

The Effects on Engagement Through the Use of Case Studies in the Earth Science Curriculum

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Introduction

Purpose

To measure changes in student engagement in the Earth Science classroom through incorporating a multidisciplinary approach through case studies compared to traditional teaching methods. Engagement was chosen to meet schoolwide goals and student needs.

Demographics

School

- Title 1 school with 49.2% free and reduced lunch
- 981 students in 9th-12th grade

Classroom

- Three sections of general Earth Science
- 44 students
- 29.5% of students with Individual Education Plans

Research Questions

Focus Question:

- What effect do real-world case studies have on student engagement in the Earth Science classroom

Sub-Questions:

- Do students perceive case studies as more relevant and applicable compared to traditional teaching methods?
- How do case studies influence student motivation to learn Earth Science concepts?

Methodology

Data Collection

Data collected over a period of five weeks in a 10th-12th grade required Earth Science course. Collection of data regarding student engagement and perspective occurred during both traditional teaching methods (lecture, discussion, labs, and research activities) and age-appropriate case studies through the following:

1. Pre- and Post-treatment survey
2. Observations
3. Student Interviews
4. Exit tickets

Data Analysis

Qualitative Data Analysis

Analysis occurred through thematic analysis to identify patterns and themes found within student responses.

Quantitative Data Analysis

Normalized gains was utilized to identify a correlations between change in engagement and perceived relevance to student. A Chi-Squared test was utilized to measure statistical significance in the data

Findings

Data Analysis

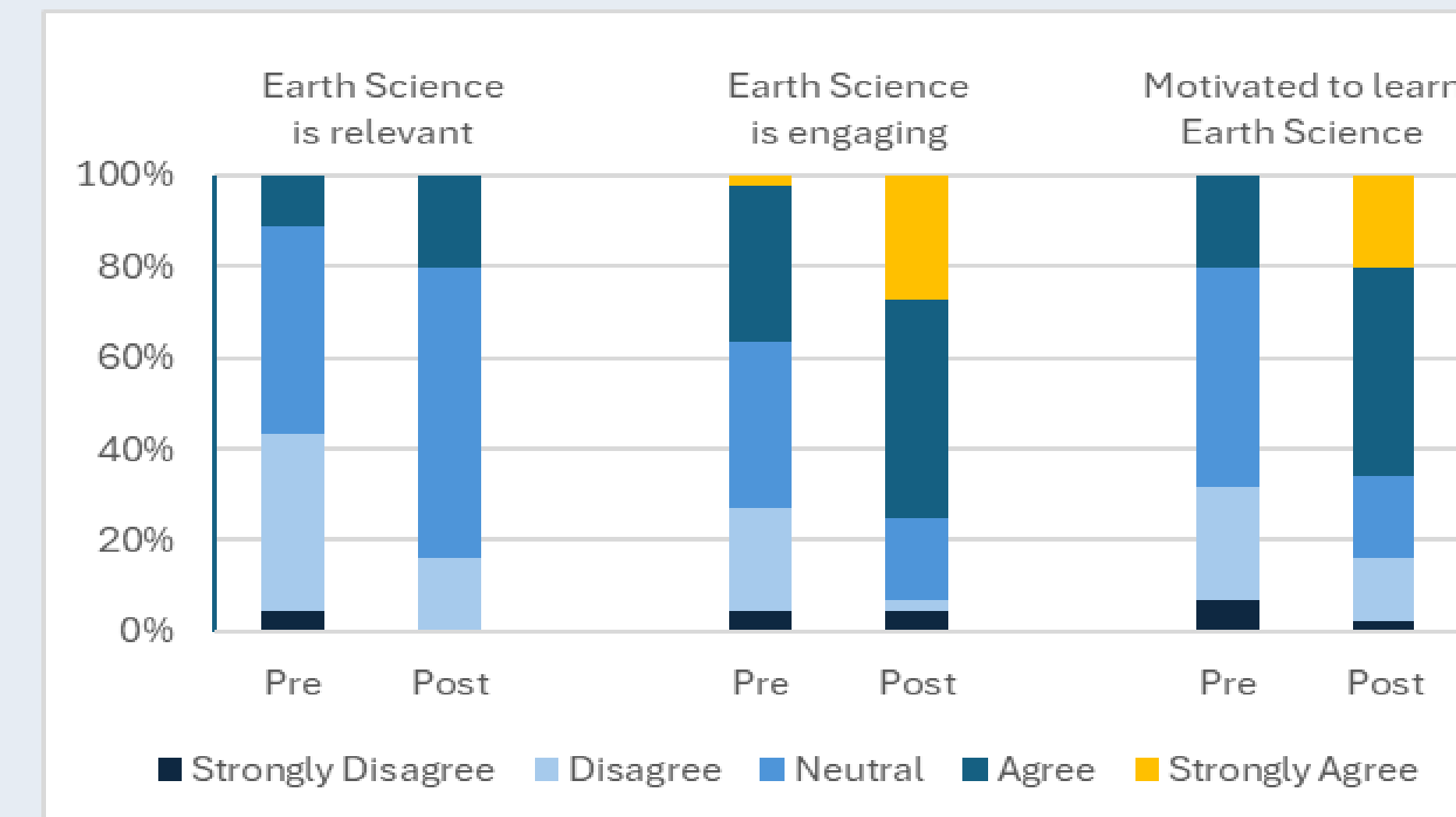


Figure 1. Pre- and Post-Treatment data, (N=44).

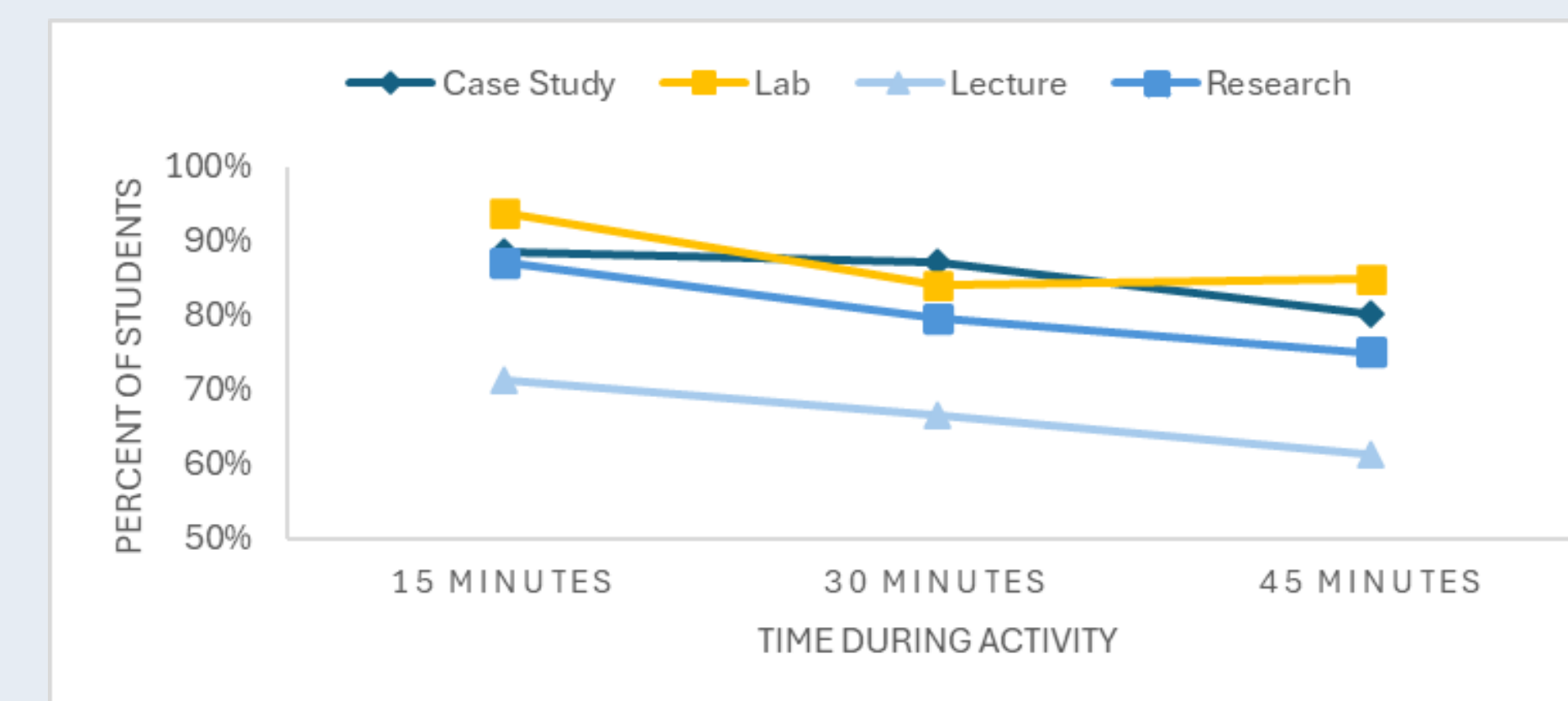


Figure 2. Percent of students engaged during task, (N=44).

Conclusion

Observational and student reported data showed a positive correlation between the use of case studies and engagement. There was statistically significance in student motivation to learn Earth Science after implementation; however, findings of increased relevance remains inconclusive.