Annotated Bibliography – R for Everyone (Working)

Tene Ariyo

Overview (how I'll use these sources)

This capstone builds on **K–12 data science standards** and **statistics education frameworks** to design low-barrier, interactive R lessons. My *core* guides are: the **GAISE II PreK–12 framework** for the data investigation cycle and grade-band progression (Bargagliotti et al. 2020), the **YouCubed Big Ideas** as K–10 content anchors and tasks (YouCubed, n.d.); (Education 2021), and the **DS4E outcomes brief** to motivate the need and equity framing (Drozda 2023). For implementation, I'll rely on **learnr** for interactive tutorials (Schloerke et al. 2025) and **bookdown** for longer-form modules and compilation to PDF/HTML (Xie 2024). For scrollytelling modules, I'll explore **Quarto Closeread** (qmd-lab 2025). For classroom-ready, relatable datasets, I plan to draw from **FiveThirtyEight's open datasets** (FiveThirtyEight 2023).

Each entry below includes (1) a short summary and (2) how I'll use it.

Core framing

Bargagliotti et al. (2020)

Summary. Second edition of the PreK–12 statistics education framework authored by Bargagliotti, Franklin, Arnold, Gould, Johnson, Perez, and Spangler; formal position of NCTM (Feb 2020), endorsed by ASA (Nov 2020). It articulates the four-stage data investigation cycle and grade-band progressions (Levels A–C), with attention to technology, ethics, and modern data practice.
Use. I'll align each lesson to the investigation cycle and level-appropriate expectations; I also plan to borrow exemplar activities to scaffold tasks for grades 6–8.

YouCubed (n.d.)

Summary. Interactive K–10 "Big Ideas" that distill the most important data science content and link concepts into a coherent progression; includes tasks, discussions, and teacher guidance.
Use. I'll map my modules to four recurring anchors: asking statistical questions, considering data collection, analyzing with simple code/visuals, and communicating results. This would be the main format of my lessons, building upon the foundation od these big ideas.

Education (2021)

Summary. Stanford GSE news article (Boaler et al.) announcing the K–10 "Big Ideas," linking them to ASA guidelines and emphasizing equity and relevance.
Use. I'll quote this for context in the intro and to justify the standards connection between YouCubed and GAISE II.

Drozda (2023)

Summary. DS4E brief synthesizing National Assessment of Educational Progress trends showing sharper declines in data literacy than other math areas; documents state/race/socioeconomic gaps and declines in data-related instruction.
Use. Problem statement + motivation section; supports equity framing and urgency for accessible, modern data lessons.

Implementation

Schloerke et al. (2025)

Summary. R package for interactive tutorials with runnable code chunks, quizzes, and progress state.
Use. I'll build short, self-paced lessons in `learnr` with formative checks and runnable code cells.

Xie (2024)

Summary. Comprehensive guide to authoring long-form documents with R Markdown/Bookdown (cross-refs, citations, multi-format rendering).
Use. For assembling multi-lesson "packs" and generating both PDF and HTML versions for teachers/students.

qmd-lab (2025)

Summary. Quarto extension enabling scrollytelling interactions (highlighting/zoom/pan) and narrative with graphics.
Potential Use. For 1–2 "wow" modules to increase engagement.

Datasets for classroom use (external data)

FiveThirtyEight (2023)

Summary. Public GitHub org hosting cleaned CSVs from FiveThirtyEight stories, relatable topics. **Use.** Source for small, engaging datasets (sports, pop culture, civics). I'll subset/simplify as needed for grades 6–8.

References

Bargagliotti, Anna, Christine Franklin, Pip Arnold, Rob Gould, Sheri Johnson, Leticia Perez, and Denise A. Spangler. 2020. *Pre-k–12 Guidelines for Assessment and Instruction in Statistics Education II (GAISE II): A Framework for Statistics and Data Science Education*. Alexandria, VA: American Statistical Association. https://www.amstat.org/docs/default-source/amstat-documents/gaiseiiprek-12_full.pdf.

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qmd-lab. 2025. "Closeread: A Quarto Format for Scrollytelling." 2025. https://closeread.dev/guide/.

Schloerke, Barret, Garrick Aden-Buie, RStudio, and PBC Posit Software. 2025. *Learnr: Interactive Tutorials for r*. https://rstudio.github.io/learnr/.

Xie, Yihui. 2024. *Bookdown: Authoring Books and Technical Documents with r Markdown*. https://bookdown.org/yihui/bookdown/.

YouCubed. n.d. "Data Science k–10 Big Ideas." https://www.youcubed.org/data-big-ideas/.