Geography/ Life Sciences
The Horseshoe Crab and its Medical Benefit Lesson Plan (I got this idea from the National Geographic website suggested in our text book)

Learners
- 5th grade ages 10-11
- 21 students made up of half male and half female
- Good group of learners
- An interpreter assists one child in the class who is deaf.
- I do not know of any of these students having any traumatic issues dealing with this subject (hospitals, IV’s, etc.)
- These children are familiar with the keyboard, a mouse, and headsets.

Expected Outcomes and Purpose
Description: S5CS5 Students will communicate scientific ideas and activities clearly.

Elements:
d. Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases

- Students will be asked their opinion on whether there should be more restriction placed on ocean pollution. The students will write a one page speech to elaborate about the relationship between the ocean and human medicine.

Lesson Technologies, Resources, and Materials
Teacher Resources:
- [https://www.georgiastandards.org/Pages/default.aspx](https://www.georgiastandards.org/Pages/default.aspx)
- [http://www.nationalgeographic.com/xpeditions/lessons/08/g35/seasmed.html](http://www.nationalgeographic.com/xpeditions/lessons/08/g35/seasmed.html)
- [http://www.pbs.org/wgbh/nova/shamanactivity/amazon2.html](http://www.pbs.org/wgbh/nova/shamanactivity/amazon2.html)
- [http://www.oar.noaa.gov/spotlite/archive/spot_delaware.html](http://www.oar.noaa.gov/spotlite/archive/spot_delaware.html)
- [http://ucsdnews.ucsd.edu/newsrel/soc/haygood_bryozoan.htm](http://ucsdnews.ucsd.edu/newsrel/soc/haygood_bryozoan.htm)

Student Resources:
- Photocopies of web page: [http://www.pbs.org/wgbh/nova/shamanactivity/amazon2.html](http://www.pbs.org/wgbh/nova/shamanactivity/amazon2.html)
- The shortcut icon set up on a computer desktop to this address: [http://www.oar.noaa.gov/spotlite/archive/spot_delaware.html](http://www.oar.noaa.gov/spotlite/archive/spot_delaware.html)
- Media Center or computer lab
- Internet
- Pencils, paper
Learning Environment

- Lesson length is about one to two hours.
- Lesson setting will be either in the Media Canter or the Computer Lab. Photocopies of the plant magic information will be printed and readily available to save time.
- The students will be asked to click on an icon that has been saved as a shortcut on the desktop ahead of time.

Teaching/Learning Strategies

A good springboard would be a virtual touch tank (the webcam at the Georgia Aquarium would work), but ideally I would want an actual touch tank with real horseshoe crabs.

1. Ask the students to explain how medicine is created. Do they know that medicine is made either two ways? Medicine contains ingredients that comes from plants and animals or it is synthetic (man-made). These synthetic ingredients are made to be similar to the ingredients found in plants and animals.

2. After viewing the PBS NOVA plant magic website photocopies, have one student read the information for each of the three plants listed on the website. Explain that both plants and animals have the potential to provide chemicals that help humans medically.

3. Ask the students if it is possible to find medicine in the sea.

4. Ask the students if they know of anyone who has ever been in the hospital and had an IV bag. Students will then go to the website (shortcut on desktop):
   [http://www.oar.noaa.gov/spotlite/archive/spot_delaware.html](http://www.oar.noaa.gov/spotlite/archive/spot_delaware.html)
   - Students will:
     - Learn about the horseshoe crab and the medical benefits (or potential benefits).
     - Read why the horseshoe crab is also known as “man’s best friend”.
     - Find out where horseshoe crab’s can be found.
     - Learn why the horseshoe crab is so important to people.
     - What are the concerns about horseshoe crabs?
     - What might happen if the horseshoe population declines?

5. Explain some of the highlights of the article to the students. Example: The shorebirds eat the crabs in order to fatten up for their migration. The crabs are used to test intravenous drugs for bacteria. The number of crabs is declining. Help them understand the importance of this small creature.

6. Students will use the web pages and personal experiences to reflect on the relationship between ocean health and human medicine. Do the students think that other people should be aware of the important role these animals play in the role between ocean health and human medicine?
7. Students will be asked their opinion on whether there should be more restriction placed on ocean pollution. The students will write a one page speech to elaborate about the relationship between the ocean and human medicine.

**Connection to Outcomes**
Student Work Evaluation  
Teacher Records

**Extensions**
Learning Center  
Technology Rich Project  
Information Dissemination