through background content provided in this inquiry, students build their knowledge of the Grand Kankakee Marsh and the impact of humans on complex, biodiverse ecosystems. Topics included span human history and impact, biodiversity, flooding impacts to communities, and restoration processes.
Assess	Several discussions and leading questions about humans' role in nature are built into the inquiry where students hear different viewpoints, questioning and honing their own perspective. Students will research and present a rare species native to the Grand Kankakee Marsh, expanding their knowledge of the area's biodiversity in their own research and hearing from their peers. In the Summative Performative Task, students are asked to apply what they have learned to another ecosystem that has undergone human alteration.
Action	Students will choose a dynamic ecosystem for their research report in the Summative Performative Task.

After learning about the Grand Kankakee Marsh, students choose another dynamic ecosystem to research further, examining human-ecosystem impacts. Students are given "voice and choice" to learn more about an ecosystem local or meaningful to them.

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