My name is Concepcion Marin. I have taught Science and Social Studies in the Spanish Immersion Program for 10 years at Craig Middle School. I teach the core subjects in Spanish to 6th, 7th and 8th grade American students. Our program runs from K-12. I usually teach the content area subject in connection with the other subjects because, I always tell my students that we are a product of our culture and everything that we learn and do is connected.

I am planning to contact a school in Barcelona (Spain) or Mallorca and be able to start a distance learning program. I plan for my students to exchange information with youngsters in Barcelona or a city in Mallorca about trade in the past, present and the future. Also they will share commonalities and differences in their daily life, all in the Spanish language.

The students will have a “Big Question” like “What is the connection between Technology, Geography, History, Science and Trade in the Catalonian region?” and through active exploration the students will be able to use critical, logical, and creative thinking to answer questions of personal interest about Spain and Catalonia in particular. I want for the students to choose a course of action and carry out the procedures of the investigation. They need to gather and record data through observation and instrumentation to draw appropriate conclusions about trade through the history of a specific area of the world. We will start with a hands-on experience and later make sense of the experience. I need for the students to be actively engage, to explore, to explain and elaborate and then be evaluated.

This interdisciplinary unit will encourage the students to use communication in Spanish, manipulation, and problem-solving skills to increase their awareness and interest in Science and Social Studies as part of every society and culture. Success in learning can best take place when the students are actively and thoughtfully immersed in the learning process.

Some of the behaviors that I expect to observe are:

* Students acting as researchers and investigators.
* Students taking responsibility for their own learning.
* Students working in groups
* Students using higher-order thinking skills.
* Students showing interest in science and social studies.
* Students making decisions as to how to communicate and present their work.
* Students demonstrating their science and social studies understandings and abilities in a variety of forms.

The students will be evaluated on: Knowledge, comprehension, application, analysis and synthesis of the interdisciplinary materials researched.

I know that these units will enhance my students knowledge of a part of Europe that used to be an Empire compared to what is today United States. They will be able to draw comparisons and also, they will be able through technology to interact with youngsters the same age and socioeconomic status.

# **Core Unit: Why Do we Gotta Do This Stuff, Mrs. Marin?**

# **A unit on Science, Technology Geography, History and Trade.**

Unit Overview:

This unit combines the Earth Science, Historical and Physical Features and Reading and writing broad fields. Students will acquire an understanding of Land Formation, Geography, Sea Trade and how technological inventions affect people and cultures through the ages.

The study of Sea Trade in Catalonia gives students another perspective of Spain, allowing them to examine documents and evidence of trading which existed on the Mediterranean a long time ago and still is going strong. In this unit, students should be able to gain an understanding of how scientist and historians can work together and also make inferences from indirect observations.

**Related Units:**

In 6th Grade Science students learn about weather, oceans, tides, technology and inventions and the world in spatial terms.

In 6th Grade Social Studies students learn about Historical Knowledge, Places and Regions, Physical Systems, Environment and Society, Individuals, Society, and Culture.

In 6th Grade Spanish Language Arts students learn Writing applications and comprehension and analysis of text.

**Common essential Learning Foundational Objectives Which Should Be Emphasized:**

1. Provide evidence of Spain and Catalonia location and physical features.
* Locate on a World Map, Spain, Catalonia, the Mediterranean
* Explain how the weather affects the climate of the different regions and the people of Catalonia in particular
* Explain the roll of the Mediterranean Sea as a natural resource and as an economic source that influenced and continue to influence the people of Catalonia and Spain.
1. Describe the History of Spain and Catalonia in particular
* Examine the different phases of its history: golden Age, Decline and Recovery.
* Research trade along the coast since Greek and Roman times.
* Compare Catalan traders with the ones from Genoa and Venice and look at their maritime code used at the 14th century. See the relationship between trade in the medieval Catalonia, the creation of new technologies and the new powerful merchant and burgher classes.
* Explain the centralizing policy of the Spanish Kings, the shifting of the trade routes with the consequent loss of commercial income, pirate attacks, and recurring plagues and famines as factors of change
* Examine how Spain and Catalonia broadened its horizons beyond traditional trade markets
* Analyze the changing perceptions of the country and its products through history.
* Look and the global presence of Spain and Catalonia after the traditional isolation post Franco’s Era.
1. Recognize how inferences are made.
	* 1. Explain how History and Scientific evidence can be used to make inferences about different countries and cultures.
		2. Explain and write how inferences about Spain, Catalonia and trade are made.

**Indiana’s Academic Standards:**

**Science:6.1.1,6.1.6,6.1.9,6.2.9,6.3.11,6.3.12,6.3.13,6.3.14,6.3.15,**

**Social Studies:6.1.1,6.1.6,6.1.9,6.2.9,6.3.11,6.3.12,6.3.13,6.3.15,6.3.16.**

**Spanish Language Arts:6.2.3,6.2.4,6.3.1,6.3.7,6.3.8,6.5.4,**

**Suggested Activities:** **“Where Are We?”** Before sophisticated navigational tools and techniques existed, explorers had a tough time finding their way and they learned from mistakes. Once we are situated, they will identify Spain as a Peninsula and will look at maps from space. The students will describe the coastlines from above, from a bird’s-eye view. How could the peninsulas be mistaken foe islands? As a navigator, how could you plot your course to correct a mistake?. These are questions that will give the students food for thought and will allow them to come up with more questions on their own to research.

* + - 1. The students will investigate biographies of first explorers, navigators and tools of the trade (Magnetic Compass, Astrolabe, Sextant, Radar Image, GPS Device. How this entrepreneurs were faced with this problem in the earliest days of sea voyaging. See how they worked around it, and how the necessary tools came into being through the scientific method.
			2. “**Weather or not”.** Thanks to satellites weather mapping is becoming more precise. Weather maps provide a forecast for an area and give scientists enough information to predict climate changes in a specific area or on a global scale. The students will collect weather maps of the Mediterranean Sea and Spain for a week and will ask the question Is there information you think should be added to the map to make more sense?
			3. Students will locate a globe and a calculator and will plot our longitude here in Indiana and later in Barcelona (Spain).Students will research some of the cartographic techniques used throughout history and review how early map forms compare with the computer assisted designs used today.
			4. **“A Map of Your Head”.** Blow up a balloon about the size of your head. Cover the balloon with papier-mache and let it dry. Then draw a picture of your face on the papier- mache. Does it look like you? Now, select one of the projections from the page that I am giving you (globe gores, Robinson Projection, Sinusoidal, Van Der Grinten, Mercator Projection) Pop the balloon and then carefully cut your paper head to match the projection you have chosen. Lay the paper head flat on a table. Any flat map is an awful distortion of reality. Share your map with your classmates.
			5. As a culminating activity for the Mapping Lesson, We will have our own **treasure hunt**. Students will develop a map based on local geography and on the scale that they determine. They will have to identify landmarks, practice distance conversions and direction reading

**Lesson 2**

1. **Independent Learning**: Students can discover for themselves the context of knowledge by actively participating in a virtual field trip to Spain. First hand evidence extends resource based learning to actual field experience. This gives students an accurate sampling of activities that historians and scientists undertake when doing on-site information gathering. A Geographer and historian will be invited to come and speak to the students in the class.
2. Students will read documents related to the history of Catalonia and Trade. They will research information looking at the internet at the Spanish-Catalonian museums and archives. An excursion such as this, in spite of the distance, is a experience that students will remember long after they complete their formal schooling.
3. Students will examine the documents and they will reflect and make inferences. They will have to find the relationship between maritime laws, international laws and trade. How come, Barcelona became a trade center? and what kind of trade they allowed? How was the Mediterranean important for all the cultures that surrounded the sea? Will be some of the initial questions and, then the students will answer to their own questions.
4. Students will look at information on trade before the civil war and after. They will examine the information and will draw a graph with the trade trends. The students will have to reflect on why Spain became an isolated country and how United States helped them to become again part of the global economy.
5. The students will be able to twin their class with a class in Barcelona or Mallorca and will correspond back and forth exchanging information on current economic trends, trade in both countries. Students will develop a better understanding of people from different backgrounds and cultures.
6. An economist will be invited to be a guest speaker.
7. As a culminating activity, students will be ask to make an oral presentation to the other classes and to write a report on how Science, History and Technology are all related and are the bases for society and culture.

**Personal and Social Values and Skills:** In a project like this students work cooperatively with others. They learn how to research individually and later share responsibility for the work done. Since the school is an Spanish Immersion Program, all the work is done in Spanish which will enrich the students vocabulary orally and in writing. Also will help them with the application of grammar mechanics in a different language.

**Assessment:**

Past scientific knowledge should be viewed in its historical context and not be degraded on the basis of present knowledge

* Anecdotal records.
* A rubric listing specific criteria.
* Independent student investigations.
* Student Portfolio interpreting progress.
* Oral Presentation
* Written report with illustrations, slides, pictures, power point etc

**Appropriate Grade Levels**: 6-7

**Implementation Time**: One Class Period (48 to 60 minutes) per lesson

**Materials needed**:

* Computers with Internet access
* Writing materials, crayons, markers etc
* Geography textbooks and other reference materials on ancient history topics
* Electronic encyclopedia
* Newspapers
* A globe or large world map
* Individual atlas
* Foil paper
* Masking tape, glue, 12 –inch pieces of string, rulers, black felt tip pens.
* Large balloons
* Construction paper

**Learner Outcome (s**): What will happen for students as a result of these lessons?

* Students will explore the Internet, using Web sites to gain information and answer questions they have been asked and questions that they had asked. Students will apply information they have learned in other lessons and will summarize what they have learned on a final project.
* Students will explore some of the places around the world where goods were and are traded. They will increase their understanding of geography by identifying places on a map and then expressing information about it in words, pictures, and models.
* Students will describe and assess the circumstances surrounding a major historical event from the ancient world by using the internet and other resources to research its location, people, and repercussions; and write a news article that summarizes and draws conclusions from a historical event.
* Students will explore the reasons people trade. They will increase their understanding by identifying tangible items that have been traded. They will then summarize what they learned through a written report.
* Students will explore how goods are moved around the world. They will increase their understanding by engaging in scientific labs to demonstrate how ships float, how they are loaded, salinity of the water etc, and creating models of ancient and new ships that have to float and carry some goods.
* Students will be able to interact and exchange information with a school in Spain (or different country) through a Long Distance Program or via e-mail.

**Academic Skills**:

**Communication**: Students will demonstrate listening and observation skills to gain understanding; and they will practice communicating ideas clearly and effectively.

Writing: Students will demonstrate writing skills by summarizing their understanding of what they have learned.

Students will create multiple paragraph expository compositions to engage the interest of the reader and state a clear purpose. Also they will develop the topic with supporting details and precise verbs, nouns, and adjectives in the targeted language(in my case Spanish) to paint a visual image in the mind of the reader.

Students will be able to use a variety of effective and coherent organizational patterns, including comparison and contrast.

Reading Comprehension: Students will connect and clarify main ideas, identifying their relationship to other sources and related topics.

Students will be able to clarify understanding of texts by creating outlines, logical notes, summaries, or reports.

**Thinking and Analysis skills :** Students use a variety of maps and documents to identify physical and cultural features of countries to explain the growth of economic systems.

Students frame questions that can be answered by historical study and research.

Students distinguish relevant from irrelevant information, essential from incidental information, and verifiable from unverifiable information in historical narratives and stories.

Students explain the central issues and problems of the past, placing people and events in a matrix of time and place.

Students recognize interpretations of history are subject to change as new information is uncovered

**Social Studies/Geography**: Students will gain practice using maps and other geographic information to gather facts. They will then demonstrate their ability to summarize this information and to communicate it to others.

Students analyze the geographic, political, economic and social structures of Spain in terms of: The connection between geography and the development of trade in a particular region of Spain, including patterns of trade and commerce among Spain and the wider Mediterranean region.

**Science**:

To acquaint students with the concept that the Earth is a dynamic ever changing planet.

Students will become familiar with density, salinity and flotation concepts.

Students will become familiar with weather patters and the relationship among weather, climate and how affects society.

Students will become familiar with and be able to use vocabulary associated with oceans and with legends and myths

**Math**: Students will add, subtract, multiply, and divide, estimate values, demonstrate their understanding of the concepts of area and volume, and simulate an example of how mathematics and the metric system are used in everyday life.

**Technology**: Students will use organizational features of electronic text like databases, keyboard searches, email addresses etc, to locate information.

Students will compose documents with appropriate formatting by using word processing skills.

Students will be able to use Power Point, Learning Distance, Digital cameras and other devices to collect graphics and data.

**Assessment**:

This lesson plan will help students strengthen their listening, reading, math, science and writing skills demonstrating their ability to effectively seek, interpret and summarize information obtained through different sources .Also will allow the students to demonstrate ability to respond to expository writing prompts.

**EVALUATION CRITERIA**

(3) Accomplished (2) Developing (1) Beginning

**Writing (Grammar)**

(3) Writing has hardly any spelling or grammar mistakes. There is a clear beginning, middle and ending to the report.

(2) Writing has some spelling or grammar mistakes. It’s hard to tell where the beginning, middle and ending of the report is.

1. Writing has many spelling or grammar mistakes. No clear beginning, middle or ending.

**Writing (Content)**

(3)Writing shows that the student understands the nature and extent of trade in the Mediterranean during history, and has been able to infer the route of trading vessels and the cargo from the research material available to him/her.

1. Writing shows that the student has an idea of the nature and extent of trade in the Mediterranean during history, but is not clear about the routes of the trading vessels or the cargo from the research material available to him/her.
2. Writing shows that the student does not understand the nature and extent of trade in the Mediterranean during history and has not been able to use the research material available to him/her to infer the route or the cargo of the trading vessels.

**Compilation of the final report on a Power Point, display board etc**

(3) Report looks organized and clearly presented. It successfully supports and clarifies the student’s oral presentation.

1. Report is somewhat organized, but needs a little more work. It fails to support and clarify some parts of the oral report.
2. Report is not organized and it fails to support and clarify the student’s oral presentation.

**Oral Presentation**

1. Student sustains audience interest and attention with effective rate, volume, pitch, and tone. Student successfully transmits the important points of the report, supports opinion with evidence, and uses his/her visuals effectively.
2. Student has some difficulty sustaining audience interest and attention, successfully transmits only some of the important points of the report, leaves some opinions unsupported with evidence, and does not make adequate use of his/her visuals.

 (1) Student does not sustain audience interest and attention. Student’s important points are confused, there is little supportive evidence, and does not make adequate use of his/her visuals

**Lab and Writing in Science- Rubric**

1. Concepts are used correctly
2. Concepts are supported with accurate details.
3. The student uses appropriate information in the writing.
4. Visuals such as drawings or diagrams are used well to support the writing.
5. Higher order thinking such as association, integration, synthesis, analysis, and/or evaluation is evident.
6. Appropriate vocabulary, language mechanics, and complete sentences are used.
7. References, if needed, are properly made.
8. The writing is organized and focused.
9. The purpose of the lab is clearly carried out.
10. The writing is neat and presentable.

**Grading Criteria for the Vessel Model**

1. Creativity
2. Accuracy, use of the metric system.
3. Can float for at least 3 minutes.
4. Details
5. Effort
6. Neat and well put together
7. Labels
8. On time
9. Group Cooperation
10. Individual work

Assessing Your Work

Student Name-----------------------

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Exceeds Expectations | Meets Expectations | Does Not Meet Expectations | Score |
| **Points Earned** | **3** | **2** | **1 or 0** |  |
| Factual Information | All information correct | Most information correct | Little or not information correct |  |
| Argument | Clear argument | Adequate argument | Inadequate or missing argument |  |
| Scientific Context | Excellent scientific context/development | Adequate scientific context/development | Poor sense or missing scientific context/development |  |
| Variety of Sources | Excellent variety of sources; excellent use of relevant materials | Adequate number of sources; adequate use of relevant materials | Inadequate number of sources, inadequate use of relevant materials. |  |
| Discussion/Detail | Excellent discussion/detail | Adequate discussion/detail | Vague/shallow discussion/detail |  |
| Depth of Insight/Analysis | Impressive depth of insight/analysis | Adequate depth of insight/analysis | Unexceptional insight/analysis |  |
| Form and Style | Effective introduction | Adequate introduction | Weak or missing introduction |  |
| Transitions | Smooth transitions | Adequate transitions | Awkward or missing transitions |  |
| Organization | Clear organization | Adequate organization | Confusing or weak organization |  |
| Spelling and Grammar |  | Correct grammar, no spelling mistakes | Incorrect grammar; many spelling mistakes |  |
| References in footnotes and Bibliography  |  | Correctly credits references | Incorrectly credits references |  |
| Conclusions | Effective conclusion | Adequate conclusion | Weak or missing conclusion |  |
|  |  |  | **Total Score** |  |

**Grade Level: 6-7**

**Unit 1**

**Lesson 1**

**Overview: Introduction to Maps**

**Water Mysteries: Myths, Legends and Strange Occurrences (the Hook)**

The story of Atlantis is a legend about a civilization located at the center of the earth. It was thought to be a land of golden cities with great ports and huge temples. Did Atlantis ever exist or was it simply the product of an ancient culture’s imagination?

There are many theories about the land under the ocean but, it is very clear to me that starting a unit researching about mythology will spark the interest of the students, they love mysteries and to become detectives. The students will find out about Plato and his dialogues, how sailors from Venice and Carthage knew of an island called Antilla and they kept it a secret, so it would not be colonized.

The legends from different cultures do not prove that the continent did exist, but they do prove that Plato did not invent the story of Atlantis and the students will be hooked on stories related to water, oceans and seas.

**Time allotment**: at least one week per lesson

**Learning Objectives**:

Students will be able to

* Understand the difference between fact and fiction
* Collect information about Atlantis from different websites
* Reflect on the value of Myths as a scientific explanation of the natural world

**Websites**:

<http://library.thinkquest.org/25245/>

[www.legend-of-atlantis.com](http://www.legend-of-atlantis.com)

[www.csicop.org/sb/2001-09/atlantis.html](http://www.csicop.org/sb/2001-09/atlantis.html)

[www.theshadowlands.net/atlantis/](http://www.theshadowlands.net/atlantis/)

**Materials needed**: Computers with Internet access

Books about The Search for Atlantis.

The students work in pairs or in groups during the research and final project, individually reflecting in their note books.

 **Introductory Activity**

* Have the students write poems, stories, or legends about Atlantis, and draw an illustration of what they think Atlantis looked like.
* Ask the students to do research about the legend of Atlantis, where it was supposed to be located, and how it looked. The Big Question will be “Atlantis, a lost continent, an island or a legend?”
* After researching, the students have to look at the facts and reflect in their reflection note books
	1. Was the city a real city or a myth?
	2. Was Plato inventing the whole story?
	3. What do they think happened to the city, assuming it really existed?
	4. Do they think that it existed in the Bermuda Triangle?
	5. Do we have enough evidence of its existence?
	6. What do they think about underwater Archaeology? Is it a career that they will consider? what about Historian?

As a culminating activity, the students will be divided into groups of four of five. They have to plan an underwater city. Draw a map of it on poster board and make it on their desks.

This could also be one large city on a big table in the room, or it could be a mural the whole class creates together.

Include: air supply, schools, food, water removal, transportation, energy supply, government buildings, etc.

Once the students are done with the city of Atlantis, they will contact the students in Spain and will ask them to research how the city of Barcelona was born, what are the facts and what is the product of a legend, what is what their parents know, how is history taught in Catalonia compare to the rest of Spain and in Indiana. The students can go to the “Archivos de la Corona de Aragon” and investigate data to include in their research.

By now the students will be collaborating more with students from Spain to be able to share notes, opinions and perceptions that they cannot find in the books.

**Cross Curricular Extensions and built up activities**

**Lesson 2**

Now that the students are thinking about oceans and water, I will give them some questions to think about and to research. The students are going to take notes during their research and at the same time, they can come up with more on their own. Once I know which questions the students are more interested, I can group them together in order of interest and they will have a better outcome. The questions also, are going to make the students able to make the connection between Science, Social Studies and real life

**Activity 2.**

 **Learning Objectives**:

Students will be able to make inferences about oceans, tides, salinity etc.

Time allotted: 1 period (50 to 60 minutes). Also the students can come up with answers given as homework.

**Materials:**

Internet access or book resources.

 **Inquiry Questions**:

What is the difference between a “sea” and an “ocean”?

Where did the ocean come from?

Why is the ocean salty?

Why don’t the oceans become saltier and saltier as water evaporates?

What is the biggest sea creature?

What are the most dangerous ocean creatures?

Where is marine life most concentrated?

What causes the tides?

Why ocean currents affect temperatures around the world?

Why does a steel ship float

Why much of the food for the world’s population comes from the ocean?

By now the students know or can predict that we are going to study some body of water and its relationship with people, cultures, the scientific part of water (weather, temperatures, salinity, buoyancy, water cycle, etc), but I am still building up interest in the subject. The students don’t know much about Spain, trade or the Mediterranean Sea yet. Those are alien words for them!

**Lesson 3**

**Mapping the Earth**

**Learning Objectives:**

* Students will be able to define and identify the globe as a model of the earth and also identify land and water areas of the globe.
* Students will be able to distinguish between distortion and projections.
* Define north and south as directions, latitude, longitude.
* Students will be able to look at maps as tools and to investigate other navigation tools.
* Research Cartography and careers related to maps

**Time allotted**: 1 week

**Material needed**:

A globe

World wall map

**Procedure:**

* Write the term model on the board and ask if anyone can explain what a model is. ( like the real thing, but is usually smaller).
* After the students answer the question, you can show them different models at scale (cars, houses etc)
* Ask them if they know and can name different ways that the globe is a model o representation of earth, how water and land is represented and colored? etc.
* The next step is to ask the students to compare the globe with a world wall map and look for differences or similitudes. Tell the students that now we have a problem: We know that the world is a sphere, yet most maps are flat. The problem is that a flat map doesn’t show the surface of a sphere correctly. So what’s a cartographer to do?

Here is were the students research ,and write about Cartography, mapping scientists or land surveyor as a possible career using some web addresses

Websites:

[www.survepmap](http://www.survepmap)

[www.asla.org](http://www.asla.org)

[www.asprs.org](http://www.asprs.org)

Questions:

* 1. What is cartography?
	2. What cartographers do?
	3. What kind of studies do you need to become one?
	4. Salary
	5. Where can we find them working?
	6. Other studies or sciences related to cartography
	7. Are you or could you possibly be interested in becoming one? Why yes or why not? Explain.

Now we know the role cartographers have today but, do we know how information about places was recorded in early times before it was understood around early 1500’s that the Earth was round?

* I will ask the students to find and compare maps from different cultures and ages like: navigation maps in Polynesia, religious maps, maps from Indiana in early stages ( if they existed), maps from Greece, China and Spain since Christopher Columbus sailed under mistaken assumptions.
* For the map in Spain, the students can contact the school in Spain “Escanyar de Manacor” and ask the students there to find more information and share with them via video, e-mail or learning distance program. The students also will see that we always learn from our mistakes!
	+ - Next step is talking about map projections: sinusoidal, Mercator, Van Der Grinten, Globe Gores, Robinson etc and how they represent the earth. Once they know the differences, the students can demonstrate with a small activity called “A map of your head”.

**Procedure**

Each student blows up a balloon about the size of their head and cover the balloon with stripes of papier - mache. Let it dry and when dry, draw a picture of the face. Pop the balloon and then select one of the projections. Cut the paper head and match the projection the student have chosen. Lay the paper head flat on a table and see the distortion to compare with the reality.

To learn how a projection map is made you can use fruits (anything edible will get students attention get a grapefruit, a knife, and a paper towel. Cut the skin of the grapefruit into four equal-sized sections b slicing it four times from the top, where the stem is, to the bottom. As you peel off each piece, place it on the paper towel so that the skin is showing. Try to flatten the map and see why map projections contain distortions.

Now that we have the map, ask the students to look at the Mediterranean Sea and where is located. Do they know if is located north or south of the Equator (here we can refresh their memories about Equator as an imaginary line, North Pole and South Pole).

We are going to learn now about some other imaginary lines called Latitude and Longitude and the reason cartographers use them.

**Procedure;**

The students need a globe and a world atlas to locate the lines. If they have trouble remembering the difference between Latitude and longitude, tell them to remember a ladder, being longitude horizontal and latitude vertical.

 Ask the students to look at a map of Indiana and the world and they have to figure out the longitude and latitude of the school grounds. The students should also look at a map of Europe and Barcelona and find the longitude and latitude of the school ground for the school in Spain. The students in Spain do the same exercise and then they compare notes.

With that simple reminder, the students can see that the different countries and continents in the world are affected by their position with respect at the equator. The closer to the North Pole the colder the weather becomes and the opposite. I can talk about the Coriolis Effect and how wind and currents affect navigation (we will learn more about winds later with ships and trade). We will look at places close and far away from bodies of water and how the temperature range affects the climate. The students can look at the temperatures in their region or state and compare the differences, making inferences after looking at the position of the cities on a map.

* + - The students can look at NOA or any world weather service and graph the mean, media, range of the country, state, region or cities.

 Here the students make a clear connection to geography and climate and how they affect people and places.

Our next connection is with maps being a hot commodity. The students become sleuths and try to find information on how valuable were maps for colonization and navigation and how since early days, they were guarded against theft.

**Lesson 5**

Maps are part of the tools cartographers, sailors, astronomers and people in general use to find their way to a location but, there are some other tools to help them.

Students can create a time- line researching information on the tools of the trade and how they were used by starting with Eratosthenes (200B.C), Magnetic Compass, Astrolabe, Sextant, Radar and 3-D Maps, Sonar, Weather maps, GPS or Global Positioning System, Satellites.

This activity will focus on study maps as models of Earth, locate the hometown, and gain an understanding of maps, scale and the metric system.

The students will make a model of a room at scale to better understand what the scale on a map represents. Every centimeter will be equal to 3 centimeters in real life.

To make it more fun, the students will create also a magnetic compass and then navigate the classroom trying to find magnetic anomalies and discussing afterwards how these anomalies could get sailors and explorers confused in the early years of exploration and navigation.

Materials:

Large sewing needle

A piece of cork sliced 1.25 cm thick or foam packing material

A bowl of water,

 A magnet

 Tape

 Liquid dish soap

Procedure:

1. add one drop of dish soap in the center of the bowl of water
2. slide one end of the magnet 20 times along the length of the needle in the same direction to magnetize it.
3. Tape the newly magnetized needle onto the cork or foam piece and float it in the center of the bowl of water.
4. Observe the needle as it settles into a north-south position.

The students should respond to the next questions:

1. Examine the state map, find your town in the map. What is the Longitude of your town?
2. What is the Latitude of your town?
3. Look at the scale in the map. Use your ruler and calculate the distance between your hometown and the capital of the state.
4. Do some research to find out about orienteering events in your area and try to attend one that you would like. Internet and local newspapers are a good source.

We are now familiarized with maps, lines in the map, scale and the history of cartography. Our next unit will take us to Europe its history and trade, and the Mediterranean Sea in particular.

 **Unit 2**

 This unit is focused more on Science Labs, Technology and History.

**Description:**

Students can develop competencies in responsible and collaborative learning. Computer software and manipulatives may be used to aid in independent learning.

The Labs will provide objects, experimental learning material, and hands-on building projects to accomplish learning goals. These activities help students learn how to think in a concrete way. Providing hands-on, inquiry based opportunities for students to enhance their understanding of science concepts is a goal of this unit. Sharing resources helps students to develop interpersonal skills. Students also have an opportunity to apply creative thinking and problem-solving techniques.

**Learning Objectives:**

1. The problem solving activities will help students to practice problem solving and to apply basic mathematics, science concepts etc. Skills that are meaningful in real-world situations. It builds on the appreciation, synthesis, and evaluation part of their learning. A goal of this unit is to equip students with some creative problem-solving skills that will help them to confidently handle change and new situations.
2. Either as an individual or in a collaborative effort, students work with a variety of media technologies that can be used as learning resources for doing research and gathering more information.

Students will participate in:

* + Productive thinking or brainstorming activities
	+ Hypothesis formulation
	+ Decision-making
	+ Planning
	+ Experimentation
	+ Evaluation

I can ask the students to look at a map of the world in their atlases and then ask them, what do you notice about the Mediterranean? Can you see why the Mediterranean is often called “the incubator” of Western Civilization? Can we see that people in the Mediterranean could travel practically anywhere in the world?.

**Lesson 1**

**Time Allotted: 1 week**

**Objectives**:

* Students will describe and assess the circumstances surrounding a major historical event from the ancient world-trade in the Mediterranean- by using the internet and other resources to research its location, people and repercussions.
* The students will start investigating the origins of the Mediterranean Sea name, what the name means, and also what else that body of water has been called in the past. The students in Spain also will do research and both groups can compare notes at the end.
* Introductory Lab: we will demonstrate that our oceans, despite their size, are a closed system.

**Materials:**

One quart or larger plain glass bottle with a tight lid

Water

Green and blue vegetable dye

Paint thinner (turpentine)

Duct or other waterproof tape.

**Procedure**:

1. Fill the bottle half way with water
2. Add green and blue dye to make it look like the ocean
3. Fill he bottle all the way to the top with paint thinner
4. Put the cap on tightly and wrap it with duct tape to keep it from leaking
5. Put the bottle on its side.
6. Ask the students what happened? What did they observe?

**Create a Lab Report**

**Follow up discussion and reflection:**

**Answer:**

If something happens inside the bottle, it affects all the water, the motion of the waves can carry and disperse pollution left behind by ships or humans.

**Lesson 2 and 3** are related and use the same web pages as resources

Both groups of students in the different countries research the answers of the questions.

**Time Allotted**: 1 week

**Procedure:**

In this activity the students will work in teams as reporters and use the Internet or different sources to investigate the different Mediterranean Cultures and trade to be able to answer Who, What, When, Where, Why and How they were influential in early history.

The students can decided which group will be in charge of which part. They work in groups researching information and presenting their findings to the other students in the form of a video documentary with pictures, interviews etc any creative idea coming from the students. Also they will be assessed individually through a reflection paper based on his/her research.

Questions that the teacher gives the students to consider are:

* Did technology or scientific advances in any way influence the civilization you are researching in relation to other cultures from the area?
* Consider the geography surrounding these cultures and how they were influenced by the sea. How did people live in your area?
* Why did this culture appealed to you?
* What kind of technological or scientific advancements ( if any) do you consider most important for humankind from your culture?
* How they exchange goods with other cultures to meet their basic needs of food, clothing and shelter?

The students can come up with more questions on their own to investigate.

Cultures to research are:

Phoenicia

Cartago

Greece

Rome

Web Links

[www.livius.org/a/spain/ampurias/emporiae.html](http://www.livius.org/a/spain/ampurias/emporiae.html)

[www.focusmm.com/spain/sp\_giamn.htm](http://www.focusmm.com/spain/sp_giamn.htm)

[www.nueva-acropolis.es?NuestraCultura?Historia/ampurias.htm](http://www.nueva-acropolis.es?NuestraCultura?Historia/ampurias.htm)

<http://geografia.freeservers.com/hispania.htm>

[www.cbrava.com/empuries/empuries.es.htm](http://www.cbrava.com/empuries/empuries.es.htm)

<http://encarta.msn.com/text_1741501460___0/Ancient_Greece.html>

<http://plasma.nationalgeographic.com/mapmachine/plates.html>

[www.anth.ucsb.edu/glossary/index2.html](http://www.anth.ucsb.edu/glossary/index2.html)

[www.sonic.net/bristlecone/dendro.html](http://www.sonic.net/bristlecone/dendro.html)

The students will be assessed based on:

Cooperative learning

Map skills

Research skills

Critical thinking skills

Reporting skills

**Lesson 3**

**Time Allotted: 1 week**

**Learning Objectives:**

Greek Trade in the Mediterranean- Ampuriae (Spain)

**The Task**

You have been selected to work as an assistant at the Institute of Nautical Archaelogy in Ampurias, Spain

You are working on three tasks. Using information from the ship that was found in Ampurias, you are going to report on:

1. the goods that were traded between societies around the Mediterranean Sea
2. the different societies that were involved in trade during this period
3. The probable route of this trading vessel in the Mediterranean Sea.

You will be required to make a report and presentation of your findings at the completion of the tasks.

**Preparation for the Task**

Your first task is to locate Ampurias in Europe and in Spain

1. On a map of the world locate your home country or state
2. print this map and mark your home
3. now go to the map of Europe and locate Spain
4. go to the north-east coast and locate Catalonia
5. go to Gerona and locate Ampurias
6. contact your partner school in Spain to request help during research

Investigate:

Why did the Greeks need to take part in trade with other countries?

What factors helped them to become successful traders?

How did trade help them become more powerful?

**Web Links:**

<http://en.wikipedia.org/wiki/History_of_the_Mediterranean>

[www.ibiblio.org/expo/1492.exhibit/b-Mediterranean/mediterranean.html](http://www.ibiblio.org/expo/1492.exhibit/b-Mediterranean/mediterranean.html).

[www.factmonster.com/ce6/world/A0859561.html](http://www.factmonster.com/ce6/world/A0859561.html)

<http://erikson.uniserve.com/med_history_trade_intro.htm>

**Task 2**

The date for the Ampurias ship has been placed towards the end of the 14th century B.C.E. One of the main methods for dating the ship has been dendrochronology.

Investigate this method of archaeological dating and tell us why do you think this is an appropriate means of dating this particular archaeological finding?

**Task 3**

Investigate what type of goods or artifacts were found in the shipwreck to learn about what was traded.

You are working as an archaeologist and they work with evidence gathered, then they compare finds from one source with those from another and make inferences. Sometimes they make an informed guess, and then search for proof for their ideas.

1. Create a list of all the goods you think were traded around the Mediterranean during the late Bronze Age organizing the list under organic material and artifacts.
2. Create a list of all the societies that were involved during this period. As you create the list, mark each society on the map and write the goods that they exported or what they imported if you find out.
3. Using all the information that you have, work out what might have been the vessel’s route and mark it on the map.
4. Write an explanation on how you came to this conclusion and support it with evidence.

**Conclusion:**

As a team, gather all the information and graphics and make your final report to the class with boards, Power Point, Models etc. Use your imagination. Individually, imagine that you are a sailor aboard this ship. Write an account of some of your experiences like,

Who are you?

Where do you come from and where you are going?

What cargo are you carrying?

What are the ports of call?

What cargo you may carry on your return trip?

**Reflection:**

With so much trade among the different societies, what else do you think was exchange besides goods? What influence do you think this trade had on how the people thought and acted?

So much talking about a wrecked ship is getting me to think that the ship run into some weather problem, buoyancy and density problem or salinity problem to sink to the depths of the Sea. Let’s figure it out, which one was the cause of the sinking!

Our first explanation has to be between water of high salinity or low salinity and what effect does density have on water currents. Students in Indiana will use fresh water and the students in Spain can use real water from the Mediterranean taken from different areas to see the differences. Let’s investigate!

**Lab Report:**

**Science Concepts**:

Salinity Density Buoyancy

**Materials**

Plastic cup, clear or 600 ml beaker

Plastic spoon

Salt

Carrot, 2 inch piece

Potato 2 inch piece

Water, cold

Water, warm

Ice cube, dyed red

Red food coloring

Prepare a red ice cube by adding red food coloring to water placed in an ice cube tray in a freezer and allow the water to freeze.

**Salinity**

1. Obtain two clear plastic cups. Fill each cup half full with cold water.
2. Place a small piece of carrot into the first cup. Note if floats or sinks.
3. Using a plastic spoon, add salt, one spoonful at a time, to the cup of water with the carrot in it. Stir the solution and have students record their observations an d the number of spoonfuls of salt added to the cup until the carrot floats.
4. Place a small piece of potato into the second cup of water.
5. Repeat steps 3 and 4 for the potato.
6. Have students compare the amount of salt added to each cup. With object required the most amount of salt before it would float? What happens as the salt is added to the water. If you were swimming, would it be easier to stay afloat in an ocean or fresh water?

\*Allow enough time for the red colored ice cube to freeze thoroughly

To experiment with the differences in density of low salinity water versus high salinity water, you can prepare a solution of high salinity, dyed blue, and also a distilled water sample dyed red. The water with the lower amount of salinity will be displaced and rise to the surface by the water with the higher concentration of salt.

Explanation:

Ocean water is a combination of freshwater and a variety of salts and other trace elements. While there are local differences in salinity and temperature of ocean water, the composition of seawater is fairly uniform around the globe. Salinity is a measure of the amount of dissolved salts in water. Variations in the salinity of seawater can be seen in regions with high versus low rates of evaporation, such as the Mediterranean Sea versus the deeper locations of the Pacific Ocean.

Ocean Currents are the large scale water movements that occur at the surface and in the depths of the oceans. Surface currents are driven primarily by global wind patterns while surface currents are driven by ocean water density differences. Subsurface currents may

also be caused by differences in the salinity or by temperature variations. As very saline water sinks, the less saline or warmer water is displaced and rises to the surface.

To demonstrate the effect of the earth’s rotation on wind and water currents Coriolis effect ) we can do this lab.

 Materials:

Construction paper

Scissors

Pencil

Ruler eyedropper

**Procedure**

Cut 20 cm diameter circle from construction paper

Push the point of the pencil through the center of the circle

Place a drop of water on top of the paper near the pencil

Hold the pencil between the palms of your hands and twirl the pencil in a counterclockwise direction.

The water drops swirls around the paper in a clockwise direction. Like the spinning water, the moving earth moves out from under the unattached air and water, causing them to change directions.

**Water Temperature and Density currents**

1. Fill a clear plastic cup about half full with warm water.
2. Have students look at the water at eye level and add a red colored ice cub
3. Have students observe what occurs. In which direction are the red color streams heading?
4. Based on observations, what do you think, is cold water less dense or more dense than warm water?

**Buoyancy or Archimedes Principle**

1. Fill a container up to the brim with water and weight it.
2. Place a block of wood on the water, and some of the liquid will spill out.
3. Weight again, to find out if the weight has altered.

Explanation:

The weight remains the same, the water spilt out of the container weights exactly the same as the whole block of wood. Archimedes discovered that a body immersed in a liquid loses as much weight as the weight of liquid displaced by it. This apparent loss of weight is called buoyancy.

At this point the students can investigate different models of vessels (Greek, Phoenician etc) and can make models of them with different materials and weights to simulate bulk to demonstrate buoyancy.

**Unit 3**

The third part of the Unit is related specifically to Trade. The students will know how to locate the Mediterranean Sea and know enough of water properties to be able to engage in more sharing information with the students in another country, in this case Spain.

**Introduction to Trade**

**Time Allotted**: 1 week

1. **Why do we trade?**

The teacher can start asking the question to the students Do you ever have traded anything?

When you have the answers, ask why he or she traded?

What made the student decide to trade?

How did he or she convince someone else to trade?

Can you think of some other objects to be traded?

How do we trade food, sporting goods, clothes technology etc?

Next the teachers ask, what do they know about exports and imports. When they can identify the difference, the students are ready to play the trade game.

**Procedure:**

* + Team up the students in groups of 4
	+ The students move around the classroom and identify 10 import objects and 10 things that are made in USA that could be exported.
	+ Give the students 10 to 15 minutes and then compare notes.
	+ The students need to write a report about the products of trade that they use in their daily life.

**Lesson 2**

1. **What is Trade?**
	* What would you do if there was no such thing as trade?
	* What does your town trade?
	* What is fair trade?

Riding the Trade Winds: Ocean Navigation and Trade

* Go to [www.gisnet.com/notebook/comprose.html](http://www.gisnet.com/notebook/comprose.html) and learn about the origins of the Compass Rose and how it helped sailors navigate and find their way.
* E-mail your friends in Spain and ask about “Trade Winds” that sailors used in Europe. Ask them how was it used and who used it?
* Trade information about goods that were traded during the middle ages in Spain and particularly in the Mediterranean Sea Ports like Barcelona, Mallorca, Genoa, Venice etc.

Ever since ancient times, we have depended upon water transportation for trade. As we are historians and since we know the reason why ships float, we are going to

* 1. Track the history of cargo ships in the Mediterranean from the beginning and make a timeline.
	2. Learn how does a company decide in which country to flag their vessels.

 <http://155.187.10.12/flags/flags.html>

**Lesson 3**

**Where do we trade?**

**Time Allotted**: 1 week

**Questions for Inquiry**:

* Do you know the two most important things a port city must have?
* How did Barcelona or Mallorca become such major ports. Research the medieval history of these two places to find out and ask the students in Spain to do the same.
* [www.barcelona2004.org/esp/eventos/exposiciones/ficha.cfm?IdEvento=110](http://www.barcelona2004.org/esp/eventos/exposiciones/ficha.cfm?IdEvento=110)
* www.csudh.edu/global\_options/375Students-Sp96/Spain/HISTORY.HTML
* What do they trade or did trade over the centuries?
* Does a port have to be on the seacoast?
* What makes a port to be succeeesful ?

**Lesson 4**

**How do we trade?**

This lesson plan focuses on how goods are moved from place o place so that they can be traded.

**Questions for Inquiry**:

* How cargo was shipped in the early ages?
* Differences between bulk cargo and containers
* E-mail the students in Spain and ask for pictures of the cargo containers in the harbor and see if they can investigate early shipments, quantity of the shipments and how they were shipped. What about today shipments?

**Science Connection**:

Ask the students if they know how containers are loaded. Since they are loaded by huge cranes, we can explain “Pulleys” and how they work (lesson on simple machines)

 When they finished learning about cranes, ask the students if they think they could load a container. Then, prepare them for the container loading race.

In a large tub of water put a large flat block floating in it. Announce that each student will have 20 seconds to use the kitchen tongs and load as many containers onto the container ship as possible. Students cannot use their hands; they can only handle the containers with the kitchen tongs. They are immediately disqualified if they drop a container or cause a container to fall off the ship.

**Lab**: To see how design effects a boat’s speed and ability to carry cargo.

**Procedure and Rules**

1. Construction materials: wood, plastic, foam. paper, polystyrene.
2. Size: the size of your lake will determine the necessary size limits. For a pool that’s 1 meter in diameter, a maximum size of 20 cm in length and width is appropriate. Boats larger than the limit should be penalized by adding time into its fastest trial run.
3. There must be space to carry cargo.
4. Types of power boats: sailboats which are powered solely by wind.
5. Use class time to discuss motion, forces, and fluid behavior.
6. Have the students begin the regatta by making detailed drawings of their ideas.
7. On race day, each contestant makes at least 3 trial runs in the speed category, against the clock. Time the boats from a starting signal until part of the craft touches a designated area at the opposite side of the pool. Repeat the trial runs with cargo category. Have students load small weights such as pebbles, marbles or pennies.

Discuss with the students how they saw that a boat’s shape determines how fast it can go and how much it can carry. Did the boat which went the fastest look like the boat that could hold the most weight? What do you change or lose if you design a boat for speed versus a b oat to carry cargo?.

**Lesson 5**

**How does a ship at sea communicate with the rest of the world?**

* How was done in the early ages?
* Do you know what VHF stands for?
* Can you find out why the word Mayday is used?
* How do they communicate today?

**Lesson 6**

**The history of olive oil**

Olive oil has been enjoyed by people around the world for thousands of years and has played a starring role in many major historical events. Also it has been a major product of trade among the Mediterranean cultures.

Let’s find out about olive oil trade and write a one page essay about the use of it by different cultures in the Mediterranean. Why oil was so important and how is used today by the people in Catalonia and Spain? Try to have enough data to create graphs.

**Lesson 7**

**How was and is Spain involved in International trading?**

**Inquiry questions**:

* Work with the students in Spain and ask them to summarize contemporary and modern Spanish history under the Spanish point of view and trade in particular. What kind of regulations trade had during Franco’s ruling, how is trade different in Catalonia than the rest of Spain At the same time, study the same subject under the American point of view and Indiana in particular. Do we have the same goods to trade? How do we trade? What kind of regulations do we have? Look for differences and analyze them.

**Web Links:**

<http://encarta.msn.com/text_761575057___40/spain.html>

[www.newpaltz.k12.ny.us/local/high\_school/Teachers/rodcast/spain\_history.htm](http://www.newpaltz.k12.ny.us/local/high_school/Teachers/rodcast/spain_history.htm)

[www.tajinastes.com/spainhistory.html](http://www.tajinastes.com/spainhistory.html)

<http://en.wikipedia.org/wiki/Prehistoric_spain>

<http://ca.encarta.msn.com/encyclopedia_761575057_9/spain.html>

[www.mongabay.com/reference/country\_studies/spain/all.html](http://www.mongabay.com/reference/country_studies/spain/all.html)

**Lesson 8**

**International Trade**

* International Trade has its own language and its own set of players. Find out about the meaning of words like:

 Shipper, consignee, carrier, freight forwarder etc

* Ask the students to investigate about the EURO and trade relationships. Write to your friends in Spain and start a trade mission asking them what product or service they might be interested in and how they are going to regulate trade between them, and pay for the services or goods.

As a culminating activity, ask the students to start a mock Trading Company with the students from the other country. They have to come up with some product that they want to trade and use the correct business lingo.

 At the end of the year the students can visit each other, kind like a Back to Back Program.

Assessing Your Work

Student Name-----------------------

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Exceeds Expectations | Meets Expectations | Does Not Meet Expectations | Score |
| **Points Earned** | **3** | **2** | **1 or 0** |  |
| Factual Information | All information correct | Most information correct | Little or not information correct |  |
| Argument | Clear argument | Adequate argument | Inadequate or missing argument |  |
| Scientific Context | Excellent scientific context/development | Adequate scientific context/development | Poor sense or missing scientific context/development |  |
| Variety of Sources | Excellent variety of sources; excellent use of relevant materials | Adequate number of sources; adequate use of relevant materials | Inadequate number of sources, inadequate use of relevant materials. |  |
| Discussion/Detail | Excellent discussion/detail | Adequate discussion/detail | Vague/shallow discussion/detail |  |
| Depth of Insight/Analysis | Impressive depth of insight/analysis | Adequate depth of insight/analysis | Unexceptional insight/analysis |  |
| Form and Style | Effective introduction | Adequate introduction | Weak or missing introduction |  |
| Transitions | Smooth transitions | Adequate transitions | Awkward or missing transitions |  |
| Organization | Clear organization | Adequate organization | Confusing or weak organization |  |
| Spelling and Grammar |  | Correct grammar, no spelling mistakes | Incorrect grammar; many spelling mistakes |  |
| References in footnotes and Bibliography  |  | Correctly credits references | Incorrectly credits references |  |
| Conclusions | Effective conclusion | Adequate conclusion | Weak or missing conclusion |  |
|  |  |  | Total Score |  |