



# First-Year Composition as “Big Data”: Towards Examining Student Revisions at Scale

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## Abstract

Given the central role revision plays in our First-Year Composition (FYC) program and the enormous number of papers students produce each semester across all course sections, we approached student revision as a “big data” phenomenon, assembling a large corpus of student papers and developing software to process them. Unlike past studies of revision which found that students focus almost exclusively on minor edits and surface errors, we found that student revisions primarily involve deleting and, more frequently, inserting complete sentences. After describing our software and reviewing its results, we examine several situational variables that may influence this unanticipated practice, and discuss ways to integrate revision more fully into the writing classroom.

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## 1. Introduction

Many First-Year Composition (FYC) programs embrace revision as the centerpiece of their writing pedagogies. Students draft each major writing assignment, receive feedback from peers and instructors, revise their papers based on that feedback, and submit their drafts and final versions at semester’s end under a single cover (i.e., the writing portfolio). The assumption here is that students improve their writing (or, at least, the processes by which they write) through these multiple and guided revisions. However, given the number of papers students produce during a typical semester (at our institution it’s between 9,000 to 12,000 major writing assignments requiring at least one revision), how can we know, at a programmatic level and on a routine basis, what happens between all of these first and final drafts? How often and how much do students revise, what specific features do they typically change, and do their revisions match, exceed, or fall short of the learning outcomes and more general expectations of the FYC courses? Equally important, can we identify feedback mechanisms from instructors that improve the revision processes of students, or can we identify feedback styles that succeed or fail to accomplish their intended purpose?

In answering these questions, the scholarship on revision has been fairly consistent: students revise infrequently, and when they do make changes to their papers, they typically focus on minor edits and surface changes. Many early studies

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compared the revision practices of students with those of more experienced writers and found that students revise less frequently and more narrowly (at the level of grammar, word, and phrase) than experienced writers who make changes at all levels of a text, attending especially to higher-order concerns such as argumentative structure and audience accommodation (Crowley, 1977; Faigley & Witte, 1981; Flower & Hayes, 1980; Sommers, 1980). Nancy Sommers (1980), for instances, says that students typically understand “the revision process as a rewording activity” —that is, finding just the right word or eliminating lexical redundancies (p. 381). According to Lester Faigley and Stephen Witte (1981), the revisions of inexperienced student writers are “overwhelmingly Surface Changes,” while advanced students and expert writers frequently make changes that alter the meaning of their texts (p. 407). Linda Flower, John R. Hayes, Linda Carey, Karen Schriver, and James Stratman (1986) developed a cognitive model to account for these differences between student and more experienced writers. According to them, students often struggle with revising because they have yet to fully develop abilities to detect problems in the texts they are composing, to diagnose them, and to select appropriate strategies to address them.

Subsequent studies have considered student revision in relation to factors other than the experience level of the writer (Jones, 2008), including instructor and peer feedback, technology, and explicit instruction. While there is more variation in the results produced by these studies (particularly those in which students receive explicit instruction in revision (Butler & Britt, 2011; Reynolds & Bonk, 1996)), many draw conclusions similar to earlier research (Dave & Russel, 2010; Haar & Horning, 2006; Horning & Becker, 2006; Treglia, 2009). Maria O. Treglia (2009), for instance, studied the effects of teacher comments on student revision and observed that students struggled with comments that requested more substantive changes; they had little trouble, however, following simple directives like “you need a comma here” (p. 83). Anish M. Dave and David R. Russel (2010) surveyed 112 upper-division undergraduates on how they used word processors while drafting and revising: although word processors would seem to encourage global revisions through such features as cut-and-paste, the survey results revealed that “students’ revision is predominantly focused on local issues” (p. 406). All in all, the research on revision is consistent in its findings: students often struggle with developing a robust approach to revision, one that includes revision strategies extending beyond word- and phrase-level changes.

As valuable as this research has been in helping us understand and respond to student revision, it is limited in two important respects, limitations that Faigley and Witte (1981) acknowledge in their own and prior studies and that still seem applicable today. First, owing to the “complexity of the analysis” involved, researchers have restricted their studies to a “small number of subjects” (Faigley & Witte, 1981, p. 411). Faigley and Witte (1981), for instance, include only 18 subjects in their study, while Alice S. Horning (2002) includes 9, Sommers (1980) 40, and Treglia (2009) 43. Second, while explaining the causes of revision, researchers focus too narrowly on one or two factors that may influence revision (e.g., the experience level of the writer, or teacher feedback), and thus risk ignoring other “situational variables” that contribute to revision or its absence (Faigley & Witte, 1981, p. 410; see also Jones, 2008, p. 258–264). In other words, “revision cannot be separated from other aspects of composing, especially during that period when writers come to grips with the demands of the particular writing situation”; research that neglects these “situational variables” is “likely to be skewed” (Faigley & Witte, 1981, p. 411).

Both of these limitations involve problems of scale: too few subjects and too few variables considered. Towards overcoming these limitations and answering the question that begins this essay (“What happens between all of these first and final drafts?”), we approached revision in our FYC program as a “big data” phenomenon—that is, as collection of data too large for humans to analyze in detail. Toward that end, we built a corpus of student papers (now totaling over 7,000 pairs of first and final drafts), and we developed software to process them. This software allows us to examine revisions in student papers, to explore correlations between those revisions and the situational variables that may influence them, and to perform both of these operations at scale. What we found differs from past research: while students continue to make word- and phrase-level changes, their primary revision strategies involve deleting and, more frequently, inserting complete sentences. This suggests that our students see revision not as a “rewording activity,” but as a sentence deletion and insertion activity, treating their original drafts as nearly completed texts into which they plug or unplug, not words, but sentences. More generally, this observation reveals a disconnect in our writing pedagogy: like many other FYC programs, ours emphasizes revision as an opportunity for students to “re-envision” their drafts at all levels of language (Trupiano, 2006, p. 117). Clearly, this message is not getting through to students, and our instruction must change to include guidance about this problem.

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