Using Technology to Increase Readability of Instructional Materials

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DR. AMY WAGLER (AWAGLER2@UTEP.EDU) & DR. LARRY LESSER (LESSER@UTEP.EDU)

THE UNIVERSITY OF TEXAS AT EL PASO

- Textbooks are a common medium used for making connections between students and content
- More self-authored or editable textbooks available
- Use of language becoming increasingly important
  - Changing student demographics-more students from diverse language backgrounds and non-traditional academic preparation
  - GAISE recommends teaching that emphasizes statistical literacy, development of statistical reasoning, and conceptual understanding

Textual Analysis Applications:

Lextutor Vocab Profiler: http://www.lextutor.ca/vp/eng/

Coh-Metrix Text Easability Assessor: http://tea.cohmetrix.com/

Consider the following exercise from a nationally published 2003 statistics textbook:

> "A citrus grower association believes that the mean consumption of fresh citrus fruits by people in the U.S. is at least 94 pounds per year. A random sample of 103 people in the U.S. has a mean consumption of fresh citrus fruits of 93.5 pounds per year and a standard deviation of 30 pounds. At $\alpha = 0.02$, can you reject the association's claim that the mean consumption of fresh citrus fruits by people in the U.S. is at least 94 pounds per year?"
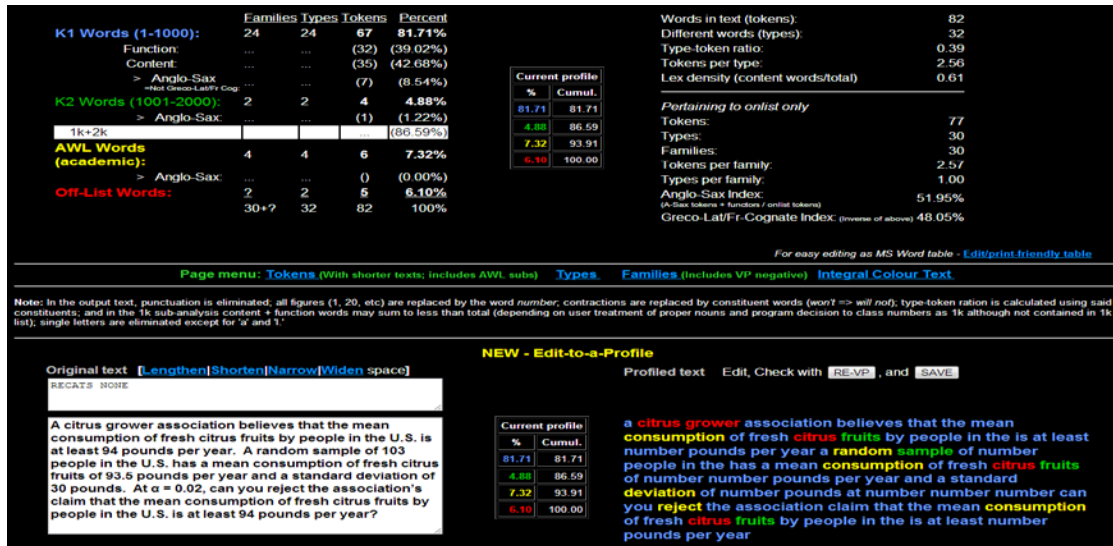
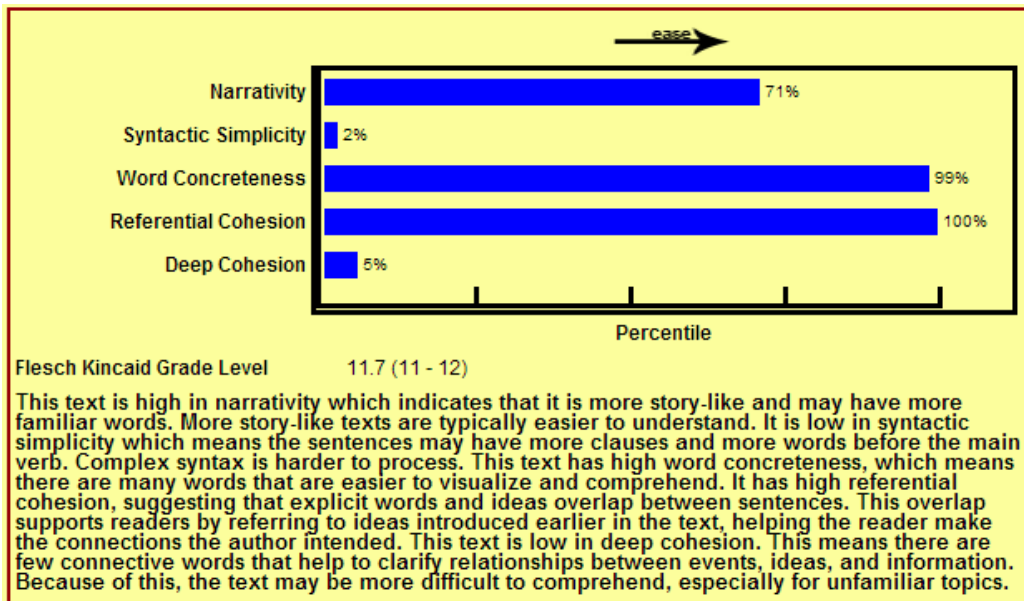*Figure: Screenshot of LexTutor's VocabProfile after Analyzing Text*

Figure: Screenshot of Coh-Metrix TEA Results after Analyzing Text

Wagler, A., Lesser, L., González, A., & Leal, L. (2015). Assessing the lexico-grammatical characteristics of a corpus of college-level statistics textbooks: Implications for instruction and practice. *The Journal of Technical Writing and Communication, 45*(1), 31-56.
http://jtw.sagepub.com/content/45/1/31.full.pdf+html

Lesser, L. & Wagler, A. (2016) Tools and framework for assessing readability of statistics teaching materials, *Journal of Computers in Mathematics and Science Teaching,* 35(2), 153-171.
https://www.learntechlib.org/p/150682/

Website with links to relevant research: http://www.math.utep.edu/Faculty/lesser/ELL.html