

# Pandemic: Rising Tide: Science Lesson Plan

**Learning the game:** Pandemic: Rising Tide is a cooperative game for 1-5 players ages 8 and up. The game takes place in the Netherlands during the early 20<sup>th</sup> century with players attempting to prevent flooding. Encountering threats from the North Sea and numerous rivers, players try to implement hydraulic works projects and a stable dike system to keep the water away from land as much as possible!

## Topics Covered:

- Environmental Science
- Oceanography
- Ecology
- Civil engineering

## Lesson Objectives:

- Grades 3-5: Students will be able to examine the preventative measures of flooding by answering questions related to the game Pandemic: Rising Tide.
- Grades 6-8: Students will be able to express the various impacts that flooding has on different areas by writing a response
- Grades 9-12: Students will be able to analyze different approaches to flood control by researching Dutch flood control projects and reflecting on Pandemic: Rising Tide.

**Academic Language and Vocabulary:** [Pronunciation guide for game locations](#), Netherlands, Dutch, flood, dikes, hydraulic structure, port, region, pump water, major breach, water flows.

## Questions/Activities:

- Actively read this [PBS article](#) on the science of floods and watch this [60 minutes video](#), then answer the following questions:
  - What are the causes of flooding in general? What cause of flooding applies most to Pandemic: Rising Tide? Which ones apply to the different floods mentioned in the video?
  - How do the responses to “100” and “500-year floods” differ between the Dutch and Americans?
  - Explain the ecological changes the Netherlands have employed in order to help prevent flooding. Do you think there are any causes not mentioned in the video that can be reflected in real life or in the game?
- Research the Delta and Zuiderzee Works projects that are currently used to prevent flooding. In at least one page, explain the thinking that went into implementing the projects, the success of the projects, and how the game might reflect these two massive projects. Information on these projects can be found in the “historical notes” section of the rulebook.
  - Additionally, research what methods were being used prior to undertaking large scale projects. Were these methods at all effective? Why or why not.
- Research the environmental causes and results of flooding. Express your findings along with the positive and/or negative impacts in a minimum one-page essay.
- Take into consideration global warming. How might this impact what projects the Dutch have already accomplished? Research the “Room for the River” projects undertaken by the Dutch. Would such

projects be replicable in the United States? Why or why not. If so, where would you implement aspects of this project? If not, what would need to change in order to implement aspects of these projects?

- What are the major causes of flooding in Netherlands? In at least one paragraph, be sure to include what percentage of the country lays below sea level and weather patterns that are common in the area.
- Print out one of the following maps ([Galveston County, Texas](#), [Harris County, Texas](#), [Louisiana](#), and the [greater metropolitan New York City area](#)), and complete the activity:
  - After printing out a map, redesign Pandemic Rising Tide to fit the map you selected. Decide the four regions where you would need to install the four hydraulic structures as well as where the ports would be.
  - Consider where you would place the dikes and appropriately rename the 56 dike cards in the game to fit your board. Research your area to ensure the cards make sense with the board.
  - Create one new objective card as an optional way of playing your newly created board.
  - In one to two paragraphs, explain why you chose a certain map, how you implemented your changes and why, and how your research is visible on the board and cards.

### Lesson Modifications:

- [Watch this news footage from 1953 about flooding in Netherlands](#). After viewing the video answer the following questions:
  - Explain how Pandemic: Rising Tide reflects the theme of the game.
  - Did anything in the video help you further understand? Why or why not.
- [Review the 60 minutes video](#) on flooding in the United States compared to the Netherlands and answer the following questions:
  - How does Netherland's approach differ from the United States'? Which approach does Pandemic: Rising Tide resemble and why?
  - Review the different policy implementations from the Netherland and the United States. What are the reasons behind each approach, which one do you agree with, and why?
- The famous story about the boy who sticks his finger in the dike from [Hans Brinker or the Silver Skates on pages 83-86](#). The story begins with "Leaving the church..." towards the bottom of page 83. Afterwards, answer the following questions:
  - How is the theme of the story reflected in the game? Why or why not.
  - This story is in fact American folklore and, despite several statues in the Netherlands, not actually a piece of Dutch literary history. Write a review of this story from the perspective of a Dutchman reading this for the first time in either the 19<sup>th</sup> century, 20<sup>th</sup> century, or present day.
- What is the economic impact flooding having on different parts of the world? Research the economic aftermath from flooding caused by hurricanes Sandy and Katrina. Do you think that it is economically sensible to spend money focused on rebuilding or preventing? Why?

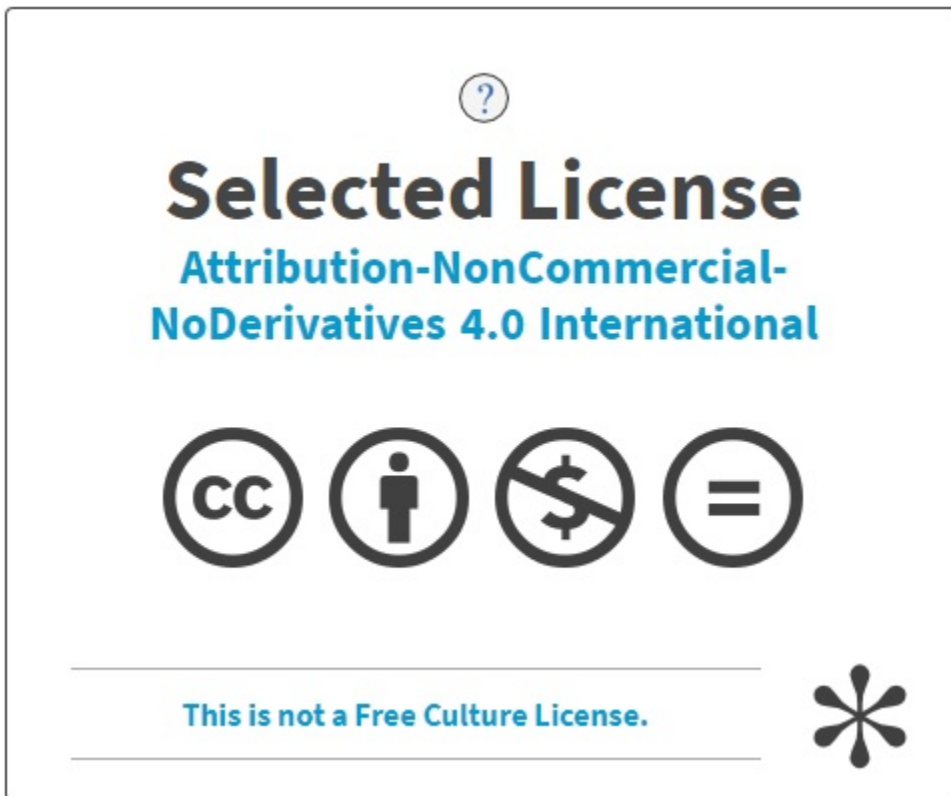
### Content Background Knowledge:

- [In depth background knowledge and pronunciation for map locations](#).
- [Basic flooding background knowledge from National Geographic](#)
- [Great Netherlands flood on 1953 and the Dutch Delta Works project](#)
- Page 10 of the rulebook has historical notes about how real-life events inspired many aspects of the game.

## Common Core Standards:

### Grades K-5:

- SL.4.5: SL.3-5.1 Engage effectively in a range of collaborative discussions with partners on Pandemic game play experience and supplemental materials, building on others' ideas and expressing their own clearly.
  - Followed agreed-upon rules for discussion (e.g. gaining the floor in respectful ways, listening to others with care, speaking one at a time).
  - Ask questions to check understanding of information presented, stay on topic, and link comments to the thoughts of others.
  - Explain their own ideas and understanding in light of the discussion.
- Grades 6-8:
  - WHST.6-8.2: Write informative/explanatory texts, including the narration of scientific procedures or technical process.
- Grades 9-12:
  - RST.9-10.1: Cite specific textual evidence to support analysis of scientific and technical texts, attending to the precise details of explanations and descriptions.



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