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IT 7360 – A04

Lesson Plan 1

DELIVERABLE 1

Lesson 1:

Mean, median, quartiles, and interquartile range.

Learning Objective:

At the end of this lesson the learner will be able to compare summary statistics from one set of data to another with a 70% or better accuracy.

Standards:

MM1D3a: Compare summary statistics (mean, median, quartiles, and interquartile range) from one sample data distribution to another sample data distribution in describing center and variability of the data distributions.

MM2D1a: Pose a question and collect sample data from at least two different populations.

Essential Questions:

How do you compare groups of data using at least of the following: mean, median, or interquartile range?

How do you write survey questions to discover the information you are looking for?

Instruction: GHSGT Review: Data & Analysis Unit

Day1:

- Teacher leads a discussion with students to review basic definitions associated with the Data Analysis unit. (This is just review from Math 1 & 2.)
- Students work in cooperative groups on basic skill and drill problems to ensure they can answer these type of questions on the GHSGT.

Day 2:

- Teacher previews what class will be doing in the computer lab that day using the projector in the classroom. Students also receive the address for the webquest so they are able to begin as soon as they get to their computer.
- Students will work on the following webquest: www.zunal.com/webquest.php?w=39523

- Teacher will circulate throughout the room to answer questions and ensure students are on topic.

Day 3:

- Students will complete their webquest, and also work on a short 2-4 minute presentation to be graded by their peers.
- The class should be able to begin presentations before the end of the day.

Day 4:

- Complete presentations and get feedback from peers and teacher.

Assessment:

Once the assignment is complete, the students will complete a peer rubric for each of their classmates during their presentations. It will be work 20% of their overall grade. My co-teacher and I will also grade the completed project using the rubric below. This will count for the remaining 80% of the grade.

DELIVERABLE 2

Sample Project:

Question to be answered:

Are boys or girls smarter? (You could compare test scores or grades)

Type of sampling:

Convenience sampling. I will ask the teacher for a list of boys and girls scores on the last test. (No names will be included.)

	Girls Scores	Boys Scores
1	85	105
2	78	48
3	55	98
4	99	65
5	76	72
6	92	78
7	103	84
8	88	77
9	94	88
10	81	80

5# Summary

	Girls	Boys
Minimum	55	48
Lower Quartile	78	72
Median	84.5	79
Upper Quartile	92	88
Maximum	103	105

Questions for paper:

1. What was your question and why did you choose it?
Are boys or girls smarter?

2**. What comparisons were being made?**
I compared scores from the last test taken in my Math 3 class; ten of the boys and ten of the girls. I then found the minimum, lower quartile, median, upper quartile, and maximum for each set of data.

3. How did you choose to survey? What sampling method did you use? How did you collect your data?I used the convenience sampling method. I collected my data from my Math 3 teacher.

4. Were the results what you expected? If they were not, what could have contributed to the differences?
They were what I expected. The difference could have been that more boys score lower on this particular test. The boys were in an assembly during the review, so this may be why they scored lower.

5. Which variable better answers the question that you posed? Support your answer using the box and whisker plots and the 5 number summary? Make sure to use the median and IQR.
I found that girls were smarter when I compared the data from the last tests. I think it might have been more accurate if I had looked at each students overall test average (all 3 tests we have taken). I found by looking at the median that the girls average was much higher than the boys. The boys did have the highest school on the test, but they also had the lowest. The interquartile range was smaller for the girls than the boys, which means there scores were closer together and more uniform while the boys were more spread out and all over the place.

DELIVERABLE 3

Evaluation Rubric

	Beginning 1	**Developing 2**	**Very Good 3**	**Exemplary 4**	**Score**
Student will pose a question that has two variables that will yield statistics.	Students did not pose a question that yielded numeric answers. The question was not relevant to the task.	Students posed a question that yielded numeric answers but did not attempt to make a comparison between two variables.	Students posed a question that yielded numeric answers and makes a comparison between two variables, but questions will yield less than 10 values.	Students posed a question that yielded numeric answers and makes a comparison between two variables while at least 10 values.	%20
Students put their data for each variable in a table and have the accompanying 5-number summary.	Students do not have a complete data table and the 5-number summaries are completely incorrect.	The values in the data table are correct, but the 5 number summaries partially incorrect (More than 3 mistakes).	The values in the data table and the 5 number summaries are partially incorrect (1-2 mistakes).	All values in the data table are correct and the 5 number summaries match the data tables.	%20
Box and whisker plots are completed on the same graph so that comparisons can be made.	Neither box and whisker plot is completed correctly.	Only one box and whisker plot is completed correctly.	Both box and whisker plots are completed, but they are not plotted on the same graph so that comparisons cannot be made.	Both box and whisker plots are completed, correct, and plotted on the same graph so that comparisons can be made.	%20
Students will write a paper justifying their topic choice and making a generalization based on the data they have gathered.	Students make no attempt to answer their own question using statistics.	Students partially answer their question with statistics. Little justification is given. Some comparison is made between the two variables.	Students answer their question completely but may have faulty logic or weak justification.	Students pose their question, answer their question with statistics, tell what sampling method they chose, and give justification relating to their statistics about which answer is better.	%20

Total Score: %80

Peer Rubric:

Presenters Name_____ Your Name _____

Rate each presentation by circling a 1-4. Remember 1 is the lowest (or worst) and 4 is the highest (or best).

1) Did the question the student researched make sense? (Could they compare two sets of data?)	1 2 3 4
2) Did the student have all the required data in their table? Was the table displayed neatly for their presentation?	1 2 3 4
3) Did you think their box and whisker plot was displayed neatly for their presentation?	1 2 3 4
4) Did the student's explanation (the paragraph they read) make sense? Did you understand the answer to their initial question?	1 2 3 4
5) Did the student speak in a voice so you could understand what they were saying? Did they conduct themselves in the correct manner? (no giggling or cutting up)	1 2 3 4

DELIVERABLE 4

6 Es

1. Engage: I would explain to the students a little about the project and explain they will be able to decide their own topic to look into and research. I will give them some example questions/topic, and have them come up with more ideas as a class. How can we use median and interquartile ranges to compare data? What types of "real life" data can we look at when trying to use these techniques? What do you think you would be interested in?
2. Explore: The students discover when they begin their webquest that they are able to choose their own questions and area of research. They will have the opportunity to explore more than one area and choose what would be the best fit for them.
3. Explain: After the student researches their ideas, collect and compare data, they will have to write their findings in a paragraph. In the webquest the students asked to answer 5 questions that apply to their project.
4. Elaborate: After completing the webquest, the students will do a presentation to the class. They may use whatever they think would best convey their information: make a poster, power point, or anything they would like.

5. Evaluate: The students will be given a copy of both rubrics before beginning their project. Having the rubrics before beginning the project will allow the students to evaluate themselves as they complete the project.
6. Extend: Have the students think of ways this project could be extended to other topics. They could also display their findings in the hallway outside of the classroom.