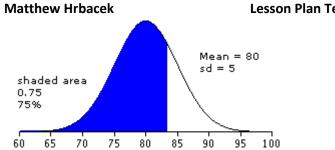
Grade: High School (11 th Grade)	Subject: Statistics	
Materials: Textbook, Notebook, Writing Utensil	Technology Needed: Laptops, Projector	
Instructional Strategies:	Guided Practices and Concrete Application:	
 Direct instruction Guided practice Socratic Seminar Learning Centers PBL Lecture Discussion/Debate Technology integration Other (list) 	 Large group activity Hands-on Independent activity Technology integration Pairing/collaboration Imitation/Repeat/Mimic Simulations/Scenarios Other (list) Explain: I will begin my lesson with direct instruction by explaining how to use mean and standard deviation to establish the graph for a normal curve. Then, I will use technology integration by projecting an Excel spreadsheet which shows students how to find the values of mean and standard deviation and graph the normal curve. 	
Standard(s) HS.S-ID.4: Use the mean and standard deviation of a set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets or tables to estimate the areas under the normal curve.	Differentiation Below Proficiency: The students below proficiency may struggle to understand both standard deviation and mean, and I will be able to recognize this after the opening reflection. If this is the case, they may also struggle to see how we are graphing the data To help with this, I plan to write a list of the most important step on the board, so that they are still able to follow what we are doing. Then, I will also walk around class as students are working	
Objective(s) Students will learn how to use spreadsheets to calculate important values such as standard deviation and mean for different outcomes. Then, they will understand how to evaluate the likelihood of certain outcomes based on this information using the distribution of a normal curve. "I can use a spreadsheet to find the mean and standard deviation of a random sample of data. I can use this information to find a normal curve for the data in Excel and on a paper graph. I can evaluate this graph to see if it accurately represents our population data." Bloom's Taxonomy Cognitive Level: Applying, Analyzing, Evaluating	 and I will try to talk with each of these students to see how they are doing with each concept. I will encourage them to work on communicating where they are struggling so that I can point the back to the correct step in fixing their problem. Above Proficiency: The students who are above proficiency will already have a strong understanding of the use of standard deviation and mean coming into class. This will help them to understand both how to graph the normal curve and why this is an effective method of calculating population percentages. For this reason, these students will be important in leading discussic as we work through problems. These students will be expected to be more proficient than others at analyzing the graphs once we have found them. 	
	 Approaching/Emerging Proficiency: Students who are approaching proficiency should already understand the meaning of standard deviation and mean when they come into class. They they will likely follow most of the instructions for graphing a normal curve. They may struggle to understand how to use Exce at first, but with help, they should be able to figure this out. They also may struggle to understand how to calculate the area under the normal curve at first. I will try to call on these students the most as we are working through problems in class to keep challenging them to reach a level that is above proficiency. Modalities/Learning Preferences: Technology Integration (using Excel), One-on-One conversations with students as they are working, Direct Instruction 	

Lesson Plan Template

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Classroom	Management- (grouping(s), movement/transitions, etc.)	Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)
	 Students should try to participate in discussion Students should listen respectfully to others Students should work quietly and independently Students raise their hand if they have questions Students are expected to use technology responsibly without getting distracted. 	 Students should respect the contributions of others Students should participate in the activities and problems w are working on I will walk around to answer student questions while they are working Students are expected to realize that the use of technology a privilege that will be taken away if they are not using it for classwork.
Minutes	Procedures	
3-5	Set-up/Prep:The only set up that is required is that students sit down and get out their notebooks and a writing utensil. I will not turn the projector on until I have introduced the lesson.Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)Students will be asked to answer the question "How would you define mean and standard deviation and why might they be important?" I will use this as an opportunity to collect attendance for the day, and students will receive credit for participating in a in-class activity. Then, we will discuss my answer. The mean of a population represents the average outcome of a data set. The standard deviation represents how much of a spread this set of data has. A small standard deviation indicates that the outcomes are very similar, while a large standard deviation represents that the outcomes may vary greatly across the population.	
20	Explain: (concepts, procedures, vocabulary, etc.)	
	 Explain: (concepts, procedures, vocabulary, etc.) 1. I will begin with a quick review of standard deviation and mean. "Does anyone remember the equations for calculating standard deviation and mean for a population?" 2. Then, I will introduce the new topic, graphing the population data using a normal curve. We will begin with an example. In the first example, we will graph discretely by choosing individual scores and the likelihood of attaining those scores first. The first example we will look at is the distribution of batting averages for the starting lineup of an MLB team. The averages are: .242, .244, .247, .247, .247, .250, .250, .250, .250 we see that 2 of these batting averages (.242 and .250) have a 1/9 chance of being our outcome. Next, we see that 2 batting averages (.244 and .250) have a 1/9 chance of being our outcome. Next, we see that 2 batting averages (.244 and .250) have a 1/9 chance of being our outcome. Next, we see that 2 batting averages (.244 and .250) have a 1/9 chance of being our outcome. 3. "Now that we have analyzed our data, we will graph these outcomes on a coordinate plane. We will graph the batting average as our x-coordinate, and we will graph the likelihood of each outcome as our y-coordinate." A graph for this data set is listed below. 4. Next, I will have the students observe the shape of this graph, and we will try to analyze the results of our graph, talking about what outcomes are most likely. "What can we observe about the relationship between each of our outcomes?" After we talk about the students' answers to this guestion, we will move into another example which will illustrate these relationships more clearly. 5. In the second example we will look at the distribution of a test scores for an English class. In this example, we are given the standard deviation and mean to begin with. The standard deviation is a = 5 and the population mean is m = 80. Now, we must droka we commuse tus loo find the height of our graph. In	

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