

Characterizing Data Literacy Instruction: Content Analysis of a High School Science and Social Studies Textbook

Background:

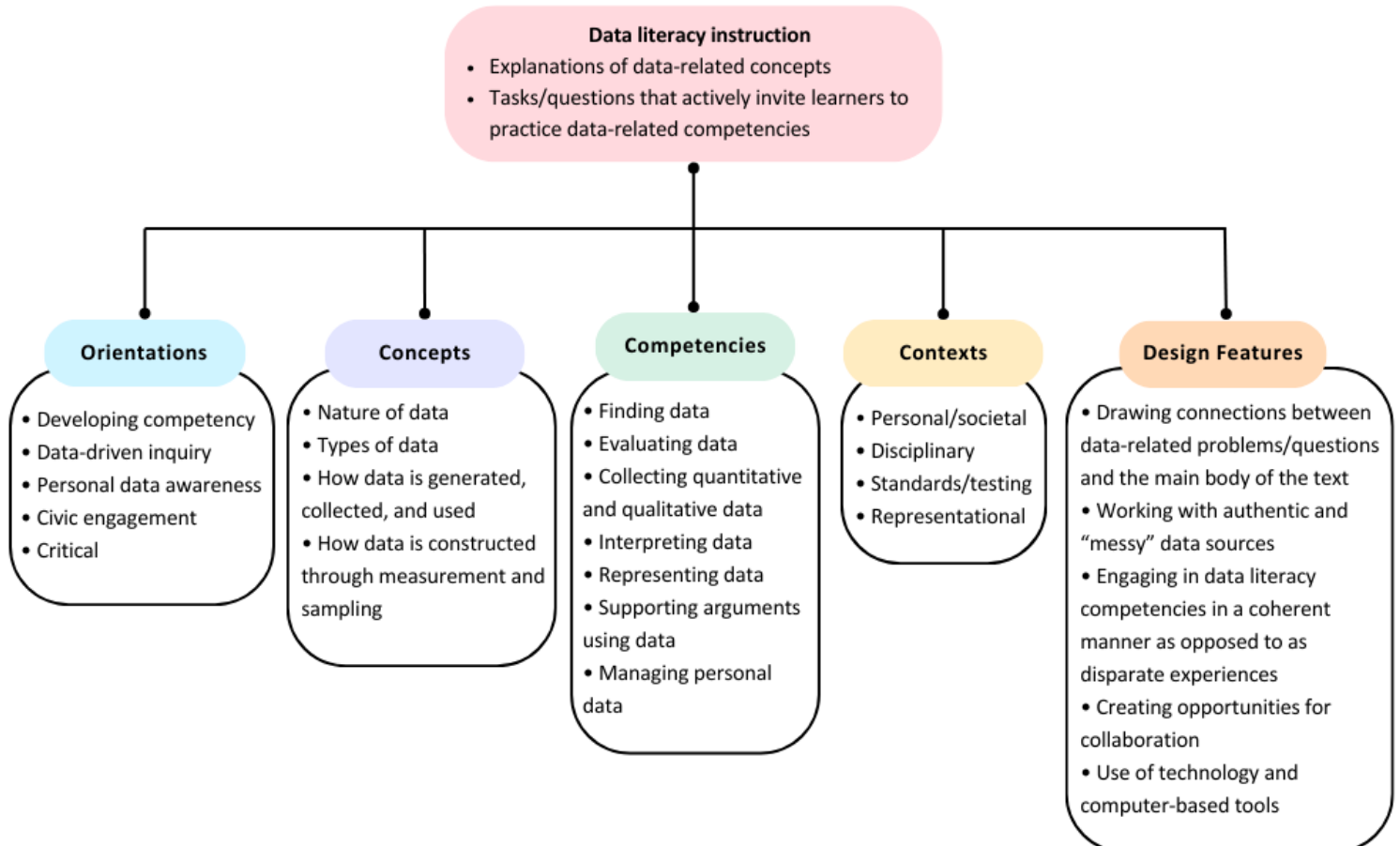
- Data literacy encompasses the concepts, competencies, and contexts involved in the generation, collection, interpretation, and use of data (Deahl, 2014; Gebre, 2022).
- Incorporating data literacy instruction within disciplines like science and social studies promotes both data literacy and disciplinary learning (Kjelvik & Schultheis, 2019; Lee & Wilkerson, 2018).
- Previous analyses of science and social studies textbooks have shown that they are rich in mathematical content and data representations, but the mere presence of data and representations without explicit instruction is not sufficient for developing data literacy or deepening disciplinary learning (Azevedo & Mann, 2019; Lee, 2010; Shreiner, 2018).

Objectives:

1. Present an analytical framework for characterizing data literacy instruction across disciplines.
2. Apply the analytical framework to a science and social studies textbook to conduct a comparative analysis of data literacy instruction in science and social studies contexts.

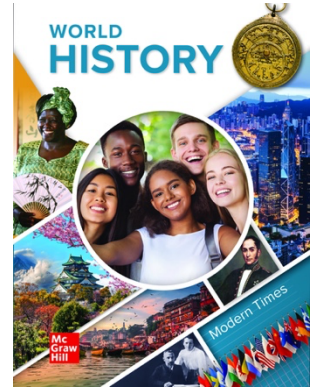
Analytical framework:

Drawing from relevant literature on data literacy in K-12 contexts (e.g., Deahl, 2014; Gebre, 2022; Lee & Wilkerson, 2018), we propose characterizing data literacy instruction along five key dimensions.

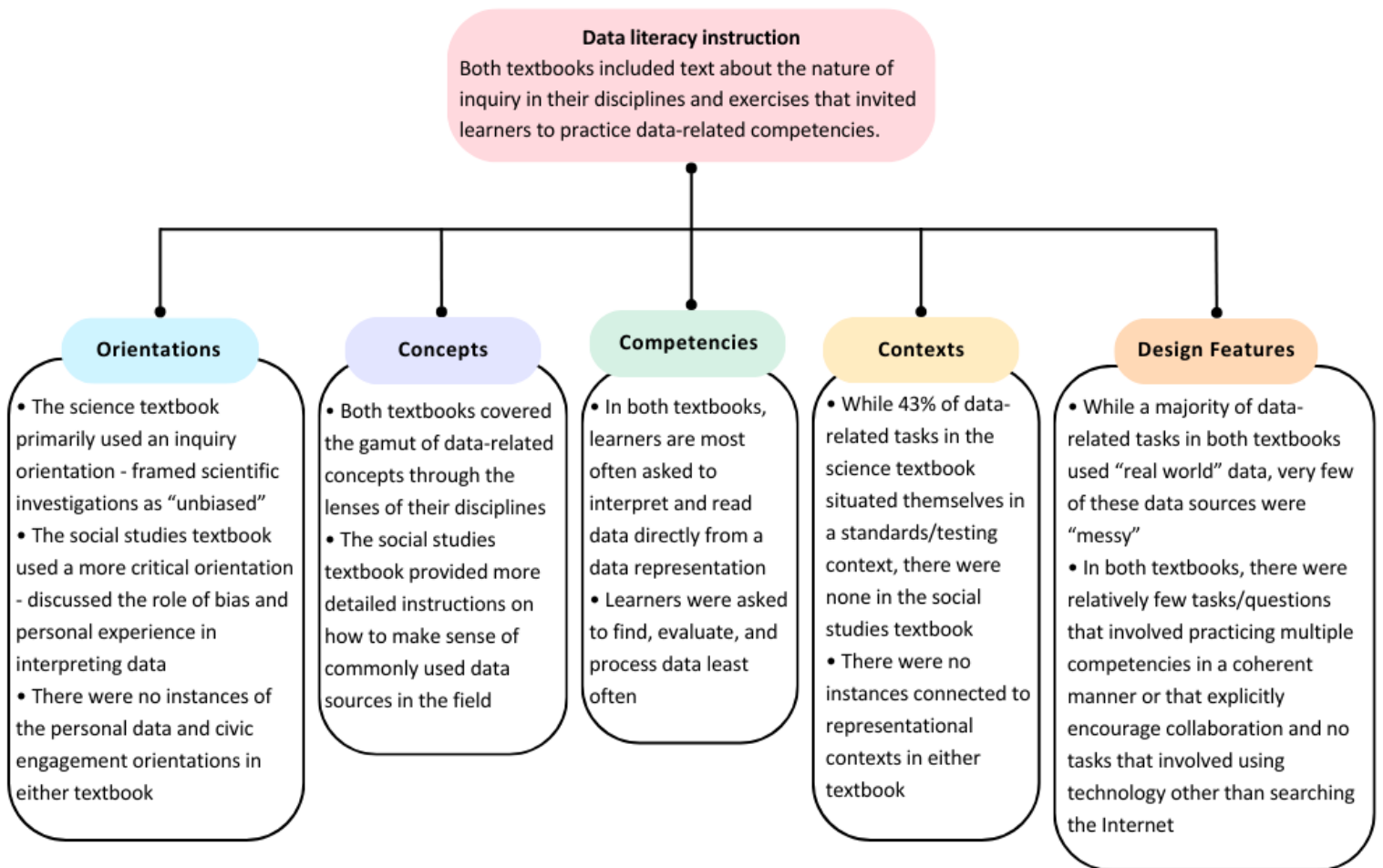


Methods:

The first author reviewed sample lessons from McGraw Hill’s high school *Inspire Biology* science textbook and *World History, Modern Times* social studies textbook, identified instances of data literacy instruction, and coded each instance using provisional codes derived from the analytical framework. They also calculated the frequency of codes under the orientation, competencies, contexts, and design features dimensions for data-related tasks in both textbooks.



Findings:



Significance and Limitations:

- This study juxtaposes data literacy instruction across two different disciplinary contexts and begins to speak to how textbook designers, curriculum developers, and educators might expand on and supplement the data literacy instruction within and across disciplines.
- While the findings are limited in that they are only based on a sample of lessons in two textbooks from the same publisher, future research can build on and apply this framework to explore data literacy instruction in other disciplinary contexts and curricular resources.

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