Three questions guide our research: on undergraduate STEM students’ composition processes.

The goal of our research is to study the effects of LaTeX and statistician developed \( \LaTeX \), a high-level markup language (like HTML) making \( \LaTeX \)’s powerful commands more accessible to a typical user.

Today professionals in nearly every STEM discipline use \( \LaTeX \) to create technical documents (like this poster). Many students in these disciplines are introduced to \( \LaTeX \) during their work in college.

We surveyed the work of students enrolled in sophomore-level and junior-level mathematics courses at two different liberal arts universities in the South during the Fall 2012 semester. Students in both courses were required to use \( \LaTeX \) to complete course assignments.

41 students completed pre-course surveys regarding their experience in writing instruction and writing in the disciplines. 32 students completed a corresponding post-course survey. Five students were interviewed in depth.

Effect on the writing process

\( \LaTeX \) use in undergraduate slowed down students’ writing process, encouraging greater revision, reducing error, and allowing for more effective communication.

This is not unlike the effect produced by writing (relative to speaking; cf. Chafe).

Most students did not compose in \( \LaTeX \) but rather included “\( \LaTeX \) coding” as a separate step in the writing process, affording additional opportunity for reflection on and revision of their work.

Only one interviewee, Kenneth, a male fourth-year math major, became comfortable enough with LaTeX syntax that he could compose all digitally: “It was way easier this time. I just did my homework like I was writing it on paper, pretty much. I had the commands memorized.”

Cognitive impact

\( \LaTeX \) use allowed students to more easily identify errors in their work. Even when \( \LaTeX \) code is technically error-free and results in an orderly document, this orderliness makes it easier to recognize and respond to errors of all kinds.

\( \LaTeX \) helped students to better grasp course content and to better organize and process their ideas. Said one student, “\( \LaTeX \) made me think differently.” (Cf. the impact of the typewriter, as in Fullmer).

Students cited the professionalism and neat appearance of \( \LaTeX \)’s output as motivation to keep working with the writing technology.

Students noted the neatness of the resulting documents, calling them “condensed,” “clean,” and “concise,” and marveling at the sense of control they had over the documents. The term “professional” was the most often used. Following Ong we are tempted to confer a sort of “truthiness” on \( \LaTeX \).

Developing proficiency in \( \LaTeX \) helped students to feel more like authentic participants in the disciplinary community, and its use lent them confidence in their ability to write mathematically.

References

BAHLs, PATRICK and WRAY, AMANDA. “\( \LaTeX \)nics: The effect of specialized typesetting software on STEM students’ composition processes,” Conference on College Composition and Communication. Las Vegas, NV. 16 Mar 2013. Session presentation.


