

Fishing for a Fortune: The Science of Understanding our World

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| Author | Mike Laird |
| Grade Level | 6 |
| Duration | 3 class periods |

National Standards

GEOGRAPHY

Element 2: Places and Regions

6. How culture and experience influence people's perceptions of places and regions

Element 4: Human Systems

10. The characteristics, distribution, and complexity of Earth's cultural mosaics.

Element 6: The uses of Geography

17. How to apply geography to interpret the past.

AZ Standards

ELA

Writing

Text Types and Purposes

6.W.1 Write arguments to support claims with clear reasons and relevant evidence.

a. Introduce claim(s) and organize the reasons and evidence clearly.

b. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.

c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons.

d. Establish and maintain a formal style.

e. Provide a concluding statement or section that follows from the argument presented.

SCIENCE

Core Ideas for Using Science

U1: Scientists explain phenomena using evidence obtained from observations and or scientific investigations. Evidence may lead to developing models and or theories to make sense of phenomena. As new evidence is discovered, models and theories can be revised.

Arizona Social Science Standards

GEOGRAPHY

Examining human population and movement helps individuals understand past, present, and future conditions on Earth's surface.

6.G3.1 Analyze how cultural and environmental characteristics affect the distribution and movement of people, goods, and ideas.

SIOP Elements

Preparation

Adapting content
Linking to background
Linking to past learning
Strategies used

Scaffolding

Modeling
Guided practice
Independent practice
Comprehensible input

Grouping Option

Whole class
Small groups
Partners
Independent

Integrating Processes

Writing
Speaking
Listening
Reading

Application

Hands on
Meaningful
Linked to objectives
Promotes engagement

Assessment

Individual
Group
Written
Oral



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Arizona English Language Proficiency Standards

Stage IV

Writing

Standard 1: The student will express his or her thinking and ideas in a variety of writing genres. The student will express his or her thinking and ideas by using a variety of writing genres, as demonstrated by:

B-5: writing original questions and predictions for further inquiry based on the conclusions of scientific investigations.

Overview

The ancients did not have today's science and technology available to help them answer life's questions and therefore, turned to divination as a way to find answers. So, from the earliest beginnings of civilization, fortune telling has made it possible for people to explain happenings in our world.

Purpose

In this lesson, students will share experiences and read about fortune telling. In order to demonstrate the conflict that often exists between divination and science, students will then follow the processes of scientific inquiry as they investigate Fortune Teller Miracle Fish—Why does it move? This lesson includes strategies for diverse learners (ELLs).

Key Vocabulary

claim: a statement of fact

culture: the arts, beliefs, customs, and institutions of a group of people

divination: to tell the future

evidence: facts on which to base a conclusion

science: knowledge of the world based on experiments and observation

Materials

- Teacher Information: How Does the Fortune Teller Miracle Fish Work
<https://www.thoughtco.com/how-fortune-teller-miracle-fish-works-607867>
- Apollo's Oracle at Delphi reading
<https://greece.mrdonn.org/greekgods/oracles.html>
- Apollo's Oracle at Delphi Questions and Answer Key
- MythBusters video clip: numerous clips can be found online (optional)
- Fortune Teller Miracle Fish (one for each student)

- Fortune Teller Miracle Fish Lab 1 and 2 sheets
- Fortune Teller Miracle Fish Scoring Guide
- Summary Scoring Guide
- Investigation materials: hand warmers, ice packs, ice, water, hand lotion, small fan, paper plates, paper bowls, paper towels, etc. (Set these out prior to Session One to pique student curiosity.)
- Vocabulary Cards
- Vocabulary Test and Answer Key

Objectives

Students will be able to:

- Record ideas reflecting the conflict between fortune telling and science.
- Design and conduct an investigation on the reliability of Fortune Teller Miracle Fish.
- Analyze results of an experiment.
- Write an argument.

Procedures

Prior to this lesson: Send home vocabulary cards to diverse learners who may need help with these terms.

SESSION ONE

Engage:

- Begin the lesson by having the students generate a list of all the fortune telling techniques they are familiar with (fortune cookies, Magic 8 Ball, Cootie Catchers, palm readers, crystal balls, etc.) and record their list on the white board. (**Grouping:**

Whole class, Preparation: Linking to Background)

- Provide time for students to share, with the whole class, personal experiences they have had with fortune telling. (**Preparation: Linking to Background)**

Explore,

- Project Apollo's Oracle at Delphi reading.
<https://greece.mrdonn.org/greekgods/oracles.html>



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- d. Have the class read it aloud and discuss:
 - o What type of fortune telling was this?
 - o What motivates people to have their fortunes told?
 - o In this story, were the fortunes predicted very specific? **(Integrated Processes: Reading, Listening, Speaking)**
- e. On notebook paper, have students answer the following comprehension questions:
 - 1. Why do you think Apollo was a favorite Ancient Greek god?
 - 2. How was Apollo's oracle different from other oracles in Ancient Greece?
 - 3. How credible were Apollo's oracle's predictions?

Explain

- f. Project and discuss the vocabulary words: culture, divination, and science.
- g. Look back at the list on the whiteboard. Which of these fortune telling techniques are based on science? **(Scaffolding: Comprehensible input)**
- h. Project and discuss the remaining vocabulary words: evidence and claim. **(Scaffolding: Comprehensible input)**
- i. Tell students that in the next session they will be conducting a scientific experiment in fortune telling. They will then write an argument as to the credibility/reliability of this fortune telling method.

SESSION TWO

Elaborate:

- a. Introduce the idea of Myth Busters. Show a short clip of one of the programs if students are not familiar with the television program.
- b. Divide students into teams of 3-4. **(Grouping Option: Small groups)** Distribute the A Challenge for the MythBusters: Fortune Teller Miracle Fish Lab 1 sheet to each student. Tell the students that they are becoming MythBusters. **(Application: Promotes engagement)**
- c. Distribute one Fortune Teller Miracle Fish to each student and ask students to leave fish in the cover.
- d. Ask groups examine the cover and explain what the fish is for. Have students determine and explain how the fish will tell a fortune.
- e. Ask students to remove fish from the cover, hold the fish on their palms, carefully observe the actions of the fish, and record the things they see, hear, feel, and smell in the "First Observation" section of their Fortune Teller Miracle Fish Lab 1 sheet. **(Grouping Option: Independent)**

- f. Have students analyze and compare their observations to the fortune telling key on the cover in order to interpret their fortune.
- g. Have students record their fortune in the "My Fortune" section of the Fortune Teller Miracle Fish Lab 1 sheet.
- h. Have students write a short statement explaining why they do or do not believe their fortune. **(Integrating Processes: Writing)**
- i. Provide students an opportunity to share their fortunes with others in the group. **(Integrating Processes: Speaking, Listening)**
- j. Initiate a discussion on the conflict that often exists between science and fortune telling. **(Preparation: Adapting content, Linking to Background)**
- k. Explain to students that they will be designing and conducting a scientific investigation to determine whether the fortune told by the Fortune Teller Miracle Fish is real or should be busted in the next session.
- l. Have the students brainstorm what they think **makes the fish move** and complete the "Claims" section of their Fortune Teller Miracle Fish Lab 1 sheet. **(Grouping: Small groups)**

SESSION THREE

Prior to this session, gather materials that might be needed to conduct the experiments (fans, thermometers, ice, hair dryers, ???)

- m. Have groups record the one claim to investigate (from Lab 1 sheet) in the "Question" section of the Fortune Teller Miracle Fish Lab 2 sheet.
- n. Have several groups share their questions with the class and help groups craft a question that can be tested with materials in the classroom. **(Scaffolding: Modeling, Guided practice)**
- o. Then instruct groups to develop and record the procedures they will follow to test their question. Review and approve their procedures at this point. Students will record their team's procedures in the "Procedure" section of the Fortune Teller Miracle Fish Lab 2 sheet. **(Scaffolding: Modeling, Guided practice)**
- p. Provide groups with collect required materials to test their claim. **(Application: Hands-on)**
- q. Remind students to make and record observations in the "Observation" section of the Lab 2 sheet.

Evaluation:

- r. Explain the Summary Scoring Guide.
- s. Demonstrate how to find concrete evidence (an important fact) in their Lab 2 sheets and then to find details to support their statements. **(Scaffolding: Modeling, Guided practice)**



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- t. Emphasize that a well-written summary will have at least three statements of concrete evidence and each will have at least one detail. Summaries will
- u. also have introductory statements and a conclusion as well as correct conventions.
- v. Instruct students to write their summary in the "Conclusion" section of the Lab 2 sheet.

(Assessment: Individual, Written) (Integrating Processes: Writing)

Assessment

Geography

Comprehension questions from the reading about Apollo's oracle can be graded. Mastery will be considered good answers to the three questions.

Science

Fortune Teller Miracle Fish Lab 1 and 2 sheets can be graded with the Fortune Teller Miracle Fish Scoring Guide. Mastery will be considered 40 points or higher. Diverse students such as ELLs may score 30 points or higher to be considered mastery.

Writing

Summaries will be graded with the Summary Scoring Guide. A score of 40 pts or higher will be considered mastery. Diverse students such as ELLs may have 2 statements of concrete evidence with details to be considered mastery.

Extensions

- Show YouTube video (3.58 min) The Fortune Fish which explains and shows the solution to what makes the fish move
<https://www.youtube.com/watch?v=bl0a8DEy6dY>
- Can research other parts of the world for their fortune telling practices.
- Can interview people in their family and see what beliefs they hold about fortune telling.

Sources

Apollo's Oracle at Delphi

<http://greece.mrdonn.org/greekgods/oracles.html>

How Does the Fortune Teller Miracle Fish Work

<https://www.thoughtco.com/how-fortune-teller-miracle-fish-works-607867>

MythBusters home page

<http://dsc.discovery.com/tv-shows/mythbusters>

Fortune Teller Miracle Fish from Amazon.com

144 fish for approximately \$8.00



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