

Designing a Study to Explore the Quantitative Literacy Practices of U.S. Undergraduates

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In this document and accompanying poster, I share motivating literature and the outline of a study that started in Fall 2025 and that will continue through Spring 2026.

Over the last three decades, coursework centered on quantitative literacy (QL) has become increasingly common at postsecondary institutions across the U.S. (Madison, 2019). A common definition of QL accompanying such courses is that QL is a skill set and disposition to engage with quantitative information in various arenas of life (e.g., work, school, daily life) (Boersma & Klyve, 2013). Given this framework for QL, the logic of such courses is that there are certain skills students need to thrive in the modern world, and that if we can teach students those skills, as well as instill in them the habit of mind to engage with quantitative information, students will be prepared for a modern world “awash in numbers” (Steen et al., 2001, p. 1). That logic is flawed, as research in anthropology (Lave et al., 1984; Street et al., 2005), psychology (Carragher et al., 1985), and numeracy studies (Yasukawa et al., 2018) suggests that the ways in which individuals reason and engage with quantitative information in daily life is not well aligned with how related mathematics might have been presented in formal schooling. An alternative to the ability/disposition framework for QL is to view QL as a social practice (Graig & Guzmán, 2018). A social practices approach to QL focuses on what people do with quantitative information—their QL practices—rather than what people can or cannot do, which is a common focus that follows from viewing QL as an ability.

Understanding the QL practices of a group is a critical part of designing a QL curriculum for such a group (Baker, 1998). While there is work in the area of QL practices among children (Anderson & Gold, 2006; Street et al. 2005), adults in India (Rampal, 2018), vocation-school students (Boistrup et al., 2018), and among workers in select professions (e.g., Kalman & Solares, 2018), to date there are no studies in relation to college students (of any age) in the U.S. This year-long multiple case study aims to address that gap by providing insights into the numeracy practices of eight undergraduate students at a small liberal arts college in the Southeastern U.S. The overarching research question that drives the project is: What are the numeracy practices of the students I am working with? The theoretical framework of numeracy as a social practice necessitates the use of ethnographic methods (Yasukawa et al., 2018). In this study, I engage in in-depth interviews with the eight participants several times per semester over the course of an academic year; while interviews from month to month have a similar structure, they evolve based on the student and their interests. During both the interviews and the focus groups, students share artifacts (e.g., course slides, homework, photos) that relate to the topics discussed. The purpose of working with students over the course of a full year is not to examine change over time—though that is likely to occur—but instead to capture information that a one-time interview simply cannot (Barton & Hamilton, 1998).

Analysis of data from the project is ongoing and informs the questions used in the interviews and focus groups. By the time of the conference, I will have early results to share.

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