

World History and Science

The Three Sisters



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Overview: This lesson will challenge students to understand how different civilizations influenced others and how agriculture, technology, and culture were transferred due to explorers and colonization.

(Time Needed: 2 class periods with option to grow the three sisters plants in the school garden.)

World History Standards:

- SSWH8 Describe the diverse characteristics of societies in Central and South America.
 - a. Explain the rise and fall of the Mayan, Aztec, and Inca Empires.
 - b. Compare and contrast the Mayan, Aztec, and Incan societies, include: religion, culture, economics, politics, and technology.
- SSWH10 Analyze the causes and effects of exploration and expansion into the Americas, Africa, and Asia.
 - a. Explain the roles of explorers and conquistadors.
 - b. Analyze the global, economic, and cultural impact of the Columbian Exchange.
 - c. Explain the role of improved technology in exploration.
 - d. Examine the effects of the Transatlantic Slave Trade on Africa and on the colonies in the Americas.

Science Standards:

- SEV1. Obtain, evaluate, and communicate information to investigate the flow of energy and cycling of matter within an ecosystem.
- a. Develop and use a model to compare and analyze the levels of biological organization including organisms, populations, communities, ecosystems, and biosphere.
- b. Develop and use a model based on the Laws of Thermodynamics to predict energy transfers throughout an ecosystem (food chains, food webs, and trophic levels). (Clarification statement: The first and second law of thermodynamics should be used to support the model.)
- c. Analyze and interpret data to construct an argument of the necessity of biogeochemical cycles (hydrologic, nitrogen, phosphorus, oxygen, and carbon) to support a sustainable ecosystem.

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Objectives:

- Students will understand how squash was carried from the new world back to Europe.
- Students will evaluate the effectiveness of traditional native growing techniques.
- Students will find plant and grow three crops using traditional methods versus conventional monoculture methods.
- Students will describe the global, economic, and cultural impact of the americas.

Materials:

- Three Sisters Folklore - <https://edpuzzle.com/media/5ba8be3de0851c4059f4c843>
- [Three Sisters .pdf](#) (make enough for the class or post in Google Classroom)
- <https://www.reneegarden.com/blogs/gardening-resources/celebrate-the-three-sisters-corn-beans-and-squash>
- <https://www.youtube.com/watch?v=kRLANoPbs1o>
- <https://www.farmproject.org/blog/2016/3/31/growing-native-american-heritage-the-three-sisters>
- <http://www.aztec-history.com/aztec-timeline.html>
- <https://www.history.com/topics/ancient-americas/aztecs>
- The domestication of squash - <https://www.thoughtco.com/domestication-history-of-the-squash-plant-172698>
- Domestication hypothesis map - https://ars.els-cdn.com/content/image/1-s2.0-S1055790317301811-fx1_lrg.jpg
- Order seeds from <https://www.rareseeds.com/> or other heirloom seed companies that specialize in original seeds.
- Garden beds prepped for planting.

Outline:

- Engage: Students will learn about the three sisters in native folklore.
- Explore: Students will explore the traditional growing methods.
- Explain: Teacher will explain how current agricultural practices are studying the traditional methods for efficacy.
- Extend: Students can examine traditional versus conventional growing practices.

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Lesson Plan:

- Engage: Start by showing students the Three Sisters Folklore edpuzzle. This can be done as a whole class activity or placed on Google classroom for students to watch individually or at home.
- Explore: Let the students explore Aztec history using the two websites listed or their own research. The teacher will also guide them through the history of the Columbian exchange and its historical significance. Have them track the use of squash the Three Sisters pdf. They will have to use their knowledge of science and growing to synthesis the information. They can also explore Renee's Garden and the Farm Project websites for simplified instructions.
- Explain: Teacher will explain that students are being asked to evaluate how effective the traditional growing method is compared to sowing individual rows of each plant. The students will divide into groups and design an experiment that uses both traditional and conventional methods. Students will need to state a hypothesis and design the scientific experiment themselves. (Teachers may want to give them a predesigned experiment.)
- Extend: Students will plant, tend, and harvest both traditional and conventional beds. They will use the scientific method to ensure that they are watering the same amount and keep as many variables consistent as possible. They will weigh and track harvest totals.
- Evaluate: Students will evaluate the data and state if their hypothesis was correct.