Reflection, Revision, and Assessment in First-Year Composition ePortfolios

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"But does it make them better writers?" This is a question writing teachers are always asked whenever they express enthusiasm for a new pedagogy. And adopting ePortfolios for final assessment in the First-Year Composition (FYC) Program at the University of Georgia (UGA) was no exception. The nearly one hundred teachers who were being asked to change their grading practices wanted to know. So, too, did the tenured faculty, whose approval was required for curricular change. And finally, so did the university's Office of Institutional Effectiveness, which would be collecting assessment data on writing achievement as a learning outcome for general education in the next accreditation cycle.

UGA's FYC Program moved to ePortfolio assessment in response to both practical and theoretical imperatives germane to writing instruction; but the electronic nature of those portfolios, creating a large centralized database of documents, has made it possible to articulate classroom and program concerns with larger institutional imperatives for measurable outcomes in assessment. Do ePortfolios improve students' writing? This is not, by any means, the sole question, or even the first one, that composition researchers or teachers would ask when assessing their students and classes. But it is a common question that unites all stakeholders in the process—from researchers, teachers, and students to

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administrators, the provost, and parents. We all care about whether composition instruction makes students better writers, however that term is defined. "Do ePortfolios improve students' writing?" therefore became the general question with which our research and the current essay began.

Revision is a key concept for process pedagogy in Rhetoric and Composition; all writing is rewriting, goes the maxim. Revision is also a key rhetorical advantage provided by portfolio assessment over other methods for judging writing. No longer are students tempted to glance at their graded paper and, seeing a big red C at the top, toss the essay into the trash along with the teacher's careful comments. Rather, feedback on graded essays becomes formative, providing information about possible future revisions for including that essay in the final portfolio. Portfolio assessment offers students time, practice, and a second chance to demonstrate their skill. For these reasons, we have focused our research question specifically on the role played by revision in writing performance. The *e* in "ePorts"—the electronic environment within which students produce documents and construct their portfolios—supports revision by making textual changes and document upload simple for the student and the reading and evaluation of ePorts efficient for teachers. Later in this essay, however, we will focus primarily on the advantages provided to researchers by the database on which this writing environment is built, which offers a large, permanent corpus of student writing that can be accessed with relative ease and low cost for the study of student revision practices.

Background: The Move to ePortfolio Assessment

Portfolio assessment is by now widespread in First-Year Composition and Writing Across the Curriculum (WAC) programs in the United States (e.g., Estrem, 2004; Huot, 2002; Yancey & Weiser, 1997). With the proliferation of online course management systems such as WebCT and Blackboard and of dedicated Web applications such as Open Source Portfolio (http://osportfolio.org/) and TaskStream's Web Folio Builder (http://www.taskstream.com/pub/), the ePortfolio has become nearly as widespread as its paper counterpart (e.g., Cambridge, 2001; Pullman, 2002). The UGA FYC had considered, for several years, the possibility of replacing the traditional, high-stakes three-hour final examination with a final portfolio. But we found daunting not merely the logistics of such a programmatic change (affecting 3,300–4,000 students per semester and around one hundred teachers) but, more crucially, the logistics of exchanging documents and portfolios between student and teacher and student and peer reviewers and then exchanging portfolios among raters. (Like those of many Research 1 institutions, the student body at UGA is large, about 32,000; so is the FYC teaching faculty—around sixty–eight teaching assistants and ten–twenty-five adjuncts

in any given year, who also tend to be somewhat dispersed geographically.) What finally made this curricular change possible was a simple, easy, electronic environment for submitting, reviewing, responding to, and evaluating both essays and ePortfolios. We found that environment in <emma>™, UGA's own *E*lectronic, *M*arkup, and *M*anagement *A*pplication.

<emma>: The Electronic Environment

<emma> (http://www.emma.uga.edu/), which has been developed by a group of faculty and graduate students in the UGA Department of English over the past five years, consists of two parts: an open-source word processor (we currently use OpenOffice [http://www.openoffice.org/]) and a database of documents.[1] A Web browser (Firefox [http://www.firefox.com/]) communicates between the word processor and database, facilitating such tasks as the upload and display of documents on the World Wide Web, downloading of documents for commenting and grading, the construction and display of ePortfolios and a class zine, and other functions common to class management systems. Working in OpenOffice, students find themselves in a familiar environment, as this open-source word processor looks and acts like the ubiquitous MSWord. Uploading documents to the database works through a simple button in the Web browser, just like attaching a document to a Web-based e-mail message. Documents are generated automatically for display as HTML and PDF documents, which permits both online reading and printing for work offscreen. A simple right click of the mouse button (or click for Macs) downloads the essay to a reader's hard drive, where the document can be reopened in OpenOffice, commented on (or graded) and uploaded again to the browser, beginning anew the writing–reviewing–revision cycle. When the writer is ready to add documents to his or her portfolio, he or she simply clicks on the "Portfolio" button at the top of the browser and, with another click of the mouse, adds to or removes from the portfolio documents from the available menu of his or her work.

Final portfolio evaluation is done by two raters, the teacher of record and another teacher from a different section of the same course. Although for the sake of programmatic consistency individual essays are assessed according to a common departmental rubric (FYC rubric [http://www.english.uga.edu/freshcomp/Rubric04-05.rtf]), raters are asked to evaluate the ePorts holistically.[2] Portfolios are graded on a 100-point scale, and the two grades assigned by the two raters are averaged. If raters differ by more than nine points, the portfolio passes to a third reader. The final grade is then the average of the two closest grades. <emma>'s software designer, Ron Balthazor, has created a portal through which instructors can access the portfolios of their companion class as well as their

own. After reading an ePort, the instructor clicks on a button to "grade portfolio" and then assigns a grade in the given box and adds comments (optional) to the comment box. Because evaluation is done online, instructors have a relative degree of autonomy and flexibility; they do not have to collect portfolios from a central location, as they would with paper portfolios, and they do not have to wait for others to "pass" them graded portfolios before they can begin their work. <emma> records and averages the grades automatically through a simple mathematical formula, and the teacher of record incorporates this information into his or her assessment of the student's final grade for the course.

Learning Theories: Revision and Reflection

From a practical perspective, <emma> provided the necessary organization and flexibility to allow our FYC Program to adopt portfolio assessment across the board. The initial impetus for this curricular reform, however, was pedagogical and involves a powerful convergence between the aims of process pedagogy in the field of rhetoric and composition and the theoretical underpinnings of ePortfolios as an emerging educational phenomenon. One central concept of composition pedagogy is that writing is a "process" and, as a largely unspoken corollary, that revision is one key hallmark of writing (as opposed to, say, oral speech). Contemporary theorists now articulate the field's orientation as "post-process" (Breuch, 2002; Dobrin, 1997; Kent, 1999; Tobin, 2001; Trimbur, 1994). The two principal critiques of process theory, as it has developed since the 1960s, that the post-process advocates offer are, first, that there are multiple and competing theories of process (Faigley, 1986) and, second, that, as the "social turn" in composition studies suggests, writing processes are not purely cognitive but take place in and are conditioned by social processes (Tobin, 2001; Trimbur, 1994). These complications to the process paradigm, as Matsuda (2003) argues, do not discredit the long-standing attention to writing as process but, rather, call attention to further dimensions of the writing process(es) and do so in a way that actually strengthens the theoretical links between the role played by revision in composition theory and the intellectual foundations of electronic portfolios, whose central concept is "reflection."

Before exploring the congruence between the ideas of writing-as-revision and reflection, it is useful to summarize the goals and structure of First-Year Composition ePortfolios at the University of Georgia. The portfolio is structured around a home page that provides a brief biography of the author and an image, which often but not always is a photograph of the portfolio author. The space below the biography provides links to the following items: a Reflective Introduction (following the definition established by Yancey, 1998) that functions

as the "thesis" of the entire portfolio, guiding readers through its contents and offering a persuasive argument about the portfolio's meaning and significance as an artifact demonstrating writing skills and development; two revised essays from the course—reconsidered, rewritten, edited, and polished—as examples of the writer's best products; a Revision exhibit, in which the author analyzes and demonstrates his or her composition process and revision skills; a Peer Review exhibit, which analyzes and demonstrates the author's ability to comment intelligently on the writing of his or her classmates; and a "Wild Card," an open piece that, within certain guidelines, rounds out the writer's self-portrait and completes the portfolio's image of the student as a writer.

The Reflective Introduction, of course, directly relates the writing portfolio to the concept of reflection, but there are other connections as well. In moving to the portfolio system, the FYC Program hoped to reinforce some key concepts of composition theory and pedagogy that are not especially well supported by the traditional curriculum of five separate essays followed by a three-hour final exam. To our mind, portfolios have several advantages over the previous system of assessment. First, portfolios increase the writer's agency in assessment; through the Reflective Introduction and, less obviously, through other exhibits in the portfolio, the student persuades his or her reader rather than passively awaiting the teacher's grade. Second, portfolios complicate and render more recursive the writing process by encouraging further revision of graded papers for inclusion in the portfolio and by asking students to reflect on and demonstrate formally their revision process. Third, the portfolio articulates an explicit relationship between process and product through the relation of other exhibits and the Reflective Introduction to the two polished essays. Finally, portfolios encourage a heightened awareness of audience, not only because the ePorts are read by two instructors and essays are read by peer reviewers throughout the semester but also because the Peer Review exhibits themselves ask students to envision a relationship between their own activities as writers and as readers/evaluators of others' writing.

As Kathleen Yancey (1998) discusses, reflection is the metacognitive counterpart to revision. Together, these activities allow writers to stand back and critique their own texts (reflection) and, subsequently, to make changes in those texts (revision). In the vocabulary of Lev Vygotsky, the term *reflection* actually means "revision, of one's goals, or more often, of one's work" (Yancey, 1998, p. 6). In discussing reflection and its relation to revision, Yancey points to several features of reflection that pertain as well to the role played by revision within process pedagogy. First, reflection is both process and product. Within composition studies, as articulated by Linda Flower and John Hayes's (1981) problematic but foundational model, writing-as-revision is a recursive but largely ineffable process

that involves goal setting; the reviewing of existing text; a resort to knowledge of the subject matter and the writer's repertoire of writing behaviors (long-term memory); existing text (short-term memory); and, finally, the production of new text in response to all of these events, which have been orchestrated and restricted by an undefined cognitive or behavioral "middle man" that is identified as the "monitor," a stimulus that leads writers from one cognitive "place" to another as a revised text takes shape in response to the author's writing/revision process. The composing process is tripartite, involving projection (planning, grasping the problem, anticipating audience expectations), retrospection (evaluating, reviewing text produced so far), and revision (see Figure 1).

According to Yancey, "Reflection [also] includes the three processes of projection, retrospection (or review), and revision" (1998, p. 6). Her further breakdown of reflection in writing echoes the vocabulary of writing-as-process and includes "goal-setting, revisiting, and refining"; "text revising in the light of retrospection"; and "the articulating of what learning has taken place, as embodied in various texts as well as in the processes used by the writer" (p. 6). This last element, the articulation of learning as a product, is what separates formal reflection in ePortfolios from the more dispersed processes of revision involved in the various exhibits of a writing portfolio. Linking revision to reflection in this manner has the added benefit of correcting what Joseph Harris sees as a critical weakness of first-wave process pedagogy: that is, a tendency to focus on the figure of the author and the (ideal) text and not to theorize adequately the role played by revision. Revision, according to Harris, is a dialogical dynamic in which texts

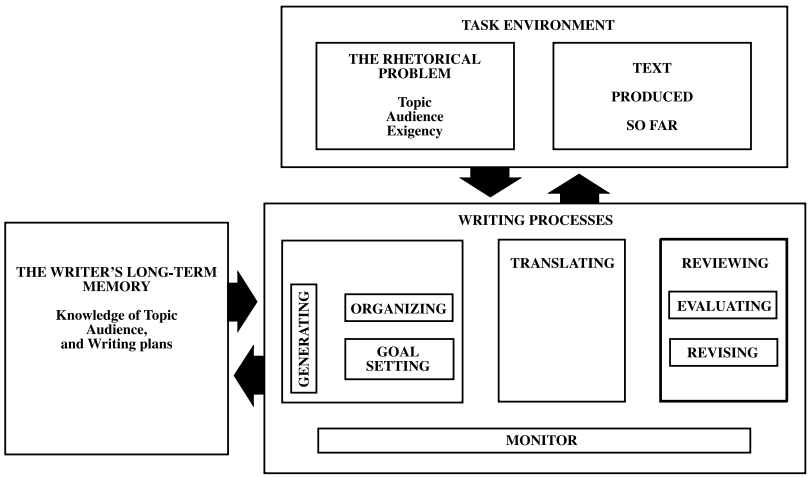

FIGURE 1 The writing process (from Flower & Hayes, 1981).

engage in "ongoing conversations" (1997, p. 68, quoted in Yancey, 1998, p. 3). In a similar vein, Yancey's version of revision is dialogic in Bakhtin's sense.

Although ongoing discussions of writing process(es) and the contribution made to writing theory by reflection have done much to highlight the centrality of revision to writing as intellectual practice, not all critics agree on a definition of revision, and some do not think revision is a universal or even a necessary ingredient of the writing process. Research by Bridwell (1980) and by Faigley and Witte (1981) remained unsure about whether revision improved the quality of written products, and in 1989, Muriel Harris suggested that there exist not only situations where single-draft writing is required but also people who are either single-draft or multiple-draft writers. At the same time, it is important to note that revision has not been studied intensively or on a large scale since the 1980s, and the current study posits that changes in media and writing environments—the move to what Arroyo (2005) calls "electracy"—have affected writing processes in ways that have yet to be articulated and further, that the fluidity of an electronic environment, when coupled with the portfolio format, makes ePortfolios particularly dependent on and hospitable toward multiple revisions of documents. Furthermore, the inclusion of reflection about revision as a formal exhibit in the UGA writing portfolios echoes Joseph Harris's (2003) suggestion that we need to think of revision not merely as a set of embedded, even inaccessible cognitive operations but also as a form of labor that can be made visible to writers and become the subject of critical self-consciousness. Thus, changes in writing environments, practices, and tools—all of which are important to the electronic nature of writing ePortfolios—suggest a particular need to study revision in this context.

The University of Georgia Revision Study

The current study of revision in ePortfolios asks two research questions: first, *Does* revision improve the quality of written products? and second, *How* do very successful and unsuccessful revisers describe their own revision processes? What can we learn about their intellectual practices and habits that will help writing teachers work more successfully with students' work? The first and most basic question addresses the existing disagreement about the impact of revision on writing quality in rhetoric and composition and faces as well the local concerns of a writing program that has so recently affirmed the importance of revision to writing pedagogy by implementing ePortfolios for final assessment. Furthermore, the UGA First-Year Composition Program is particularly well equipped to study revision because of its database of digital documents gathered through <emma>. Large-scale studies of writing have always been hampered by the labor

and expense of gathering, managing, and storing the documents to be studied. <emma>, by contrast, collects documents into a very large, permanent digital archive that can readily be accessed and searched.[3]

Research Question and Methodology

To answer the first research question—"*Does* revision improve the quality of written products?"—we focused on a single, simple measure: holistic ratings by trained, anonymous raters of "before" essays (submitted during the semester for a grade) and "after" essays (revised and submitted as part of the final portfolio). From a pool of five thousand essays submitted to <emma> during fall semester 2005, we aimed to gather five hundred before and five hundred after essays; after culling out false or problematic pairings, we wound up with 450 before and 450 after essays.[4] We attempted to oversample from the high and low ends of our student population, but finding an adequate number of portfolios that had received very low scores proved difficult; most students who scored very low during the semester had dropped the class, and the low-scoring portfolios we found were generally incomplete. We then created a spreadsheet listing the teacher's name and section number for each section of English 1101 offered in fall 2005, including columns for the following data: student's name, portfolio grade, the essay ID number of the before essay, and the essay ID number of the after essay (see Figure 2).[5]

To select the portfolios and essays, we used the following protocol for each chosen class:

1. Select the highest-graded portfolio and one of its two polished essays.
2. Select the lowest-graded portfolio and one of its two polished essays (in cases where there were several candidates for highest or lowest portfolio grade, we would select one portfolio).
3. Select an additional four to six portfolios and one of each of these portfolios' two polished essays using a randomized number scheme to control selection of the portfolios for sampling (e.g., the second, fifth, seventh, tenth, twelfth, sixteenth, and twentieth portfolios on the class list).

In a second pass through the portfolios, we located before essay ID numbers that paired with the after ID numbers that we had already collected. We obtained this information by using the administrative portal of <emma> to access the teacher's class document archive and then selecting the student's name whose after essay we were trying to match. Searching the class document archive, we would then identify the paired before essay ID numbers.

	A	B	C	D	E	F	G	H	I
1	Class				Student Nam	ID#	Port grade	Before	After (port)
2	ENGL 1101/1102	A***	M****		O****		92.5	194897	240329
3					W****		71	162352	230433
4					C****		86	171810	239433
5					D****		89	132820	232942
6					G****		86.5	132801	242968
7					K****		92	155862	215927
8					P****		86	154477	243303

Sheet1

FIGURE 2 Spreadsheet of information about essays for the revision study.

For the holistic rating of essays, we assigned lists of before and after essays to each of five raters. Essay ID numbers were assigned in random groups, so that no rater read the same essay twice and so that raters did not know whether any given essay was a before or an after essay. Each essay ID number was assigned to two readers for rating, going to a third reader when the first two scores differed by more than one point on the six-point scale used for rating the essays. The rating scale was based on the First-Year Composition Program's standard grading rubric. We did not use the rubric itself because it admitted of fewer numerical gradations than did the six-point scale and because we did not want the teachers to respond as teachers, as if the essays had been written for their own classes. The raters were normed in a face-to-face session, but the rating itself was conducted electronically.

Results

Between the "before" (Essay 1) and "after" essays (Essay 2), we observed a statistically significant improvement in ratings (see Figure 3). The mean score for

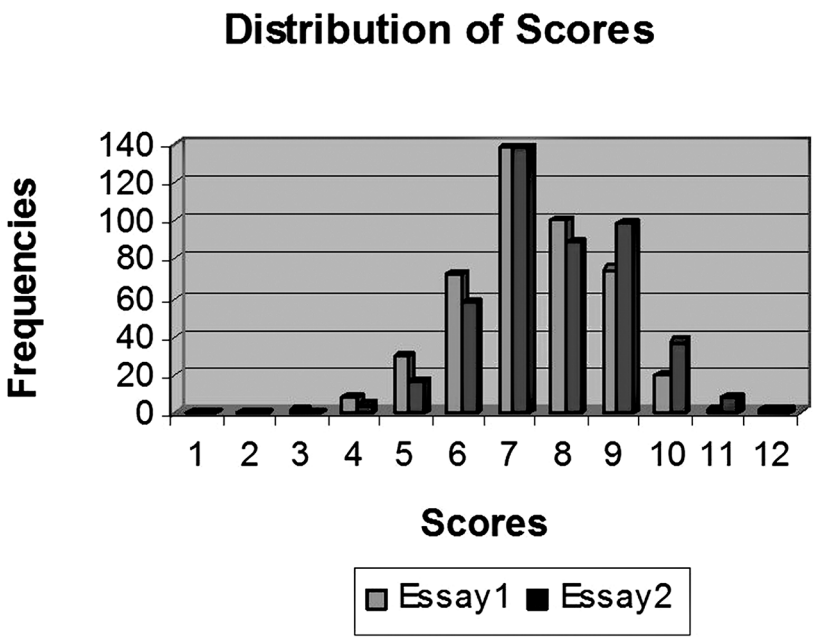

FIGURE 3 Side-by-side histogram of scores before revision (Essay 1) and after revision (Essay 2).

Essay 1 was 7.36 (out of twelve possible points for two readings), and the mean score for Essay 2 was 7.74.[6] Thus, on average across the 450 essay pairings, ratings increased by 0.38 points. The true mean improvement was between 0.2567 and 0.5077.[7] Using these data, we feel confident that if we were to rate paired essays written by the entire population of FYC students, we could expect the mean improvement to be between 0.25 and 0.50 points on a six-point scale. Of course, improvement was not equally distributed across essay pairings, and no student increased his or her score by exactly 0.38 points; rather, a number of students increased their scores by one or more points after revision, some had scores that remained the same, and some decreased their scores.

Forty-six percent of the essays revised for the ePortfolio ("after" essays or Essay 2) improved by one or more points, 28 percent remained the same, and 26 percent declined by one or more points. Table 1 shows the distribution of improvement scores derived by subtracting before essay scores from after essay scores.

Further, we were able to determine that those who had low scores (less than eight) for Essay 1 were more likely to improve their Essay 2 scores and that those with high Essay 1 scores (eight or more) were more likely to decrease their scores. Known as the regression effect in statistics, this finding is not surprising; there is more room for improvement than regression at the low end of the rating scale and little room for improvement at the upper end of the scale.

Discussion

Adopting ePortfolios has allowed us to study the effect of revision on student writing; without the ePortfolios we could not have been able to gather so many complete pairs of essays submitted for a final grade in a First-Year Composition class and then revised for a final portfolio. The results of the study convince us as well that revision, at least within the context of ePortfolio assessment, improves student writing. We know of no other assignment that has been shown to improve the quality of student writing to the same degree; we can therefore tell teachers of FYC with confidence that using an ePortfolio method of assessment will improve the scores of approximately half their students. The study will also prove useful as assessment data of general education when the University of Georgia undergoes its next Southern Association of Colleges and Schools accreditation.

We are now ready to enter the second phase of the study, a qualitative examination of how students—particularly those whose revision scores change dramatically in a positive or negative direction—reflect on their own revision process.

TABLE 1 Distribution of Improvement Scores

Distribution	Improvement Score										
	–5	–4	–3	–2	–1	0	1	2	3	4	5
Frequency	1	0	3	27	86	125	121	65	14	7	1
%	0.22	0.00	0.67	6.00	19.11	27.78	26.89	14.44	3.11	1.56	0.22
Total %	26.00					27.78	46.22				

Because the <emma> database allows researchers access to complete documents as well as to the structured XML data within those documents, we can construct case studies of twenty students who are either very successful or very unsuccessful revisers. From the Reflective Introductions and the exhibits demonstrating the writers' composing and revision processes, we can analyze the rhetoric of these students' explanation of and ability to reflect on revision. We can test Nancy Sommers's (1980) by-now-classic formulation of the difference between student writers, who make local changes during revision, and adult writers, who make global revisions. We can also consider Joseph Harris's (2003) contention that reflection is crucial to the process of revision. More broadly, we can ask:

- How does the study of revision with a large database such as <emma> change our understanding of revision as both process and product?
- How does the study change our understanding of reflection as both process and product?
- How do the quantitative study and qualitative study of revision complement or contradict one another?
- And finally, what is the value added of the *e* in "ePortfolios"? The cycle of production—reading and review of essays, comment, revision, reading and evaluation of revised products—is reinforced by both the portfolio format and the electronic environment. What effect do these two factors exert in student success in writing?

These are questions whose answers can be found through a continuing engagement between composition researchers and <emma>'s ever-growing database of student writing at the University of Georgia.

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NOTES:

1. Technical note: All of the software in the <emma> application is open source, which allows the developers to respond easily to the needs of teachers and students and makes the cost of implementation reasonable. As mentioned,

we use OpenOffice as our word processor, which looks and functions almost exactly like MSWord but runs XML (from extensible markup language) in the background, which allows documents to be displayed in different ways as structured data. <emma> uses Cocoon (part of the Apache XML open-source development project) to produce server-side XSL (extensible style sheet) transformations of the XML documents for display on the World Wide Web. Cocoon is a complete document production and management environment that includes automatic PDF production and the potential for other displays. <emma> uses PostgreSQL (http://www.postgresql.org/) as its database for authentication and document tracking.

2. Raters used the method outlined by Edward White (2004), which calls for graders to use the portfolio's Reflective Introduction (discussed later in the essay) as the guiding "thesis" to the rest of the portfolio's contents.
3. The total cost of this phase of the project, which involved selecting and rating 450 before essays (Essay 1) and 450 after essays (Essay 2) from the semester pool of five thousand documents, was $6,000, with $500 paid to the statisticians who worked with the project and the remainder paid to the administrator who gathered the essays and the five raters who worked with the project.
4. There were some problems with collecting the essays. One problem that plagued our efforts to locate before essays were teachers' idiosyncratic labels for student essay stages. Whereas some teachers used easy-to-interpret numbering and naming systems (such as identifying the essay stage of before essays as "Final" and titling the after essays with understandable labels such as "Essay 4—polished"), we often had to peruse the entire list of a student's documents, looking for matching titles and opening documents to look for essay content. We almost always had to refer to the date and time stamp added to the document when it was uploaded to <emma> in order to identify with confidence the essay submitted for a grade. Furthermore, many teachers specifically asked students to revise essay titles for the portfolios, making sampling for pairs by title problematic; and in a few cases (not included in our final sample), the before version had been posted as the portfolio after version—that is, the ID numbers were identical because the author had not revised at all. Finally, because all teachers were not yet equally at home in the electronic environment, some classes posted only portfolio essays, so that there were no before versions to sample.
5. Documents in <emma> are never overwritten. Each document uploaded to the database is assigned a unique ID number and remains in the database unless it is deleted by the author.

6. Mean scores were derived using SAS PROC FREQ, a procedure used to create frequency and cross-tabulation tables that can be used to analyze associations between variations and responses.
7. The lower confidence level (CL) mean and upper CL mean (the upper and lower ends of the interval of the probability value for an operation) were derived using SAS PROC TTEST, a standard procedure used to test hypotheses about means of samples.

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