

# LETTER TO THE EDITOR

LAWRENCE M. LESSER  
*The University of Texas at El Paso*  
*Lesser@utep.edu*

I was happy to see the Yang and Idris (2021) paper on accessibility of statistics textbooks, a topic that deserves more attention, as they state: “Textbook analysis is rare in the statistics education literature, particularly at the college (tertiary) level, as we found very few relevant studies” (p. 13).

A relevant study the authors may have overlooked, Wagler et al. (2015), assessed aspects of readability of a corpus of 18 (more recent) college introductory statistics textbooks. Wagler et al. (2015) found that overall readability of the corpus was at an appropriate level, and there was much more within-textbook variation among the four examined topics (measures of center, line of fit, regression analysis, regression inference) than there was variation among textbooks. Like Yang and Idris, Wagler et al. included attention to applicability for educators and was deeply informed by work with students whose first language was not English.

The principal components descriptive model in Wagler et al. (2015) has dimensions of lexical complexity, grammatical complexity, and textual cohesion (which can be readily and reliably assessed using Coh-Metrix, LexTutor’s VocabProfile, etc.). These text readability aspects should not be quickly bypassed in the framework conversation because they are arguably necessary (though not sufficient) for the worthy broader goal of text accessibility. For example, can one have strong text coherence when there is weak text cohesion? And, could unnecessarily high lexical and grammatical complexity interfere with achieving strong voice and text concreteness?

Given that Yang and Idris note that we should consider the contexts of readers as well as of texts, it is worth noting a followup study in which Wagler et al. (n.d.) conducted semi-structured interviews of eight college introductory statistics students as they perused short (3-4 pages) excerpts on linear regression from three textbooks from the 18-book corpus. The excerpts were presented in blinded form so students could not see the textbook author, title, and publisher, and the students also did not know the three books had been purposively selected to have maximum variation (Miles & Huberman, 1994) with respect to lexical and grammatical complexity. After taking time to browse the excerpts, students were asked open-ended questions about the ones they preferred most and least, then about those they found easiest and hardest to read/understand, and then what level of importance they gave to each of various individual factors. The students focused more on lexical issues than grammatical issues and gave much attention to graphic design and layout, with a positive relationship between perceived readability and how many types of elements the text used to call out or make various distinctions so a page could be more readily navigated. And so, I concur with Yang and Idris’ inclusion of well-integrated visual information in the framework and I note that there have been important contributions on visual information in more recent literature such as the references shared by Malone et al. (2021).

I appreciate that the framework’s development is informed by literature in mathematics and in science, and wonder if those influences are (or should be) as separate as the Table 1 layout may suggest. With current prevalence of online learning, I also wonder if the text accessibility framework could be expanded to also take into account how students read electronic textbooks and other online instructional materials (Jabr, 2013; Larreamendy-Joerns et al., 2005; Zieffler et al., 2013).

## REFERENCES

- Jabr, F. (2013). Why the brain prefers paper. *Scientific American*, 309(5), 48–53. <https://www.jstor.org/stable/26018148>
- Larreamendy-Joerns, J., Leinhardt, G., & Corredor, J. (2005). Six online statistics courses: Examination and review. *The American Statistician*, 59(3), 240–251. <https://www.jstor.org/stable/27643673>
- Malone, C., Hooks, T., & Iverson, T. (2021). Improving the presentation of visual information: All things Gestalt. Workshop presented at *Expanding opportunities, 9<sup>th</sup> United States Conference on Teaching Statistics*, June 28–July 1, 2021. [https://github.com/WSU-DataScience/USCOTS2021\\_all\\_things\\_gestalt/raw/main/all\\_things\\_gestalt.pptx](https://github.com/WSU-DataScience/USCOTS2021_all_things_gestalt/raw/main/all_things_gestalt.pptx)

- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2<sup>nd</sup> ed.). SAGE Publications.
- Wagler, A. E., Lesser, L. M., González, A. I., & Leal, L. (2015). Assessing the lexico-grammatical characteristics of a corpus of college-level statistics textbooks: Implications for instruction and practice. *Journal of Technical Writing and Communication*, 45(1), 31–56. <https://doi.org/10.2190/TW.45.1.c>
- Wagler, A. E., Lesser, L. M., Heinrichs, H., Gomez, D., Esparza, J., & González, A. I. (n.d.). Exploratory interviews about textbook preferences of college students enrolled in introductory statistics. [Manuscript in preparation]
- Yang, K.-L., & Idris, K. (2021). Conceptualizing a framework for analysing college statistics textbooks in terms of text accessibility. *Statistics Education Research Journal*, 20(1), Article 6. <https://doi.org/10.52041/serj.v20i1.102>
- Yerushalmy, M. (2014). Challenging the authoritarian role of textbooks. In K. Johnes, C. Bokhove, G. Howson, & L. Fan (Eds.), *Proceedings of the International Conference on Mathematics Textbook Research and Development 2014* (ICMT-2014), July 29–31, 2014 (pp. 13–20). University of Southampton, UK.
- Zieffler, A., Isaak, R., & Garfield, J. (2013). The course as textbook: A symbiotic relationship in the introductory statistics class. *Technology Innovations in Statistics Education*, 7(3), 1–14. <http://dx.doi.org/10.5070/T573020083>

LAWRENCE M. LESSER  
Department of Mathematical Sciences  
The University of Texas at El Paso  
500 W. University Avenue  
El Paso, TX 79968  
USA