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Article Critique 2 AN EXPERIMENT IN TEACHING RATIO AND PROPORTION

What is the purpose of the study? The purpose of the study is to determine what grade level is best fit for students to learn about ratio and proportions. The purpose is also to determine in what way ratio and proportions should be taught in the 6th -8th grade.

2. What type of research design is used (must use classification of designs in chapter 11)?

The type of research design used is systematic classification under the experimental design. It allows for pupils to work systematically in order to achieve better results. The physical and the mathematical interpretation is expanded in both experiments in order to magnify the outcome. The experimental design allows for active dependents to help determine internal validity.

3. How does the research design control for the following threats* to internal validity:

a. Selection: Depending on the two classes chosen, the demographics of the school itself can greatly influence the outcome of the experiment due to goals. Both classes belonged to a small public secondary school. Depending on who the subjects are, the outcome could be seen as different.

b. Maturation: This could change during the course of the experiment due to children getting older and more mature and therefore, are able to handle concepts more easily.

c. Mortality: The dropping out of subjects can lead to an overall attrition but should not have an impact on the internal validity of the experiment. As long as the control group is consistent within the rest of the experiment, people dropping out only lessons the subject amount and not the quality of the

subjects.

d. Regression: This has to do with aiming towards to average. The people with the lowest score aim to get a higher mark because they can only “ get better”. Instead of looking at it from and “ improvement” standpoint, it is important to view the subjects as making gradual strides to improve instead of an obvious jump.

e. Testing: If you repeatedly test a student, this could easily lead to a bias that causes change within the experiment. Subjects may remember the correct answer from previous questions and therefore, they are not coming from an unbiased perspective but instead, using memory to help them get through. Also, sometimes too much testing does not give enough room for actual growth.

f. Instrumentation: Depending on what instruments or manipulatives is used during the experiment, the outcome can be different. The Partial experiment is different from the full experiment due to its implementations.

g. History: History can affect the outcome because students are affected every day by their environment and therefore, without the control of the variables, nothing is consistent. This can greatly affect the experiment as history changes perspective.

*If any of these threats are not a credible concern in the study, explain why.

4. What are findings of the study (be brief)?

The findings of the study are that the pupils involved in the “ full experiment” and the partial experiment scored differently due to exposure of manipulatives and instrumentation. The full experiment done is more suited for the “ educated” population rather the 7th grade norm population. The Partial Experiment was more prevalent to the regular 7th grade population.

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5. Is the study internally valid? Why or why not? The study is internally valid because it deals more with things that can be controlled such as selection, history, maturity and instrumentation.

6. Is the study externally valid? Why or why not? This study has external validity because it includes pre-test and post test, situation specific observations, and it plays greatly off the independent variables.

Works Cited

Pluinage, R. A. (2007, June 3/4/2012). An Experiment in Teaching Ratio and Proportion. *Educational Studies in Mathematics*, Vol. 65, No 2, pp. 149-175.

Note: Please respond only to the questions posted. Do not include in your response any statistical results. Follow APA style in formatting: Times New Roman font, 12, black.