

Lesson Plan: Navigating Change Unit 1: The Voyage

1.2 Island Investigations

Emphasis: History (island facts), geology (island formation), geography (relative location of the islands.)

Description: Introducing the Marianas Island Archipelago and characteristics of each. How has the evolution of our people and culture differentially changed the 'way of life' amongst the Marianas Islands? Students are probably familiar with Guam, Rota, Tinian, and Saipan, but how much do they know about the rest of our island chain? Students will investigate the age and composition of the archipelago.

Objectives: (Students will...)

1. List the 15 islands in the Marianas Archipelago.
2. Attain basic knowledge of the 15 islands in the Marianas Archipelago.
3. Evaluate historical practices (mining) on relevant island(s) and determine how sustainable these activities were.
4. Have an understanding of how the islands differ from one another.
5. Conceptualize how much life has changed since Spanish contact and begin to imagine how people lived their daily lives.

Assessments Techniques:

1. KWL - Know, Want to Know, Learned Chart about the Marianas Islands.
2. Have students do a pre-test (Test your Marianas Knowledge quiz) and post-test.
3. Island Card In Class Presentation

Assessing Prior Knowledge

Pre-activity:

Ask some basic Marianas Island questions:

Where is Guam located? Is Guam part of a larger island chain? What is the name of our island chain or archipelago? What is an archipelago? How many islands are in our archipelago? Does the Marianas Archipelago run east to west or north to south? What is the southern most island? Northern? Can anyone draw a map of our archipelago on the board? (if you have already completed Charting the Marianas, this can serve as a good review!)

Background Information:

Subject(s)

Earth Science, Ecology, Biology, Environmental Science, Marine Biology

Grade Level

Elementary, 3-5
Middle, 6-8
High, 9-12

Time Required

3-4 50-minute class periods

Materials Required

Paper
Pencil
Marianas Island Cards

Related Background Reading

Guam: A Natural History, Lawrence J
Cunningham

Related Documents

Marianas Island Cards
New Discoveries Worksheet

Related Links

<http://guampedia.com/physical-anthropology-of-ancient-guam-and-the-marianas-islands/>

The Marianas Archipelago is a chain of island located between 13°28'N, 144° 47'E and 20°31'N, 144° 54'E. Visually, the islands take the shape of an eyebrow or even a rainbow, extending from south of Japan to north of New Guinea. To the west of the archipelago is the Philippine Sea and to the east is the Pacific Ocean. According to the 2000 census, the population of the archipelago was 247,658, with only 6 of the 15 islands inhabited (Guam, Rota, Saipan, Tinian, Alamagan, Pagan).

Land: The highest elevation is 965 meters in Agrihan. This archipelago is made up of a southern and northern arc of islands. The southern arc islands are oldest (43,000,000 to 30,000,000 years old). From south to north the southern arc includes: Guam, Rota, Aguijan, Tinian, Saipan, and Farallon de Medinilla. These islands are both volcanic and limestone. The limestone areas are uplifted coral reefs. From south to north the northern arc includes: Anatahan, Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asunción, Maug, and Farallon de Pajaros. The northern arc volcanic islands are less than 5,000,000 years old. Many of them are still active volcanoes.

Sea: The M.I. divide the Pacific Ocean to the east and the Philippine Sea to the west. These islands are 148 km west of the deepest oceanic trench, the Marianas Trench. In 2009, scientists measured the Marianas Trench's Challenger Deep at 10.91 km. The Marianas Trench stretches 2,550 km long and 69 km wide. The islands of the southern arc have the largest fringing reefs. The M.I. formed just west of the subduction zone, where the Pacific plate and the Marianas plate (also called the Philippine Sea plate) meet. The Pacific plate is moving west about 7.5 centimeters (cm) a year and slides deep into the Mariana Trench and under the Marianas plate. As the basalt rock is pushed back into the earth's mantle, it melts. Eruptions of this magma have formed the "basement" rocks of the M.I. In the shallow areas around these seamounts and islands, coral reefs have grown. Uplifted coral reefs can be found on all the islands of the Southern Marianas arc, and to a slight extent in Pagan. In 2008, the United States (U.S.) declared the area around the islands of Asunción, Maug, Farallon de Pajaros and the Marianas Trench, the Marianas Trench Marine National Monument. This natural environment of beauty and wonder will be protected from exploitation. In 2010, we celebrated the 50th anniversary of the first and only dive by humans to the bottom of the Marianas Trench in a bathysphere.

People: The first people of the M.I. are the Chamorros (Chamoru). They settled in the Marianas around 4,000 years ago. They were a seafaring people who fished and farmed. By 845 AD they were building houses on stone supports called latte. The latte had two parts, a trapezoidal stone pillar and a cup shaped capstone. The fast, light, outrigger sailing canoes, the latte, and the early settlement of these Pacific Islands, distinguish the Chamorros from other Pacific islanders. They were also the first of the Pacific island people to be colonized by Europeans. Spain found Guam in 1521 and claimed the M.I. in 1565. From that time until 1815, the M.I. served as a stop for the Manila galleons. Silver from New Spain, now Mexico, was traded for silks, spices, carved ivory and gold jewelry in Manila. The galleons stopped on Guam, and sometimes Rota, on their way from Acapulco to Manila. Unless bad weather inhibited a stopover in the M.I. on the Manila to Acapulco voyage. Spain occupied Guam in 1668. The Chamorros resisted colonization by the Spanish. In 1695, they fought the last major battle against the Spanish on Aguijan. The Spanish moved the people of Tinian and Aguijan to Pago Bay and Hagåtña in Guam. The Chamorros referred to the islands north of Saipan, Gani.

The Marianas Island Cards (.pdf) contains information on each the archipelago as well as information pertaining to the Land, Sea, and People.

Activity:

1. Model Think, Pair, Share activity using Guam as an example. Describe to students that you studied Guam's Island Card and became an expert on Guam (although not ALL of Guam's facts are on this card!) Present interesting characteristics of Guam to the class. For example, Guam:
 - a. Is the southern most island in the Marianas
 - b. Is 48 km miles long (how many miles is this? ~29.83 miles)
 - c. Is located at 13° N 144° E
 - d. Had many native birds until the brown tree snake came along

- e. There 4,635 snakes per sq km (how many sq miles is that? ~ 2880/sq mile)
 - f. Chamorros settled guam 4,000 years ago
 - g. In ancient times there were ~150 latte villages
 - h. The Spanish introduced many of the non native species we have today (pig, cattle, deer, carabao)
 - i. The north of Guam is made of limestone and very porous, while the south of Guam is made of very impermeable basalt rock, which forms our rivers
 - j. What else do we know about Guam that isn't on this card...
- 2. Introduce the idea of taking a voyage to discover the islands, reefs, and atolls that are found beyond Saipan.** Draw a large “K,” “W,” and “L” on the board to represent what students “Know,” “Want to know,” and what they will “Learn” about these islands. Ask students to record what they know of any of the islands that make up the Marianas Archipelago under the “K” and what they want to know under the “W.” Introduce the idea that these are the islands and discuss how these older islands might look.
 - 3. Divide students into 14 groups.** Each group is assigned an island. Organize the groups so each group has a natural presenter, so each island can be represented.
 - 4. Ask students to identify key information about Land, Sea and People and complete the following tasks.**
 - On their cards, create a to-scale cut-out of the island for the wall map. (Students can trace these from the projected map.)
 - Design a way to display key geographic data and interesting facts about the island on the map.
 - Share information on their cards with the class, including the meaning of the Chamorro name of the island. (If desired, encourage students to research the Internet for additional information about their island.)
 - 5. Ask the students to present their island to the class.** Turn off the projection of the map on the ocean wall map. Using the latitude and longitudinal coordinates, place it on the map at its correct ‘address’. Use push pins or tape so the islands can be relocated if necessary.
 - 6. Have students fill in the ‘Learn’ column of the the KWL chart.**
 - 7. Stimulate discussion amongst the class about the fun things they have learned about the Marianas.**
 - 8. Distribute students’ journals and have then enter a journal entry.** Pretend that you are on a voyage from Guam to the northern Marianas Islands, using the new vocabulary words, write a short story about your journey (Use ‘New Discoveries’ worksheet.)

Follow Up Assessment:

1. Have students complete ‘Marianas Knowledge’ quiz as a post-test and compare their knowledge. Marianas Knowledge Quiz Answer Key: 1-b, 2-a, 3-b, 4-a, 5-c, 6-d, 7-a, 8-b, 9-a, 10-b, 11-b, 12-a, 13-d, 14-d, 15-a, 16-d, 17-c, 18-c, 19-a, 20-c.

In Depth Analysis:

1. **Were there activities conducted on some of the islands that have negatively impacted the economy and/or environment?**
2. **How could things have been approached differently to produce a more sustainable outcome?**
3. **Pertaining directly to the treatment of the local populations...Pretend that you are a liaison for the indigenous people, how could you serve to ensure that 1) events transpired with their best interest at heart, 2) the culture was perpetuated, and/or 3) there was a minimal effect on the environment.**

New Discoveries

Name

Date

What have you discovered about the Marianas islands? Define the vocabulary words below. Then use the words as you write a short story about the islands.

archipelago -

basalt -

fringing reef -

gani -

latitude -

longitude -

On the back of this page, use the vocabulary words to write a short story about the gani. Imagine that you were sailing to the north past each island. Describe some of the physical characteristics and other qualities that make each island so special. What might you have encountered at the different islands? What might have surprised you that you would want to share with your family upon your return?

Marianas Knowledge - Quiz!

Name _____

Date _____

1. What island is mostly volcanic grasslands in the south and is made of coral in the north?
 - a. Saipan
 - b. Guam
 - c. Tinian
 - d. Rota
2. What is the largest island of the Northern Marianas?
 - a. Guam
 - b. Aguijan
 - c. Saipan
 - d. Alamagan
3. Pagan has black and white _____, hot springs, two lakes, and an eastern off-shore rock arch.
 - a. Caves
 - b. Beaches
 - c. Houses
 - d. None of the above
4. Alamagan is almost _____ times as high as Guam.
 - a. 2
 - b. 3
 - c. 4
 - d. 5
5. Guguan was named
 - a. Farallon de Medinilla
 - b. Anatahan
 - c. Faralon de Luis de Torres
 - d. None of the above
6. During late Spanish times, what island was repopulated with Chamorros and Carolinians for the copra trade?
 - a. Sarigan
 - b. Saipan
 - c. Rota
 - d. Anatahan
7. What Marianas Island was used to obtain prisoners?
 - a. Sarigan
 - b. Guam
 - c. Aguijan
 - d. Tinian
8. After WWII, Saipan became the
 - a. Leading supplier of sugar canes in Mariana Islands.
 - b. Administrative center for the United Nations Trust Territory of the Pacific Islands
 - c. CNMI
 - d. Both b & c
9. Farallon de Medinilla (No'os) is the _____ and _____ most Marianas Island.
 - a. Smallest/eastern
 - b. Largest/eastern
 - c. Smallest/western
 - d. Largest western

10. Aguijan is called
 - a. Island of Thieves
 - b. Goat Island
 - c. Bird island
 - d. None of the above
11. What island has the richest soil in the Northern Marianas?
 - a. Guam
 - b. Tinian
 - c. Farallon de Pajaros
 - d. Alamagan
12. What northern Marianas Island has the biggest latte stones recorded?
 - a. Rota
 - b. Asuncion
 - c. Maug
 - d. Agrihan
13. What people once settled in Farallon de Pajaros (Uracas)?
 - a. Chamorros
 - b. Carolinians
 - c. Both Chamorros and Carolinians
 - d. No people settled
14. _____ has the highest elevation in the Mariana Islands and in all of Micronesia
 - a. Pagan
 - b. Saipan
 - c. Guguan
 - d. Agrihan
15. The island of Asuncion looks like an upside down
 - a. Ice cream cone
 - b. Boot
 - c. Fish
 - d. Heart
16. What Mariana Island consists of three islands?
 - a. Guam
 - b. Saipan
 - c. Tinian
 - d. Maug answer
17. There are ____ islands In the Marianas.
 - a. 13
 - b. 14
 - c. 15
 - d. 16
18. The Mariana Islands divide the Pacific Ocean to the east and the _____ Sea to the west.
 - a. Caribbean
 - b. Yellow
 - c. Philippine
 - d. None of the above
19. Who were the first people of the Mariana Islands?
 - a. Chamorros
 - b. Carolinians
 - c. Spanish
 - d. Aborigines
20. What island is the only island of the Mariana's who have not yet determined their political status?
 - a. Saipan



- b. Maug
- c. Guam
- d. Tinian