

THE EFFECTS OF INQUIRY-BASED TEACHING IN THE MIDDLE SCHOOL SCIENCE CLASSROOM

Brandon Furr, Cut Bank, Montana, Summer 2023



Background:

Enrollment is 806 students

Three sections of 8th-grade physical science

Sample size of 50 students (Cut Bank Public Schools)

Research Question:

How does a student's learning and attitude change using inquiry-based teaching in a grade 8 science classroom?

Treatment: For the Foundations of Chemistry Unit periods 1 and 3 received inquiry-based teaching methods and period 5 received lecture then lab traditional style instruction on the unit. On the States of Matter Unit, the periods switched learning methods.

Data Collection:

Pre- and post-test, journal observations, student assignments, student self-evaluations, student interviews.

Data Analysis: The data shows for both Treatment and Non-Treatment Groups made some sort of improvement from the pre-test to the post-test. The data shows that the groups either had no normalized gain or a small gain in their learning for both units.

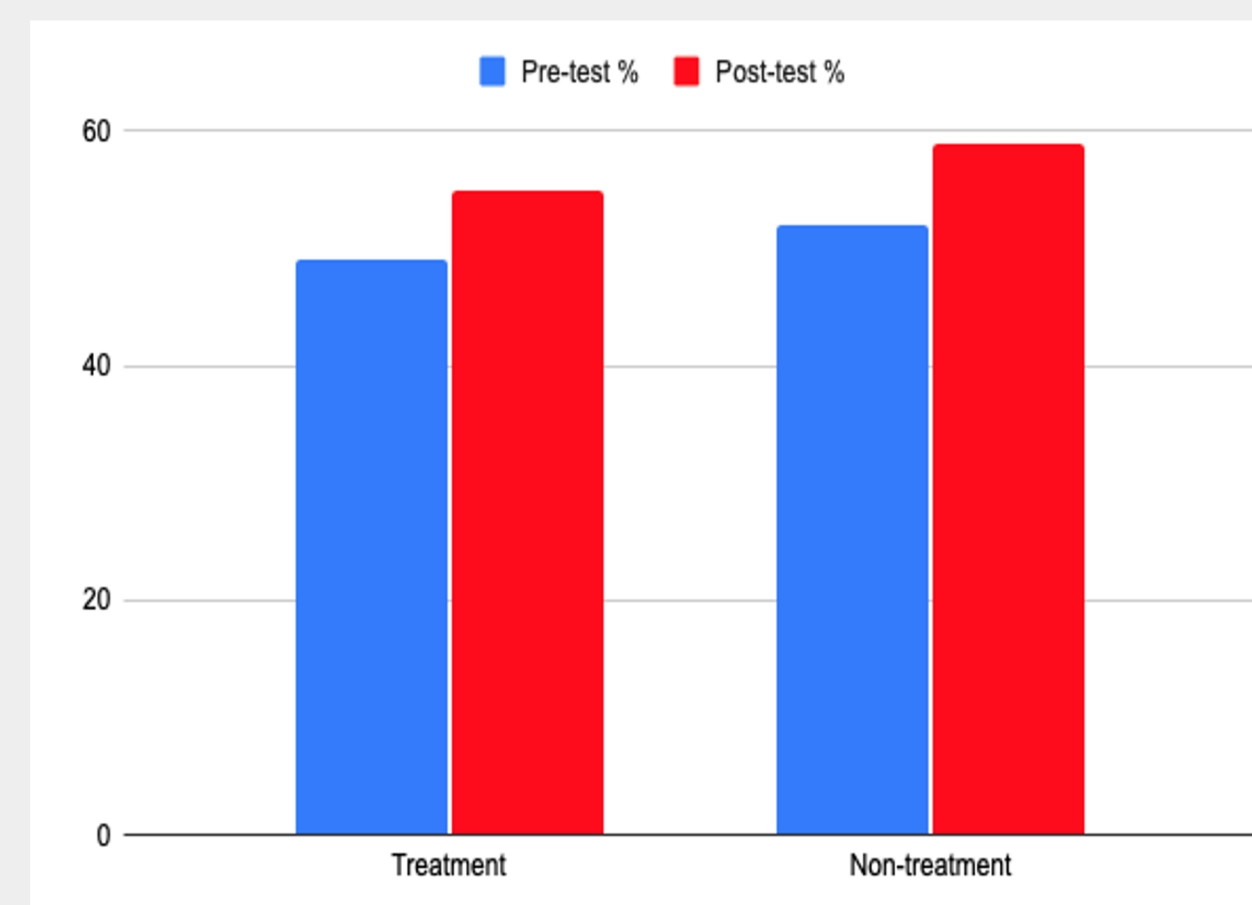


Figure 1. Foundations of Chemistry Pre- and Post Test Results (N=30) (N=13)

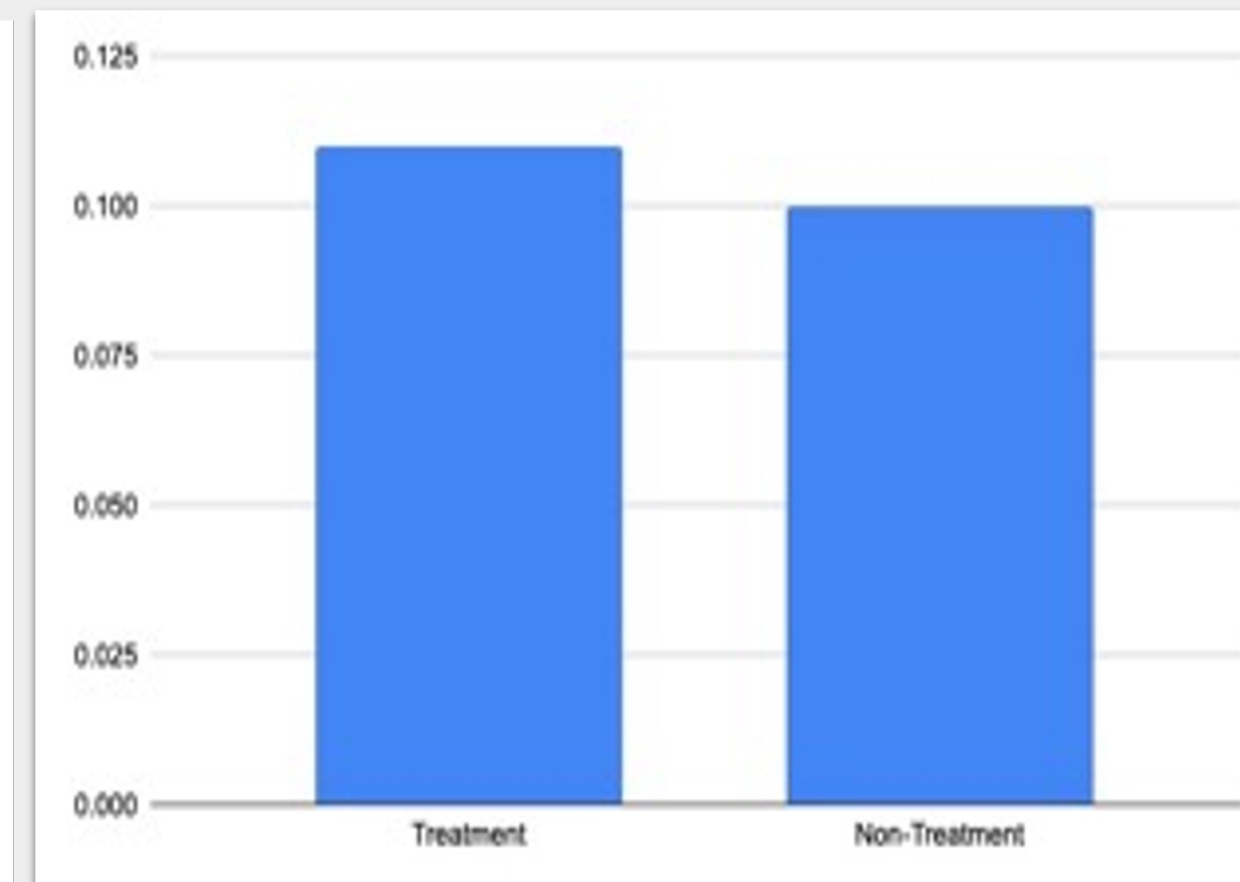


Figure 2. Normalized gains for Foundations of Chemistry (N=30) (N=13)

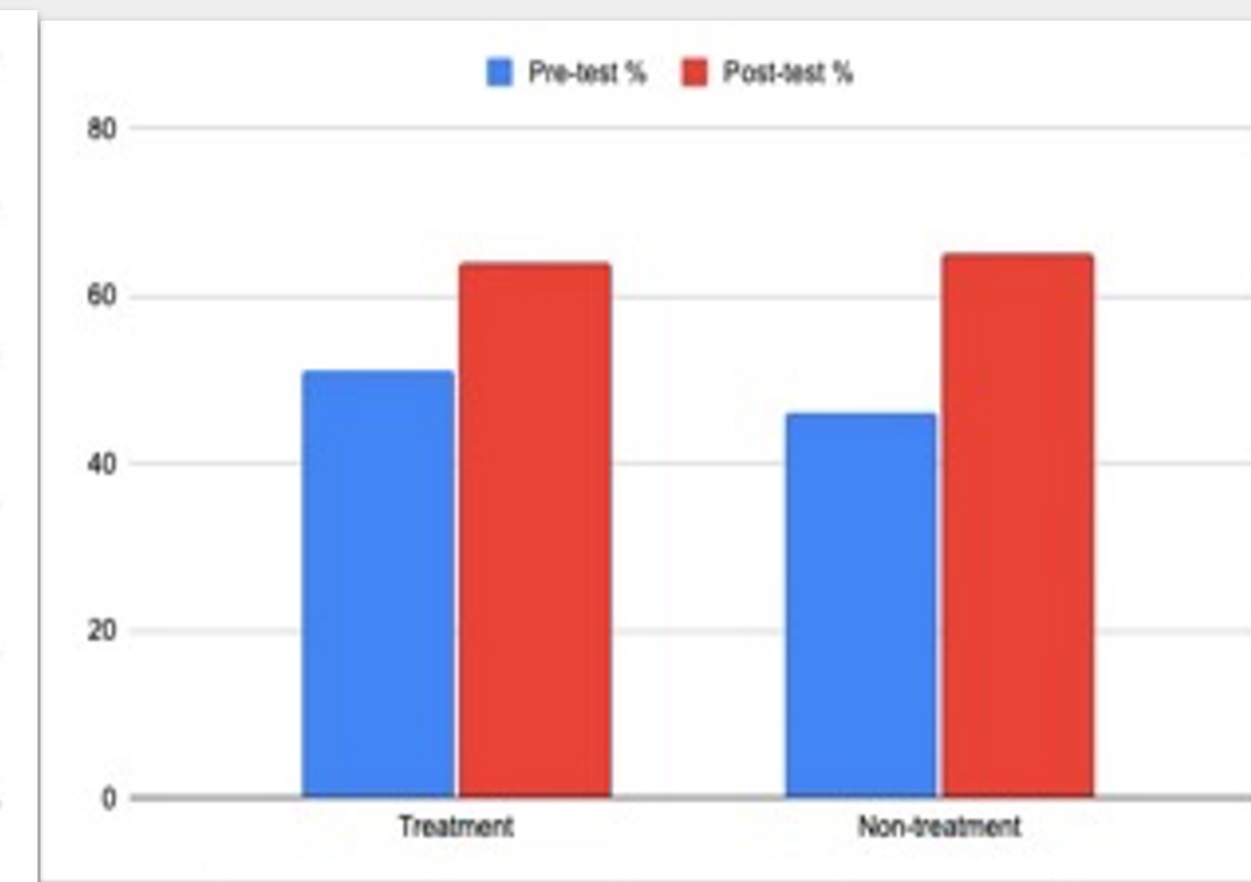


Figure 3. States of Matter Pre- and Post-Test Results (N=30) (N=13)

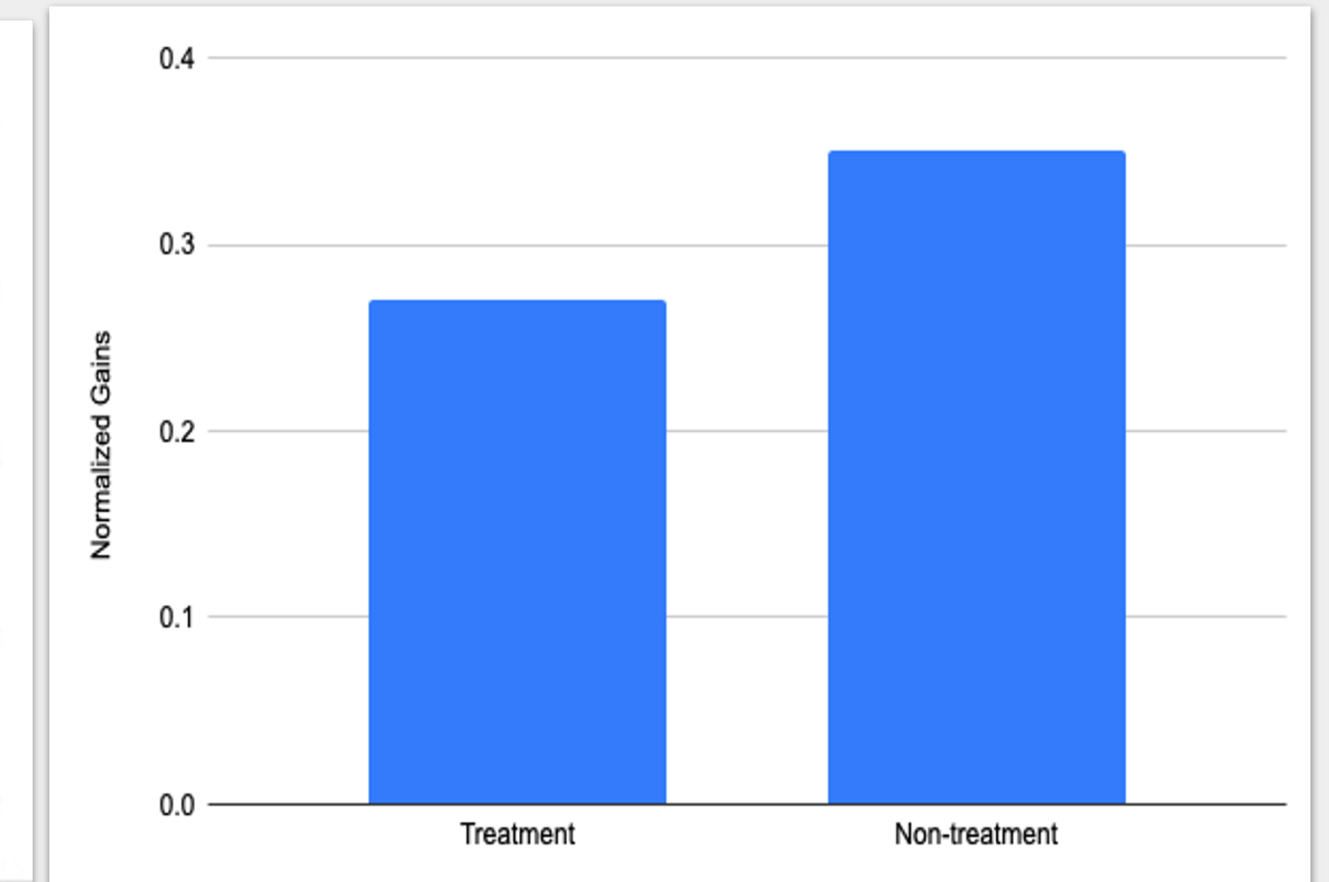


Figure 4. Normalized Gains for States of Matter (N=30) (N=13)

Conclusion: The results showed that students made improvements in both inquiry-based teaching and traditional teaching methods. The best way to teach and engage students would be to use a mix of inquiry and traditional methods. Student attitudes towards science improved during this study. Student engagement to the subject increased and so did self-regulation.