

# The Effects of Vocabulary Instruction in a High School Earth Science Classroom on Students with Disabilities and English-Language Learners

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## Background Info

- I teach **special education** in a diverse, Title I NYC public high school with 3,800 students.
- Students with disabilities (SWDs)** and **English-language learners (ELLs)** struggle with content **vocabulary** and **assessments**.
- This seems to negatively affect their **self-efficacy** and **attitudes towards science**.
- Quizlet** is a popular ed-tech tool designed to **engage students** and improve their content vocabulary and knowledge.

## Sample Demographics

- All students (**N=21**) are in a self-contained (15:1) 10<sup>th</sup>-grade special education earth science class.
- About **66%** of my students are **current ELLs** (7 students) or **former ELLs** (7 students).

## Research Questions

**Key Question:** How does explicit instruction of content vocabulary in a self-contained science classroom affect students' assessment scores?

**Sub-Question #1:** To what extent are the assessment scores affected when comparing native English speakers to English-language learners?

**Sub-Question #2:** How does explicit vocabulary instruction impact students' attitudes and self-efficacy regarding earth science?

**Sub-Question #3:** How is the teacher impacted by implementing explicit content vocabulary instruction?

## Action Research Methodology

**Treatment:** Prioritized vocabulary list is taught during the unit by using Quizlet in-class weekly. Morphemes of the vocabulary words are also taught in lessons.

Pre-

- Science & Vocabulary Learning Survey
- Content Assessments without Treatment
- Begin Teacher Journal

During

- Quizlet for Explicit Vocabulary Instruction
- Pre-/Post-Unit Vocabulary Quizzes
- Content Assessment with Treatment

Post-

- Science & Vocabulary Learning Survey
- Student Group Interviews
- Evaluate Teacher Journal

## Results: Assessment Scores

- Assessment scores increased** for all student groups after implementing explicit vocabulary instruction.
- Former ELLs had the greatest score increase** and normalized gain.

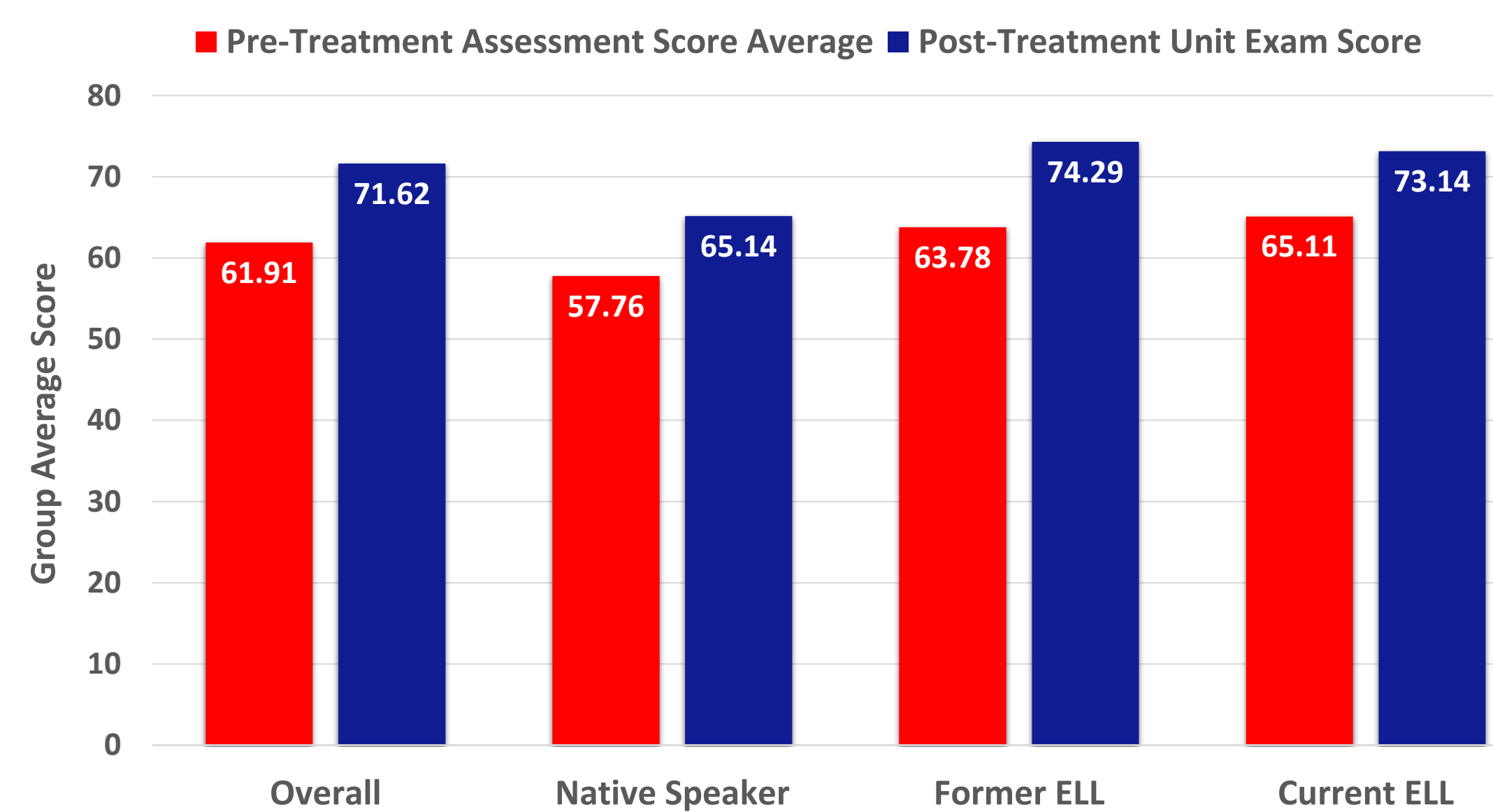


Figure 1. Comparison by ELL status of students' pre-treatment score averages to their Minerals & Rocks unit exam scores, (N=21).

## Results: Attitudes towards Science

- Students **enjoy learning** vocabulary by using **Quizlet** and **enjoy science** class more for using it.
- Fewer students find science to be hard** due to lack of vocabulary knowledge after the treatment.

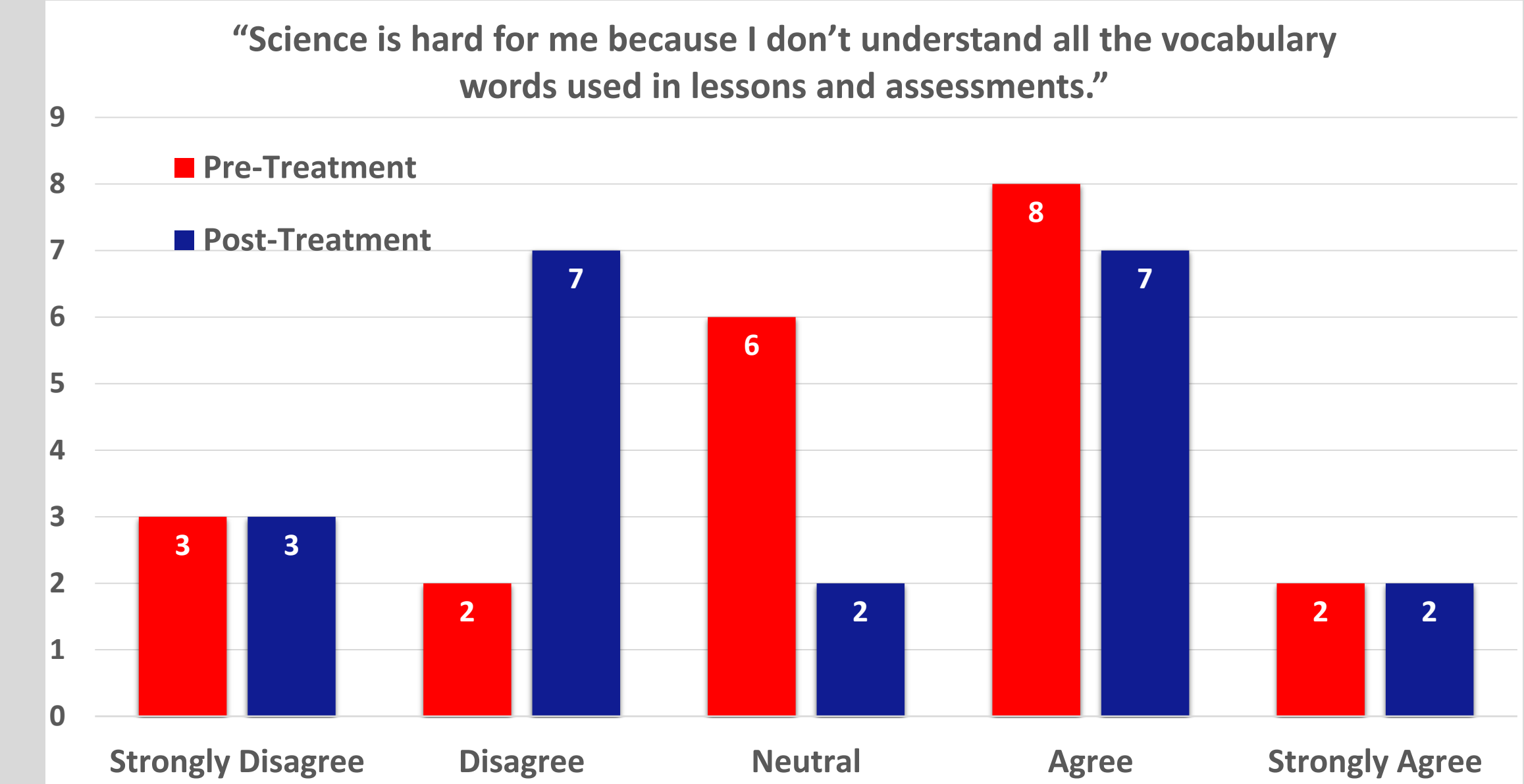


Figure 2. Comparison of students' responses to the Likert item about science being difficult due to their lack of vocabulary knowledge, (N=21).

## Select Student Responses

“[It’s] really **hard** for me to understand all the science **words** used in class because I forget stuff easily so I won’t remember what all the science words means.”

“I like to do many kind[s] of **activities** like **Quizlet** that the teacher give me to do in **groups** or [**individually**].”

“When [I learn] new vocab words it makes it easier to **help me on the next vocab or normal test** for this class.”

## Implications of the Action Research

- Evaluate my **curriculum’s pacing calendar** and determine how to allow more time for explicit vocabulary instruction during the school year.
- Implement the **treatment in other vocabulary-heavy units** or possibly all units to improve students’ comprehension.
- Encourage teachers to dedicate more classroom time for vocabulary instruction** to support ELLs and SWDs.