Teacher: Michelle Crane: Texarkana, Texas

Grade Level: 9 - 12

Lesson Summary: In this lesson, students will create and analyze a choropleth map showing the countries which have been attacked by modern pirates. Students will use charts and outline maps to create and color a map of a given region, and then they will present their maps to the class. The class will complete a world choropleth map for a final analysis.

Curriculum Connection: This lesson is part of a project-based learning unit on the geographical factors affecting pirates – both historic and modern. The project spans the first six weeks of a traditional World Regional Geography course, covering Geographic Skills, Physical Geography and Cultural Geography. This lesson can be used alone as part of a unit on map skills and uses. It would also fit into a unit on Africa. Students should understand maritime boundaries of countries prior to this lesson.

Time Needed: Two 55 minute periods

Lesson Status: Developed

Materials Needed:
- PC computer with projection device and internet connection
- World outline map – one per student (an 11” x 17” map would work best)
- Desk atlases, reference maps or textbooks to help locate countries
- Student Handout
- Region Cards
- Map pencils

Geography Standards (State and/or National Standards) :
- Geography Standard 1: How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information.
- Geography Standard 18: How to apply geography to interpret the present and plan for the future.

- TEKS 21C – create and interpret different types of maps to answer geographic questions.
- TEKS 22A – design and draw appropriate graphics such as maps, diagrams, tables and graphs to communicate geographic features, distributions, and relationships.
- TEKS 22B – generate summaries, generalizations and thesis statements supported by evidence.
- TEKS 23B – use case studies and GIS to identify contemporary challenges and answer real-world questions.
Geospatial Thinking Objectives:
Students will locate the places where modern pirates attack. Students will identify the pattern of attacks and attempt to find correlations for the pattern. Finally, students can identify how the pattern has changed over time.

Starting the Lesson: (10 minutes)

Asking Geographic Questions:

Warm-up: Display the IMB live pirate attacks map. Have students answer the following questions:

1. What does this map show?
2. Where in the world do most modern pirate attacks occur?
3. If you were responsible for protecting the world’s ships from pirate attacks, how might this map be helpful?
4. What other information that is not displayed on this map do you think might help you prepare for attacks?

Call on volunteers to discuss students’ answers.

The Lesson:

Background: Knowing the number of attacks and the specific countries which are at risk is important in planning and prevention. A choropleth map gives more detailed information regarding the number of attacks per country. Also, it is important to note that attacks which occur within 2 miles of a country’s shoreline are considered as having taken place within that country. Attacks which occurred over 2 miles from a shoreline are listed in the body of water in which the attack occurred. For the purpose of analysis, the students will be shading in the entire country – this will make it easier for the students to see patterns.

Acquiring Geographic Information:
Divide the students into pairs. Assign each pair a world region to study (if there are not enough pairs, Europe can be eliminated). Hand them an outline map, chart and student handout for their region. Give them time to complete their maps and answer their questions. (20 - 30 minutes)

After the pairs are finished, hand out a world outline map to each pair (you may choose to use two hemisphere maps to make the smaller countries more visible). Have each pair of students tell the class the number of attacks the countries in their region have sustained. Have students mark the totals on their maps. (10 - 15 minutes)

Organizing Geographic Information:
As a class, discuss how choropleth maps are created. Give the pairs time to divide the numbers on their map into 5 categories, assign each category a color, and color their map.

Analyzing Geographic Information:
Once they have completed their map, each pair will complete the final questions on their handout. (30 minutes – this stage may need to be completed the next day.)
Answering Geographic Questions:
Once all maps and questions are completed, discuss the following as a class:
- How did you and your partner decide how to divide the categories?
- How did you choose your color scheme?
- How would these maps help an organization or a country prepare?
- What do these maps show that the other maps didn’t?
- What other information would you find helpful?
- Why might some countries be more at risk than others?
- How does the location of modern pirate attacks compare with historic pirate hideouts?
- Why is piracy an international issue?
(15 minutes)

End the Lesson:
Day One Closing Product: Before leaving class, have each student write down the name of the country with the most attacks and the one with the least (but not zero). Hand in as an exit ticket.

Day Two Closing Product: Hand in an exit ticket with your answer to the following question: Based upon our map, in which region of the world would you expect to find the most modern pirate hideouts?

 Modifications:
If time is limited or if the number of students is too small, the countries or areas with very few attacks can be eliminated.

For advanced students, each pair can be given one card and a large world outline map (11” x 17” would work best). As each pair finishes one card, the cards can be traded so that each pair completes the entire world map at the beginning. Then, they can create their choropleth map and complete their analysis.

References:
International Maritime Bureau Piracy Reporting Centre
http://www.icc-ccs.org/piracy-reporting-centre
Here Be Pirates Choropleth Map and Analysis Handout
You and your partner will be investigating the location of pirate attacks within a particular world region.

Our region is: _____________________________________________________________

I. Region Analysis: Using the information on your Region Card, complete the following charts, then answer the questions.

   a. For your region, fill in each of the locations on your card. Looking at the numbers for each year, decide if the attacks are increasing (I), decreasing (D), fluctuating (F), or stable (S) and write the code in the chart below. Then, add up the total number of attacks for each location for the 5 year period and write that in the chart below.

      | Location | Trend Code | Total number of attacks, 2006-2010 |
      |----------|------------|-----------------------------------|
      |          |            |                                   |
      |          |            |                                   |
      |          |            |                                   |
      |          |            |                                   |
      |          |            |                                   |

   b. On your map, write the total number of attacks and the trend code in each location.

   c. Add up the number of attacks for each year and fill them in the chart below.


d. Questions – Answer the following questions on your own paper.
1. What country in your region has experienced the highest number of pirate attacks?

2. Which country in your region has experienced the lowest number of pirate attacks?

3. Based on your chart, has your region experienced a high number of attacks or a low number of attacks?

4. Overall, is the number of attacks for your region increasing, decreasing, fluctuating or stable?

   e. Analysis – On your own paper, write 2 to 3 sentences describing the pattern of pirate attacks for your region. Decide whether or not the countries in your region need to plan for future pirate attacks. Explain why or why not.

II. **Choropleth Map:** You and your partner will present the total number of attacks for each location to the class. While other pairs present, you will record their information on your world map.

   a. Color your map:
      1. Divide the number of attacks into 5 categories.
      2. Assign each category a different color.
      3. Draw and color your legend on your map.
      4. Color each location on your map using your legend.

   b. Questions – Answer the following questions on your own paper.

1. Which world region experiences the highest number of pirate attacks?

2. Which world region experiences the least number of pirate attacks?

3. How does your region compare to the rest of the world – is it really high, low or moderate?

4. Which world regions need to worry the most about pirate attacks? (list them all)

5. What do the locations where most pirate attacks occur have in common?

6. How are these places different from areas where few to no pirate attacks occur?

   c. **Analysis:** On your own paper, write 4 to 6 sentences describing where modern pirate attacks occur and which world regions are most at risk. Explain why you feel these areas are most at risk, and explain how organizations might use this map to help plan against attacks.