

# Authentic Data in High School Marine Science: Impacts on Data Literacy and Real-World Connections

Caroline Bottega - The Hun School of Princeton, Princeton NJ - July 2024



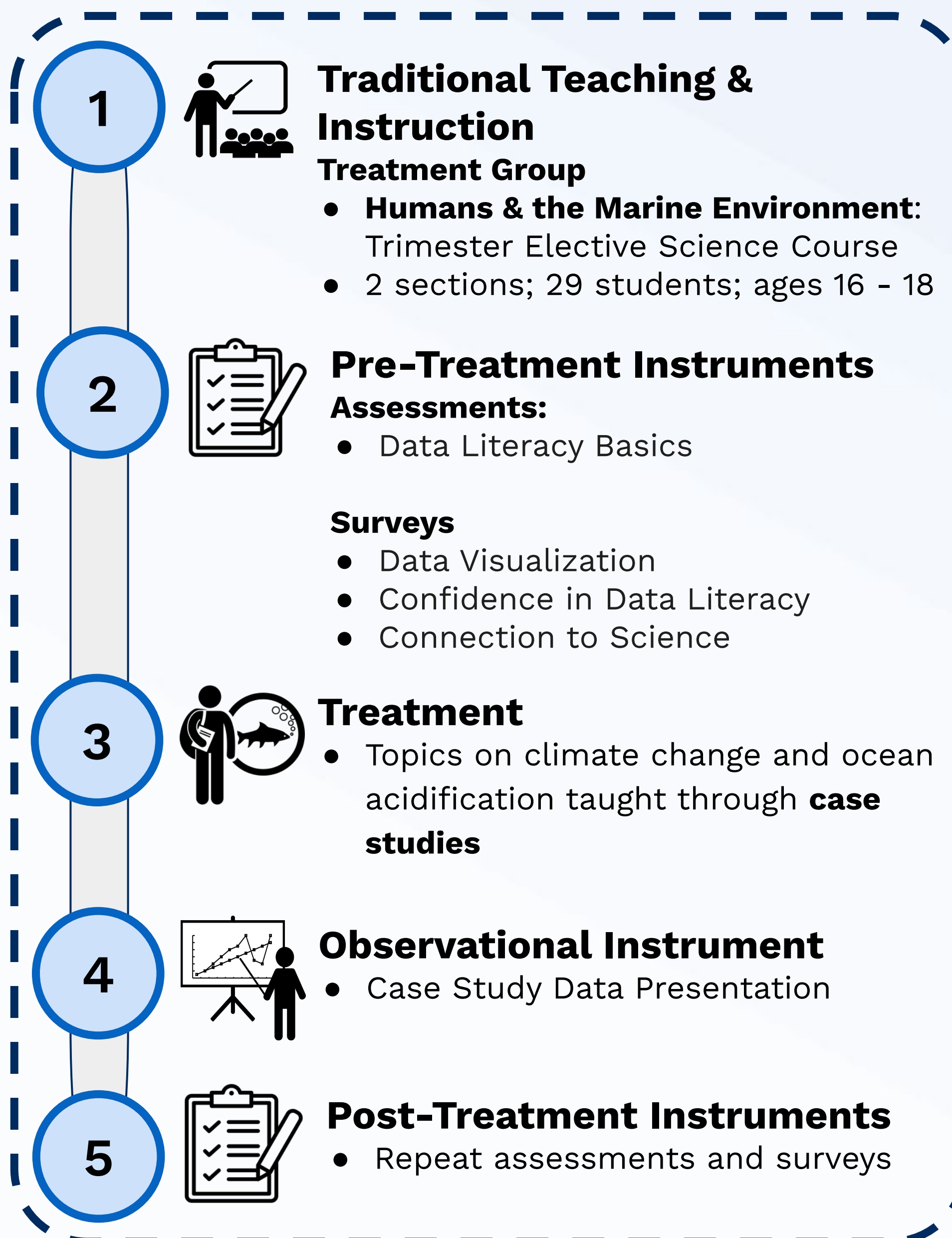
Master of Science in  
Science Education

## BACKGROUND

In an increasingly data-driven world, **data literacy is an important cross-disciplinary skill that students often lack**, as structured implementation is not widespread over the course of a students' educational journey.

By **teaching data literacy skills** through the medium of authentic data, this research sought to provide students with the tools to **feel confident and capable interacting with data** and see how classroom learning has **applicable value** beyond the confines of the classroom.

## METHODOLOGY



## FOCUS QUESTIONS

**Data Literacy Skills**  
How will the **use and manipulation of authentic data** impact students' scientific **data literacy skills** and their capacity to connect scientific concepts to **real-world science** applications?

**Confidence in Data Literacy**  
Does repeated manipulation and analysis of authentic data increase students' **confidence** in their data literacy skills?

**Connection to Real World Science**  
Does the use of authentic data from real case studies increase students' **understanding** of the application of science beyond the classroom?

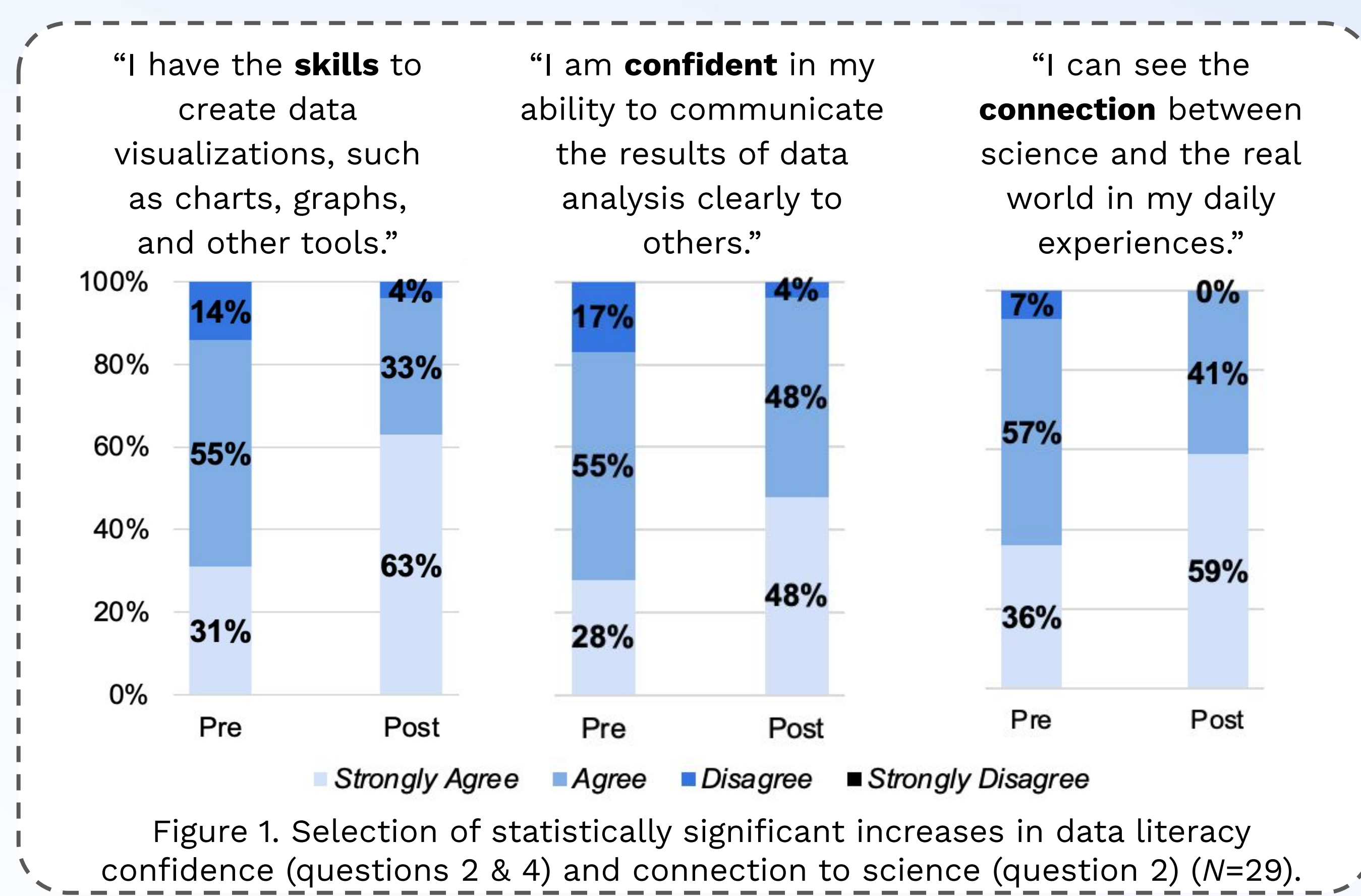


Figure 1. Selection of statistically significant increases in data literacy confidence (questions 2 & 4) and connection to science (question 2) (N=29).

## CONCLUSIONS

- **Modest increases in familiarity with common data visualizations**
- Average score of the data literacy basics assessment increased and the standard deviation narrowed, but **no statistic difference in the data literacy basics** assessment pre- and post-treatment
- Most of the quantitative changes in this study were not found to be statistically significant
- However, students showed **early signs of data literacy skill development and increased engagement in their lessons** when taught through real-world case studies and data

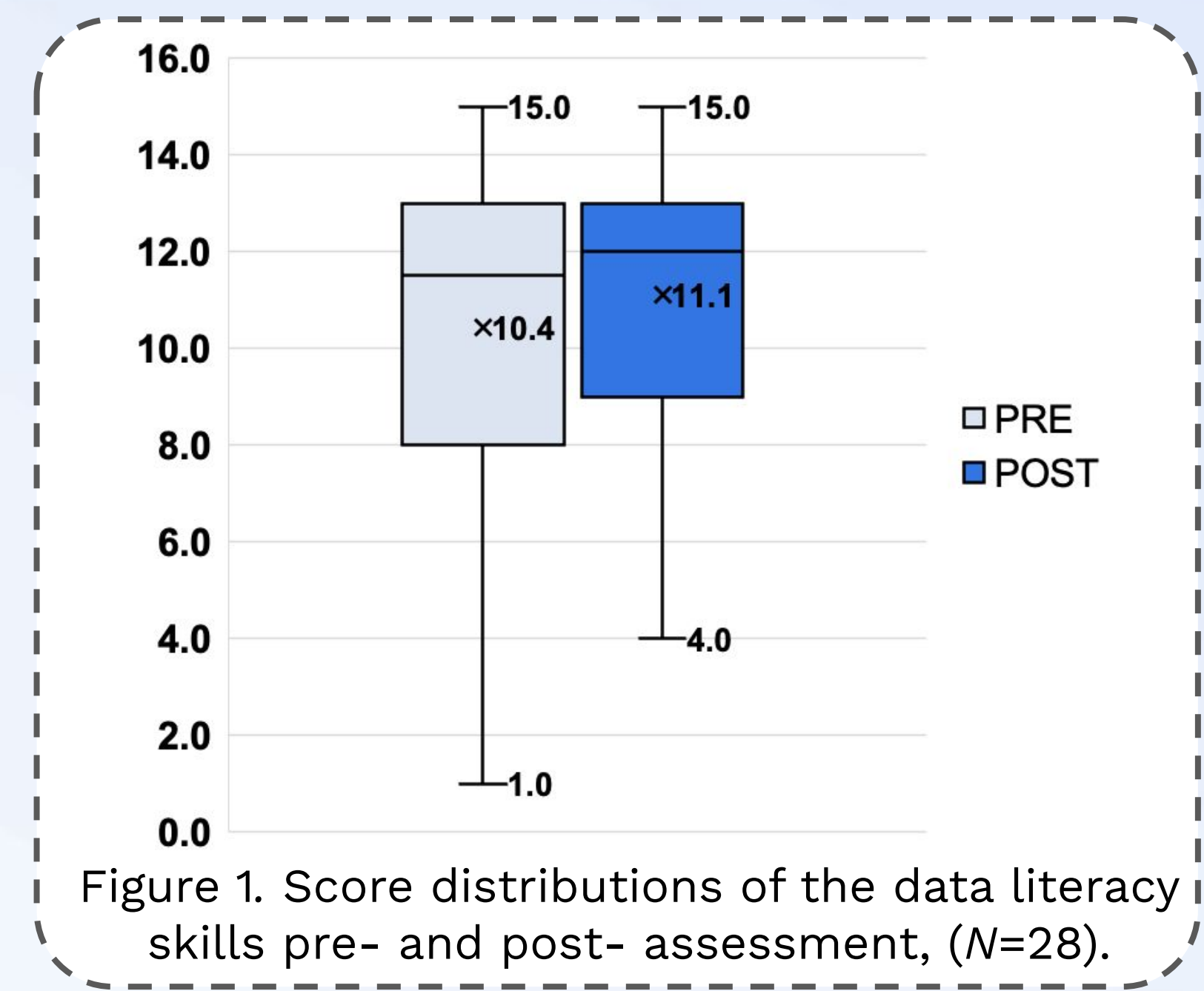


Figure 1. Score distributions of the data literacy skills pre- and post- assessment, (N=28).