Outbreak! Palm Beach, Florida

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Abstract:

This activity is designed to incorporate biological elements with Media distractions to see if the students can successfully detect an outbreak of a disease (the disease chosen should be one that could be passed around the state of Florida) to see if the students can accurately navigate resources and misinformation campaigns, as well as identify pathogenic elements of a disease. The students should be able to successfully identify the disease based on symptoms and point of origin.

Rationale:

The overall objective is to establish a knowledge base for the students that they can tap into at any time. It also for them to realize that there are immediate danger to themselves and dangers that, while they are threatening, are not an immediate threat to themselves or their families. The Ebola outbreak of 2014 is one such example, while it was a dangerous time and the world had it's lens focused solely on the African continent and the spread of this deadly disease, a much different outbreak was occurring in the United States, more specifically Florida.

The disease Chikungunya was beginning to spread in the Southern portion of the state of Florida around the same time as the Ebola outbreak was occurring in Africa. However, the news did not mention, warn, or otherwise inform the general public of Florida that there was an imminent threat to the states residents, instead they chose to focus on the Ebola outbreak and how it was a potential threat to the United States as a whole.

I believe it is important for students to begin disseminating information and trying to find out what is true and what is not. I also believe it is important for students to be able to accurately identify pathogens based on symptoms and for them to realize how difficult disease identification can be when you compare the symptoms from one disease to another.

Description of teaching unit or module(s), including expected outcomes:

This instructional unit will span two 108 minute block schedules (one at the beginning of the year and one at the end of the year) or Four 55 minutes class periods (two at the beginning of the year and two at the end of the year).

Standards covered:

SC.912.N.1.1

Define a problem based on a specific body of knowledge, for example: biology and do the following:

1. Pose questions about the natural world
2. Conduct systematic observations
3. Examine books and other sources of information to see what is already known
4. Review what is known in light of empirical evidence
5. Plan investigations
6. Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs)
7. Pose answers, explanations, or descriptions of events,
8. Generate explanations that explicate or describe natural phenomena (inferences),
9. Use appropriate evidence and reasoning to justify these explanations to others,
10. Communicate results of scientific investigations
11. Evaluate the merits of the explanations produced by others.

SC.912.N.4.1
Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.

SC.912.L.14.6

Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.

The learning outcomes are expected to be as follows:

1. Students will be able to successfully execute the scientific method to determine who is or is not infected based on evidence they gather during the activity.
2. Students will be able to identify pathogenic diseases based on a number of factors including origin point, disease symptoms, and method of transmission.
3. Students will be able to differentiate between real news and sensationalized news, and be able to accurately determine what is or is not a danger to them in real time.

4. Students should be able to begin to develop the ability to discern between pathogens that have similar symptoms and modes of transmission based on other factors.
5. Students should be able to communicate their findings with others to work together to contain a potentially dangerous pathogen.

The student learning outcomes will be achieved through the Outbreak! Palm Beach, Florida Activity, and lessons preceding the activity to establish a base of knowledge for the students.

Students achievement will be measured by:

1. Success or Failure to successfully identify the "patient zero", initiate quarantine procedures and establish a successful treatment plan.
2. Success or Failure to successfully navigate the news stories to pick out the important to them information that will allow for them to achieve goal 1.
3. The Post Activity discussion that will show what the students gained from completing the activity and what the students think they will be able to continue to utilize in their future.

Use of Equipment and/or UF Visit

1. Pens/Pencils
2. Notepads
3. Sticker Books
4. UF visit during execution of lesson (TBD)

Teacher: Stephen Berlanga

Subject/Topic: Biology

Grade Level: 10th – 11th Grade

GUIDING QUESTIONS

Enacted on the Spot

What will I do to engage students in the lesson?

For this lesson the plan is to engage the students in a variety of activities that will teach the students about emerging pathogens as well as how the Media can cause panic to something that cannot be considered a serious threat to a location.

What will I do to recognize and acknowledge lack of adherence to classroom rules and procedures?

I will refer to the posted rules and guidelines that I will pass out to each student prior to the beginning of the activity. If a student cannot successfully follow the rules and guidelines after two redirections, the student will be removed from the remainder of the activity.

What will I do to communicate high expectations to students within the lesson?

I will communicate my expectations through the rules and guidelines set out in the procedure of the experiment. The students will also periodically check-in with me to receive hints and clues about the actual real "threat" present and how to weed out distracting information from News sources.

How will this lesson be organized as part of a cohesive unit?

This lesson is an introductory lesson to the Scientific Method unit at the beginning of the year. We will have students actively forming and testing Hypothesis to help gain valuable insight into the world of Emerging Pathogens and Scientific Literacy.

Planning and Preparing for Use of Resources and Technology

How will the resources and materials that you select be used to enhance students' understanding of the content?

Please describe:

- traditional resources

Students will have Note Pads, Pens, and the “infected” student will have a small sheets of stickers in their notepad to being “infecting” other students with.

- technology

Students will be given “News Stories” via videos pre-recorded with guiding/mis-information. Students will also be utilizing the school Classroom Microphones to spread “breaking news” with their classmates.

Planning and Preparing for the Special Needs of Students

How do you plan to address the special needs of your students to include special education students, ELL students and students who come from home environments that offer little support for schooling?

Please describe:

- specific accommodations that will be made

I will adhere to any 504 plans that the students in my class may have. Since it is a day of introducing new material, I will not have to make too many specific accommodations.

LESSON PLAN

Subject Matter Content

Identify what you intend to teach. Identify which forms of knowledge (concept, academic rule, law and law-lilke principles, and/or value knowledge) will be included in the lesson

I will be teaching the students about Emerging Pathogens, as well as the Scientific Method. Students will be utilizing concept organization & implementation in order to succeed in their over-arching goal.

Instructional Objectives/Outcomes (based on standard)

*Indicate **what is to be learned**. Include the following objectives and goals: Ask yourself "What do I want my students to know and be able to do at the end of the lesson and how will I measure that this was achieved?"*

- *Specific Lesson Objectives* (Written as a **SMART Objectives linked to the assessment***)*
- *Core /Next Generation Standards* (Use the appropriate codes and descriptions for only standards assessed in this lesson) ***TIP: This standard should be on the 3.0 scale below***
- *Goal 3 Standards* (List appropriate standards and describe the activities provided for students in this lesson that demonstrate the Goal 3 Standards)

After the successful completion of the Outbreak! Palm Beach activity (108 minute block period or two 54 minute periods), the students should have be able to display mastery over the concept of the scientific method. The students should also have rudimentary knowledge on emerging pathogens and how to identify important details in media sources and distracting and unimportant sources of information.

S: Display mastery of concept of scientific method & rudimentary knowledge on emerging pathogens

M: Successful completion of the Outbreak! Palm Beach activity

A: Displayed Mastery, Display Rudimentary Knowledge

R: Activity supplies and guidelines

T: (145 minute block period or two 55 minute periods)

SC.912.N.1.1

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5. **Plan investigations**
6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs)**
7. **Pose answers, explanations, or descriptions of events,**
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9. **Use appropriate evidence and reasoning to justify these explanations to others,**
10. **Communicate results of scientific investigations, and**
11. **Evaluate the merits of the explanations produced by others.**

SC.912.N.4.1

Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.

Learning Targets: (write in the scale below)

4.0

- **Evaluate how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.**
- **Assess a problem based on a specific body of knowledge, for example: biology and do the following:**
  - **Pose questions about the natural world**
  - **Conduct systematic observations**
  - **Examine books and other sources of information to see what is already known**
  - **Review what is known in light of empirical evidence**
  - **Plan investigations**
  - **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs)**
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2.0

- **Identify how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.**
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1.0

- **With help partial success at level 2.0 and 3.0**

Monitoring (checks for content and desired effect)

How will you know where the students are on the scale?

I will closely monitor their progress through the activity to ensure that the students are engaged in the activity and the students are performing their required tasks to my specific standards.

Instructional Strategies / Lesson Activity/Procedures

*Indicate **how you intend to sequence** the activities in the lesson from initiation to closure, estimating the time necessary to complete each major component of the lesson. Include these three major components:*

- *Lesson Initiating Activity: (Estimated Time)* **Go over the rules and guidelines (10 minutes)**
- *Core Activities: (Estimated Time)* **Outbreak! Palm Beach (see attached assignment) (83 Minutes)**

- *Closure Activity: (Estimated Time)* **Exit Activity: Gauge student reaction by a discussion of the core values of the lesson, get student input on their thought processes during the activity and assess any changes that may need to be made to activity. (15 minutes)**

Assessment

Identify the techniques used in determining to what extent the students have attained the instructional objective(s). For example, tests, presentations, products and/or systematic observation (attach copy.) Assessment techniques must include measurable terms and link to the SMART objective and performance outcomes, (criteria level).

Students will be assessed based on whether they succeed in the activity of finding the "infected" individual or not. Students will also be assessed on whether they can accurately identify why they succeeded or failed in finding "patient zero".

Assignments/Follow Up

Indicate how <u>other activities/materials</u> are used to remediate, reinforce, and extend this lesson to assist with differentiated instruction. Include special assignments, projects, field trips, research, technology, etc.

I will follow up on the assignment with a recap of what occurred in the class and possibly replicate the scenario again at the end of the year for beginning and end check.

Corresponding Activity:

Outbreak! Palm Beach, Florida

This activity is to test your use of the Scientific Method and how well you can identify good sources of information from bad sources of information.

There has been an outbreak of an unknown disease in our area. One of the people in this room is infected with this bacterium and is going to infect the rest of the class! Your objective is to find out who has the Bacterium before they infect the rest of the class.

But wait, there's more!

The News is reporting on some breaking information that we need to know. There's been another outbreak of Ebola in Africa, while bad there is little belief amongst the scientific community in Florida that we have anything to worry about.

The goal of the students is to initiate Quarantine protocol on the correct "patient zero" before the entire class is infected.

Quarantine zone will be indicated in the classroom by a taped off area surrounded by tables.

Materials:

Everyone will have:

A notepad

A pencil

One person will have:

A packet of stickers

A notepad

A pencil

Procedure:

1) Students will be assigned a random notepad one of the notepads will have the packet of stickers inside of it.
2) Students will wait for the first News report to play before beginning the activity.
3) Student with the sticker packet will begin "infecting" others as sneakily as possible
    a) Student with the sticker packet must also take notes to avoid suspicion and find out the best person to infect
4) The other students will attempt to find out who patient zero is while sifting through News reports presented to them to find out what the real threat is
5) News reports will either be played from YouTube or given LIVE by "newscaster" students. Reports will contain information ranging from the Ebola outbreak in Africa to the Outbreak in the classroom. They will also include "local news". News reports will be released once every 5 minutes.
6) Students have only 2 accusations each. If a student is falsely accused then they are automatically infected inside the quarantine zone.
7) Once the infected student has been identified and quarantined, the rest of the class must deduce how to stop the spread of misinformation and find a possible cure for the disease.
8) Once the disease has been stopped and treatment has begun the class will be given a reward.

Learning Objective:

The learning objective for this activity is to investigate the scientific method and sorting through valid and invalid resources. The students should be able to successfully sift through the "junk" or "sensationalist" news in order to determine the actual location and cause of the outbreak within

our classroom. The students should be able to base their ID of the disease based on symptoms that get presented and how the disease gets transmitted.

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Outbreak! Palm Beach, Florida

Action Proposal Explanation
Presented by: Stephen Berlanga
Atlantic Community High School
Delray Beach, Florida
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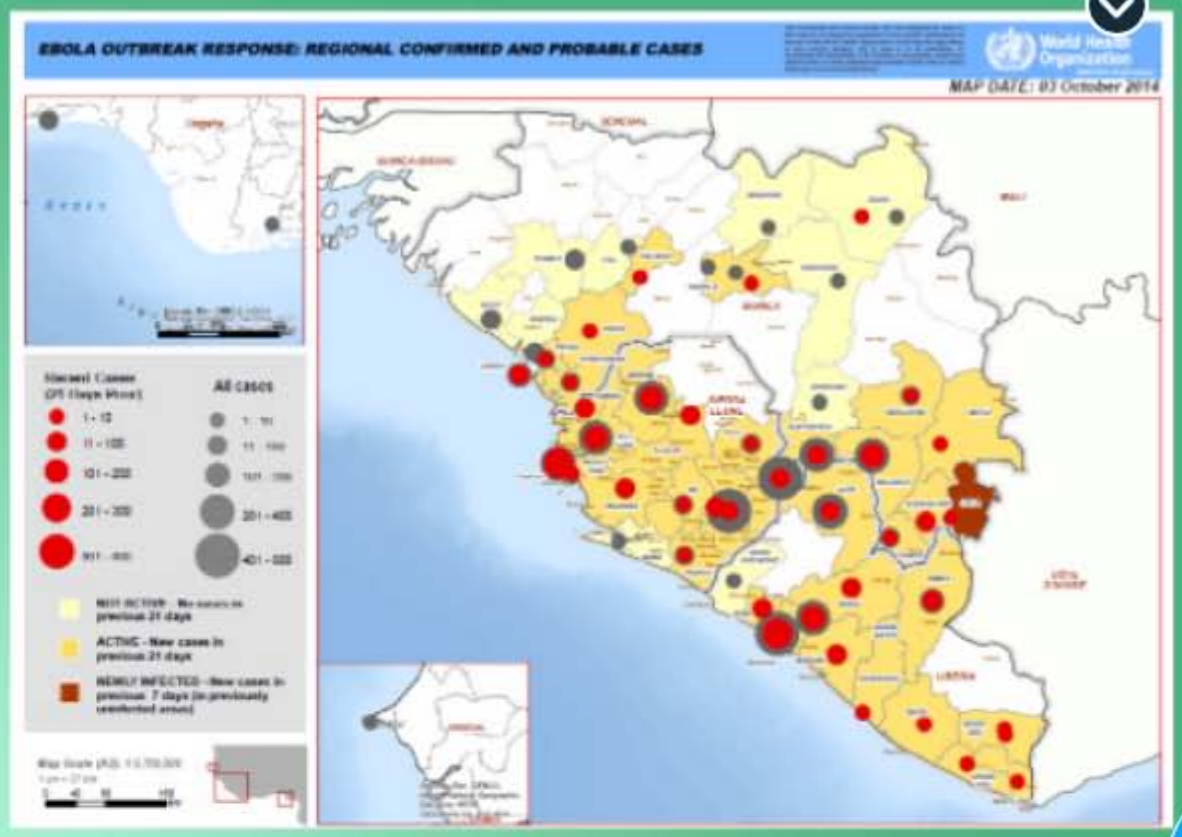
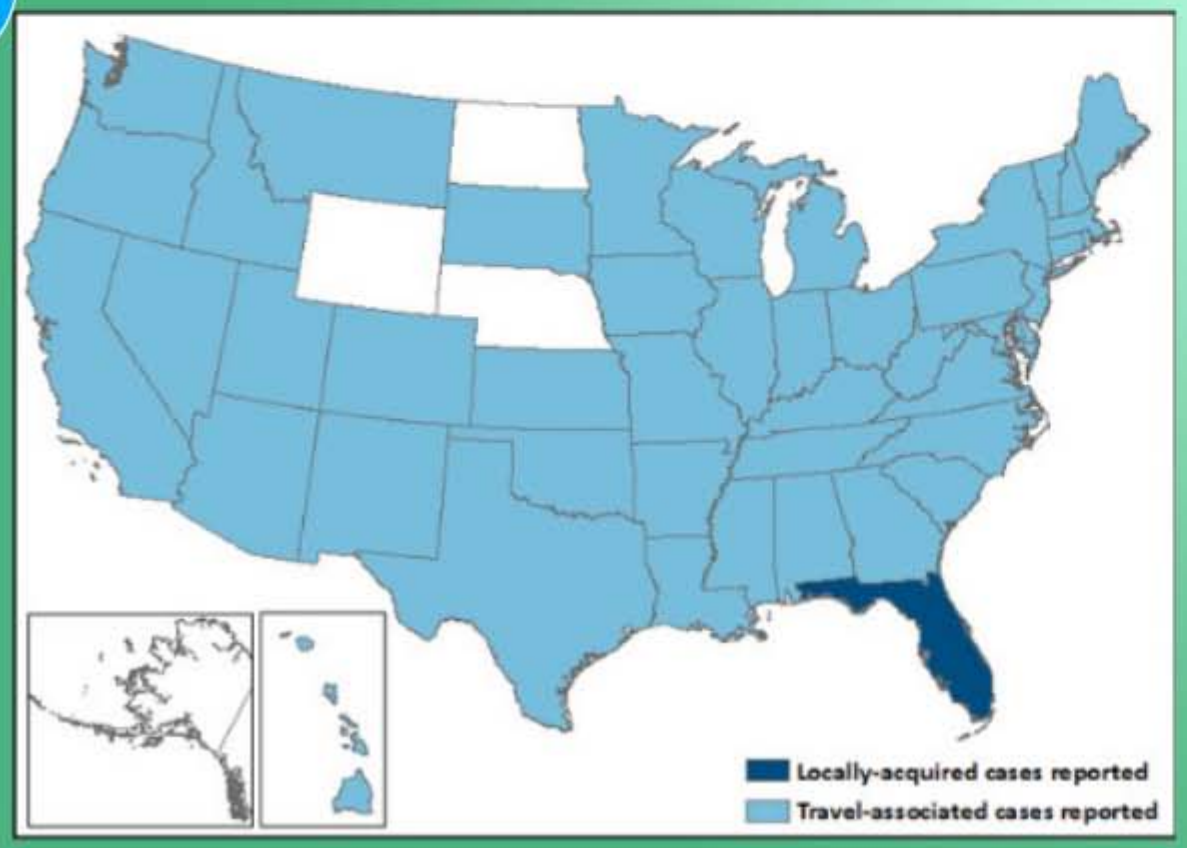
- This activity is designed to incorporate biological elements with Media distractions to see if the students can successfully detect an outbreak of a disease
- The disease chosen should be one that could be passed around the state of Florida





- We want to see students can accurately navigate resources and misinformation campaigns
- The students should be able to successfully identify the disease based on symptoms and point of origin.

Question 1 / 2 Which of the following diseases had an outbreak during the year 2014?

A. Ebola

B. Chikungunya

C. Cholera

D. All of the Above

Question 2 / 2 Of the diseases that had outbreaks in 2014, how many of them did you hear reported on the news?

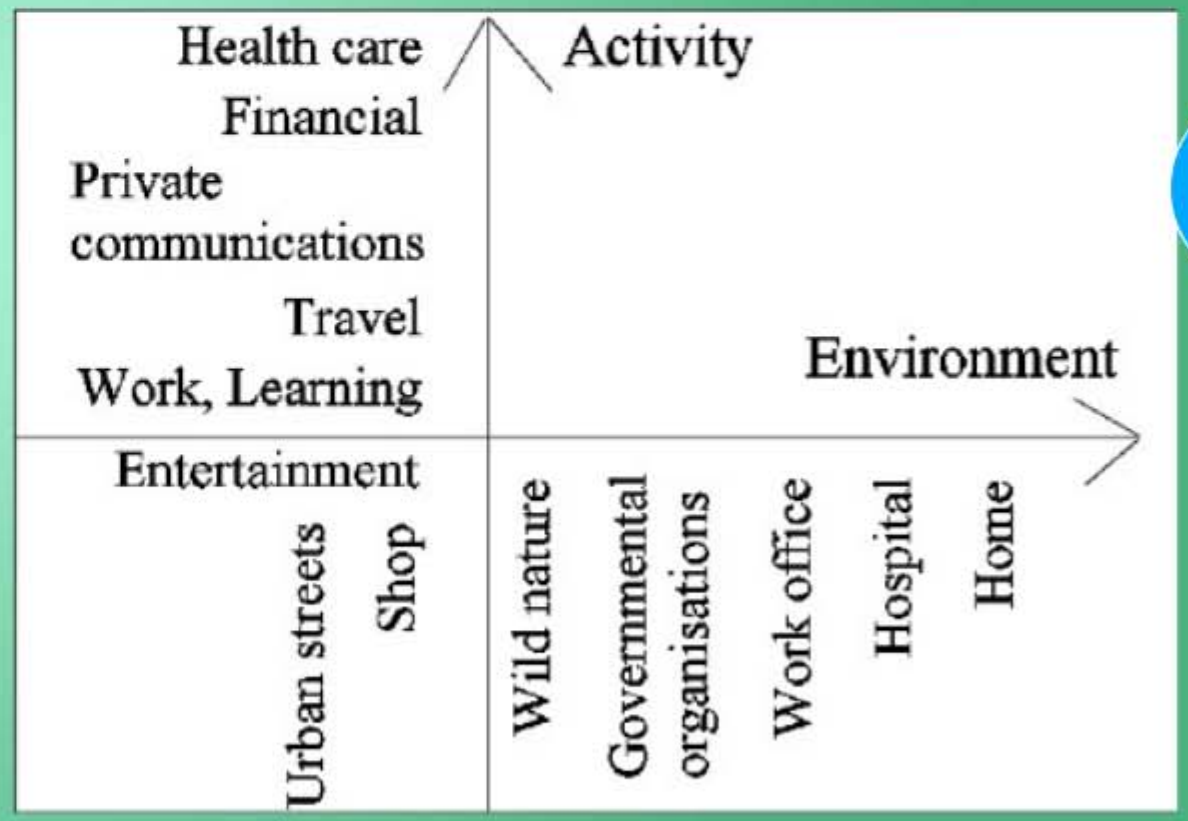
A. 1

B. 2

C. All of them

Why should I do this?

- It is important for students to be able to evaluate real threats to their health compared to real perceived threats.
- Students can become better informed on issues, diseases, and other important and pertinent issues to their day to day lives.
- Students will be able to gain the insight and knowledge to recognize when something is wrong (both health wise & news wise).



- The activity I have planned I have titled "Outbreak! Palm Beach, Florida" (it's a working title)
- To distract the students I will have periodic "newscasts" about the 2014 Ebola outbreak to distract them from their objective.

- As the class attempts to figure out who "patient zero" is, "patient zero" will be infecting as many people as they can.
- If patient zero infects everyone, they "win", if the students find patient zero and successfully quarantine and identify the disease they win.
- At the conclusion of the game, we will determine what we can do differently, and how we can improve detection.

Questions?