**Linear Regression Day 3**

1. TITLE OF LESSON: Linear Regression Capstone Project. The students will take everything that they have learned about linear regression to create a bungee jumping scenario for a Barbie.
2. CONTEXT OF LESSON: The students should be able to construct the line of best fit given a graph, and find the equation of the line they have created. They should also be able to identify a positive, negative, or no correlation. Students should also know how to find the equation of a line given two points or the graph of a line. They should also know how to input tables on the calculator and use the calculator to find the line of best fit.
3. LEARNING OBJECTIVES and ASSESSMENT:

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| Learning Objective | Bloom | Assessment (Formative/Summative) |
| The student will collect data. | A | I will know that these goal have been met with the successful completion of the Barbie bungee jumping project. |
| The student will graph points in a scatter plot and fit a line to the points. | R |
| The student will analyze real life data. | A |
| The student will make predictions data that they have collected | U |
| The student will compare and contrast different techniques of finding the line of best fit. | E |
| The student will compare and contrast the validity of a line of best fit. | E |
| The student will construct a real life scenario of a bungee jump to demonstrate knowledge of the uses of linear regression. | C |

1. RELATED 2009 VIRGINIA STANDARDS OF LEARNING:

**A.6** The student will graph linear equations and linear inequalities in two variables, including:

* 1. Determining the slope of a line when given the equation of the line, the graph of the line, or two points on the line. Slope will be describes as rate of change and will be positive, negative, zero, or undefined; and
  2. Writing the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line.

**A.11** the student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve real-world problems, using mathematical models. Mathematical models will include linear and quadratic functions.

1. MATERIALS NEEDED:

I SUPPLY: calculators, 7 dolls, tape measure, rubber bands, project handouts, tape, and rulers

They supply: Pencils, Paper, and may bring own doll

1. PROCEDURE:

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| Time |  |  |
| 5 min | Distribute warm up about bungee jumping and show a couple of bungee jumping videos. Discuss what bungee jumping is for kids that may not know. | Fill out form about what makes a Bungee jump successful and what would make a bungee jump unsuccessful. |
| 10 min | Go over in depth instructions for Barbie project. Make sure that the kids know how to make slip knots and have their dolls set up to jump. Place emphasis on respect to other people’s property. | Students should be listening about how to set up dolls for the throw and prepping their doll for a jump. |
| Remaining time | Walk around room checking for appropriate behavior, and splitting up groups when they are supposed to be split to work on their own. | Work through project packet with group. Full instructions for students are in project packet. |

1. MEETING THE NEEDS OF ALL STUDENTS:

Additional time may be needed for some students to complete assignment. Also instead of finding and comparing 4 equations they can be shortened down to 2 equations or less. They may also be paired up with a student even for non partner activities for additional help.

1. WHAT COULD GO WRONG WITH THIS LESSON AND WHAT WILL YOU DO ABOUT IT? A lot of things can go wrong with the project. Students may misbehave with dolls, which would result in them being taken away and given their own set of data. Students may not want to participate and in that case I would have them come 1 on 1 with me to get the project done. The project may also take longer than 1 block period, so I would have students come in during study hall for them to complete the project.
2. LINK TO CTA: This is the project that I presented at CTA in the Nussbaum lecture. I really like incorporating projects into the curriculum to make it real for the kids. In the handout I also use a few open ended questions that they students can answer. That idea came from Litner. Also the students are generating their own data like we did in Colleen Watson’s lecture.

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