**BISSNET TPS Project**

Teacher: Mrs. Janice Klein

Course: Algebra II & Trig

Grade Level: 11

**Lesson Title: Outbreak!**

**I. Lesson Objectives:**

a) Through the process of inquiry, students will understand how math can be used in to show the spread of disease.

b) Introduce STEAM methods to show how to integrate math to real life

c) Students will analyze how disease is spread using charts and statistics

d) Students will create a mathematical model to predict how fast a disease will spread

**II. Lesson Context:** To be presented after students have studied creating scatterplots and developing regression models

**III. Standards:**

A-CED Create equations that describe numbers or relationships

F-LE Construct and compare linear, quadratic and exponential models and solve problems

S-ID Summarize, represent, and interpret data

S-IC Make inferences and justify conclusions

**IV. Materials:**

1. Computer

2. Projector

3. Smartboard or Apple TV

4. Student Handouts

5. Graphing Calculators

6. Lesson Plan

7. Pens/Pencils

8. HoverCam

**V. Anticipatory Set/ The Hook:** The lesson will begin with the imagemination unit.



This needs modifying on how Ican best present it, but I need technical help with this.

The teacher will ask students to write down questions about the image. In groups of three students will compare their questions and narrow them down to 3 for each group. The groups will share their questions to arrive at various hypotheses.

The teacher will then show the video attached.

[**http://www.cnn.com/video/standard.html?/video/health/2014/08/05/how-to-start-end-ebola-outbreak-orig-nws.cnn&iref=videosearch&video\_referrer=http%3A%2F%2Fwww.cnn.com%2Fsearch%2F%3Fquery%3DEbola%2Bvideos%26x%3D-947%26y%3D-106%26primaryType%3Dmixed%26sortBy%3Drelevance%26intl%3Dfalse**](http://www.cnn.com/video/standard.html?/video/health/2014/08/05/how-to-start-end-ebola-outbreak-orig-nws.cnn&iref=videosearch&video_referrer=http%3A%2F%2Fwww.cnn.com%2Fsearch%2F%3Fquery%3DEbola%2Bvideos%26x%3D-947%26y%3D-106%26primaryType%3Dmixed%26sortBy%3Drelevance%26intl%3Dfalse)

I seem to have a problem with getting the sound. I need technical help to fix this and to cut this video to eliminate the commercial and solution part. I will consult with you later on this, but you get a rough idea.

The teacher will finish with the question: Can we come up with an equation that represents the spread of the disease?

**VI. Procedures:**

1. After the hook, the students will be divided into groups of two.(One will serve as recorder)

2. Each group will be given a handout and complete sections I-III

Each handout will have a different set of data. The data will consist of a chart depicting the number of days of the disease and the number of cases.

3. Part I - Students will create a scatterplot of the material.

4. Part II - Students will determine the line of best fit rounding their data to thousandths.

5. Part III - Students will answer questions based on their findings.

How many people will have the disease in one month?

The population of the United States is 317,000,000 in 2014. If the disease is not checked, in how many days will the whole United States be infected?

6. Students will combine with 2 other groups and compare their equations and complete Part IV of the handout. (Again, one will serve as recorder)

How are your equations similar?

How are they different?

Compare the answers to the 2 questions in Part III. Whose equation had the worst prediction? Why?

What can health officials do to try to stop the spread of the disease?

**VII. Conclusion:** The students will present their findings to the class. The class will discuss the results.

Will the equations always be exponential?

What procedures can be used to check the disease?

What procedures can be used to prevent the spread of the disease?

Will these findings work for all disease s? i.e. flu, measles, etc.

**VIII: Assessment:** The teacher will circulate the classroom throughout the lesson to see if the students are on task, need guidance or have the correct mathematical calculations. Results of the Reflection question will also influence the assessment. Not judging their opinions but their justifications.

**IX. Differentiation:** By manipulating the Data, the equations can be simple of complex depending on the students’ ability.

**X. Reflection:** Have students complete Part V individually.

Did seeing the situation mathematically help you to understand the situation better? Why or Why not?