Descriptive Statistics in Excel:
An Articulate Rise Microlesson

Microlearning Lesson Plan	**Joseph Emmi IDT 535**
1. **Anticipatory Set** ■ Focus students ■ State objective/goal (limit to 1 or 2) ■ Establish purpose ■ Establish transfer	The focus students are high school juniors and seniors who have completed two or more semesters of Algebra. The objectives are: To teach the learner the basic definitions and uses of descriptive statistics. Also, to teach the learner how to calculate descriptive statistics in Excel. The purpose is to establish statistical literacy and problem-solving skills for the learner. Transfer of learning will be applied to the learner directly by replicating the tasks that are taught in Excel.
2. **Instruction** **List the mode of instruction.** **List the software used.** Provide information Explain concept State definitions Identify critical attributes Provide examples Model Check for understanding Pose key questions Ask students to explain concept, definitions, attributes in their own words Have students discriminate between examples and non-examples Encourage students to generate their own examples Use active participation devices	The mode of instruction will be an online asynchronous microlesson. The software will be Articulate Rise and Excel. The concepts will be histograms, measures of center, and measures of variability. The critical attributes are as follows: A histogram is a graphical representation of the distribution of a dataset, showing the frequency of data points within specified ranges using bars. Measures of center are statistical values, such as the mean, median, and mode, that summarize a dataset by identifying the central point around which the data tends to cluster. Measures of variability include statistics like range, variance, and standard deviation, which quantify the spread or dispersion of the data points in a dataset. An example would be calculating the mean, median, and mode, along with other descriptive statistics in Excel, and showing it in a video for the class. The model is as follows: First, explain key concepts such as histograms, measures of center, and measures of variability. Second, watch a few videos on calculating descriptive statistics. Lastly, have an assessment at the end of each page with a few quiz questions. The lesson will have a variety of questions on descriptive statistics. What are the mean, median, and mode? How do you calculate each one? The students will explain the various examples. And they will generate them on their own. The active participation will be a downloadable Excel file, which the student will follow within the lesson.

3. **Guided Practice** Initiate practice activities which are under direct supervision Elicit overt response that demonstrates behavior in objective Continue to check for understanding Provide immediate and specific knowledge of results Provide direct, close monitoring by teacher	The first instructional strategy will be Direct Instruction. The students will start with directed practice and then guided practice. The student will download an Excel file and watch it along with a video. The problems will be completed in real time. Descriptive statistics will be calculated using a data set from Kaggle. The first example will be mathematics test scores for primary students. The mean, median, and mode will be compared to ensure that the distribution of the data is normal. The class will also need to calculate the standard deviation and variance. Students will work along with the video. Questions will be answered by email in a timely manner.
4. **Closure** Make final assessment to determine if students have met objective Have each student perform behavior on his/her own Final check for teacher's next lesson	The final assessment will be multiple-choice quiz questions at the end of each page that asks basic questions on descriptive statistics. Also, there will be a critical reflection at the end of the page to compare and contrast the various topics. There will also be a homework assignment to complete, which will be a downloadable Excel file.
5. **Independent Practice:** Students continue to practice on their own for: Speed/fluency from newly learned skills Maintenance for previously learned skills How have you included UDL practices into your lesson plan?	The next step of Direct Instruction is independent practice. The students will be given a second part to complete for homework in the dataset. A data set in Excel will be used. They are expected to do the calculations on their own. The Independent problems will be more challenging than the original guided practice problems. This challenge will foster critical thinking skills. The UDL Principle used for this lesson will be Engagement. Students will be engaged with guided practice because the learners will have active participation. Students will also be engaged with independent practice because they will have autonomy. Compare and Contrast will foster engagement by being relevant and sparking the students' interest. Students who suffer from motivational difficulties will benefit from increased engagement.

6. **Instructional Strategies:** Direct Instruction Compare and Contrast	The two instructional strategies will be Direct Instruction and Compare and Contrast. Direct instruction was already mentioned above using modeling, guided practice, direct practice, assessment, and independent practice. Compare and Contrast will be used to compare the different descriptive statistics. Students will also compare measures of center and measures of variability. The student will first be able to identify them on their own. Afterward, the student will come up with examples. Lastly, the student will compare each one and recite the differences.