# OPEN ACCESS MATHEMATICS TEXTBOOKS: THE STUDENTS' PERSPECTIVE

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*To create a climate and instructional space for non-mathematics majors to embrace mathematics and develop increased mathematics literacy, a model of critical multicultural instructional design with service learning was employed while introducing a free open access textbook. Student perceptions (attitudes, behaviours, beliefs) of an open source text were collected through pre- and post- surveys. Student journals before and after major assignments and tests were also collected. This poster presentation will highlight student's characteristics related to their attitudes towards open access text/materials, course outcomes, and the service learning project (designed collaboratively with students, non-governmental or non-profit organizations, and the instructor).*

**Key Words:** Open Access texts, math literacy, multicultural, postsecondary.

## CONTEXT OF THE STUDY

Engaging non-STEM (science, technology, engineering, or mathematics) major students in an undergraduate mathematics course can be daunting. Students' may just be taking the class to check off the graduation requirement. The interest in the class may be passing it not particularly "learning" mathematics. On many occasions students may not even purchase the $100 - $140 dollar text book. The high cost of textbooks for students has increased faster than inflation (Office of Program Policy & Government Accountability, 2008, April). Evidence of student engagement in learning has been attributed to the use of open textbooks (Doering, Pereira, & Kuechler, 2010; Petrides, Jimes, Middleton-Detzner, Waling & Weiss, 2011). Open textbooks were found to support inquiry-based, interactive learning and pedagogy in a series of studies by Baker, Theirstein, Fletcher, Kaur, and Emmons (2009) and Hilton and Laman (2012). This hybrid introductory statistics course was revamped with the purpose of using a free open access book with free open access applets for exploring statistical content/concept; infusing a social justice theme within the course (Atweh, Forgasz, & Nebres, 2001; Solomon, 2009); use of Microsoft Excel with shareware add-ins for statistical analysis; and requiring students to participate with a non-governmental or non-profit organization in the design, implementation and analysis of data important to the service agency (Hadlock, 2005). The on-campus sessions were conducted within a computer classroom, each student having access to their own computer for the online text, researching their topic of interest, data analysis, and the course management system, Moodle. The off-campus sessions were conducted utilizing Moodle and engaging with service agencies.

A pre- and post-survey of students' experience with an open access texts and computer-based support materials was conducted along with reflections before and

after each major test and assignment. This quantitative and qualitative data was collected from **a**n undergraduate course that fulfills a mathematical thinking, liberal education graduation requirement for a student in a tier one, doctoral research university in the US. This preliminary data measures the impact of an open access text on students' behaviors, performance, and engagement. Since this class also engages students in service project and social justice themes this interface is also an important context of this study.

**Outline of the Poster**

The poster will include research questions, definitions, summary of theoretical foundations, research methods (context and points of evidence), results, implications for practice, and next steps in order to elicit discussion with colleagues on advantages and limitations of open access texts for undergraduate mathematics for faculty and students.

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