BrainPOP Science Accelerates Evidence-Based Writing and Reasoning Skills

Executive Summary

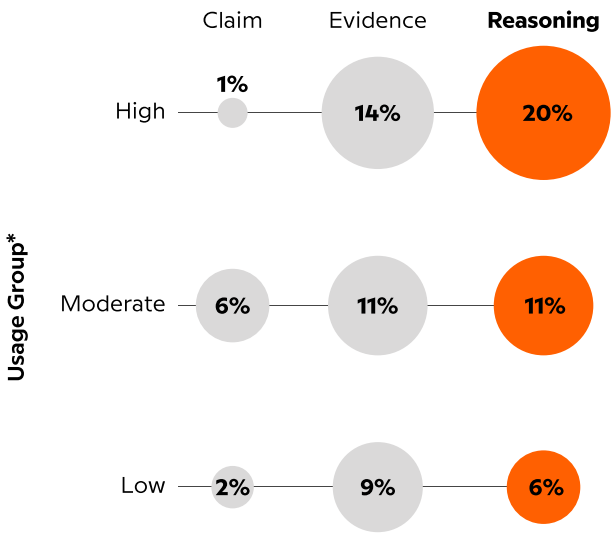
This is a case study on four school districts in the Southeastern United States, their usage habits of BrainPOP Science, and the completion of investigations to determine how the Claim Evidence Reasoning (CER) process improved students' evidence-based writing and reasoning skills.

Key findings indicate that all four districts saw statistically significant improvements in students' Claim Evidence Reasoning (CER) scores — particularly in Reasoning. Districts with the most consistent usage saw the most substantial improvement in CER scores by the fourth investigation.

Key Findings

- **Stronger Science Writers:** Regular completion of four or more investigations correlates with improvement in constructing scientific arguments and explanations.
- **Confident Test Takers:** The CER approach sharpens critical thinking and reasoning skills, which help improve students' sense of readiness on their state science assessments.
- **Accelerated Skill Development:** Targeted instruction and the CER process empower students to learn complex scientific concepts more quickly.

Learning Gains Percentage by Usage Group



*Percentage of completed assigned BPS investigations by usage group:
High: at least 55% or more **Moderate:** 30-54% **Low:** less than 30%

How BrainPOP Science Integrates Multidimensional Science

The abstract nature of reasoning can be challenging for middle school science students. The Claim, Evidence, Reasoning (CER) process focuses on developing a student's ability to make a claim, support it with evidence, and provide reasoning to connect the evidence to the claim. When students practice evidence-based writing skills throughout every stage of an investigation, they engage in continuous critical thinking and analysis. This repetition strengthens their understanding and ability to apply scientific concepts in various contexts.

Integrated Learning Experience: Instead of stand-alone tasks, the embedded, cohesive experience of our investigations ensures continuous evidence collection and evaluation culminating in the Claim-Evidence-Reasoning (CER), linking reasoning directly with the learning experience.

Real-World Application: Each investigation immerses students in real-world scenarios, guiding them to effectively gather and analyze evidence to answer a specific question.

Study Details

BrainPOP Science significantly boosts students' claim, evidence, and reasoning skills. Regular and extensive engagement enhances students' scientific writing and reasoning skills.

Sample Size: 548 students across seven schools in four districts in Southeastern US; **Duration:** 6 months (10-01-2022 to 03-28-2023); **Methodology:** Multivariate and univariate analyses were used to compare students' first and fourth CER submissions, examining the role of school and grade as factors.