Case 5: Innovative Teaching on Posttest Improvement

An educational research study examines the effectiveness of an innovative teaching approach. The study includes 60 students randomly sampled from a middle school and randomly assigned to two groups (30 students each). The same curriculum content is covered for both groups. The traditional approach (Method A: control) is used for one group and an innovative approach (Method B: experimental) is used for the other group. The pretest is administered at the beginning of an 8-week teaching intervention period, and the posttest is administered at the end of the intervention period. Standardized assessment of learning outcomes and standardized testing conditions are used for both the pretest and the posttest. Does the innovative approach significantly improve students' performance? (download data)

Case:

Initial Questions

1. What are the research objectives?

2. What are the statistical questions?

3. What is the response variable, and what is the data type of the response variable?

4. What are the explanatory variables of interest?

5. Are there covariates?

6. What is the population of interest?

7. What is the subject, and what is the number of distinct subjects?

8. Are there subject-level data?

9. Are response variables dependent (repeated measures / clustered subjects)?

10. Are the subjects selected randomly?

11. Are the subjects randomly assigned to different groups?

Initial Thoughts

