

## A Review of WriteLab

Beth L. Hewett

Defend & Publish, LLC  
Forest Hill, Maryland

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Will educational software like WriteLab replace the human writing assistance offered in writing centers? When such a question has been posed in recent years, writing center directors and tutors have had reason for concern. The good news in this review of WriteLab is that while some of the software's current capabilities should be approached cautiously, writing center educators—whether in onsite or online settings—can be excited about its potential. WriteLab is in its infancy and it has some faults, but it is a good idea in the process of becoming a useful tool. As educators, we would do well to try it out, offer constructive feedback, and consider how to use such software well.

### **FEAR NOT**

In recent history, claims of software that can “read” and “evaluate” student writing, such as that provided by ETS for standardized testing and Pearson's Knowledge Technology group for student learning, have been offered as a means to eliminate the need for human readers and instructors or to ease their time-based burden of reading, commenting, and grading. Writing professionals have tended to object strenuously to those claims, leading to strongly worded position statements that outline the many ways that machines are incapable of imitating the nuanced intellectual work of the human reader and educator (NCTE Position Statement; CCCC Writing Assessment 2C). Despite these legitimate concerns about machine assessment, WriteLab's current configuration and stated goals should not be ethically troublesome for writing center educators.

WriteLab is software that provides automated style-focused response to student writing. Using machine learning and natural language processing (NLP) to respond to student writing, WriteLab focuses on drafting and revising and does

not provide any assessment for grading or evaluative purposes. Writing teachers, tutors, other writing studies professionals, and software engineers collaborated to develop WriteLab, which seeks to help all levels of writers grow more “confident and successful in their thinking and writing. . . . without fixating on ‘correctness’” (WriteLab FAQs). The software encourages writers to develop writing self-sufficiency and success. I am excited about its potential to explain some stylistic changes students might undertake, which could allow tutors and teachers to focus more time on each writer’s meaning. WriteLab acknowledges that students need insightful human readers, and it has promise as a tutoring/teaching tool for students and as a scholarly research aid for writing studies professionals.

Students using WriteLab can write using the software’s text field that provides basic word processing or they can upload digital files for analysis. When students edit their documents, the system automatically saves the changes as a new draft. WriteLab’s machine analytics provides feedback by highlighting words and phrases and commenting about style, addressing only one of seven stylistic areas per comment: clarity, cohesion, logic, concision, emphasis, elegance, and coherence. The software offers no surface level corrections or edits (e.g., misspellings, sentence boundary faults). In WriteLab’s writing center setting, students can post writing to their institution’s tutors for response; in the course setting, they can post to their peers or teachers for additional human-generated response. Hence, in either setting, WriteLab gives affirmative and constructive machine-generated comments about students’ writing and provides a text-sharing feature for reader response. In fact, students can receive WriteLab, tutor, peer, and teacher comments on a single draft, enabling what the company calls “cross-collaboration.” Because WriteLab can be integrated within existing learning management systems (LMSs), it does not facilitate discussions or offer a Wiki, one-to-one conferencing, or internal email; such features typically exist in the LMS and are unnecessary to replicate. Currently, WriteLab’s goals are to encourage writers and teach them something about their writing.

I used “fear not” as the section header because the software’s functional goals clearly are to help students learn more about their writing and to leave the assessment to instructors. Because WriteLab is being developed by fellow rhetoric and composition educators, we have reason to trust that the company is seeking

to find twenty-first century solutions to teaching and tutoring students that match up with ideals the writing studies field holds dear. Adding to their ethos is the work that research expert Les Perelman is doing in pushing WriteLab to do its job well.<sup>1</sup> In a recent post on the WPA-L listserv, Perelman—well known for his criticism of claims that machines can teach or score writing—expressed his support, explaining that he had attended a meeting about WriteLab at the 2014 NCTE conference: “intending to do my usual hatchet job on another badly implemented attempt to use computers to teach writing, but instead I came away greatly impressed with the approach developed by Don McQuade, whom I have respected for decades, and his partner and graduate student, Matthew Ramirez.” Since then, WriteLab hired Perelman to “do my worst in trying to break it or elicit inappropriate or confusing comments. When I have done so, they either fix the problem or remove that feature” (“Re: WriteLab”). Frankly, I am encouraged when a well-known colleague does a public about-face regarding an issue on which he has been trenchant because it increases my confidence in the integrity of his—and WriteLab’s—intentions. Getting Perelman on board was a smart move on WriteLab’s part both for its own ethos and for the improvement of its teaching model.

### **USE CAUTION**

Despite my encouragement to not fear WriteLab, the software currently has significant limitations in the kinds of revision with which it supports students. Hopefully, these problems can be fixed using NLP, which is the key feature that WriteLab offers to assist students.

For this review, I submitted three essays—two of my blogs about grief and one young man’s essay that I have permission to use. Most of the comments WriteLab offered the texts regarded “clarity” and “concision,” where deleting one word was subtly recommended. I frequently found that following those suggestions would not hurt or especially help the text—sometimes creating a more focused sentence and other times lessening nuance. This attention to word deletion seems to connect with WriteLab’s claims: According to the WriteLab FAQ, “After a year of beta testing, we found that students like working in our Concision Module—they prefer tightening their prose over expanding it to fit minimum word requirements.” Further, students “have also shown considerable interest in limiting their use of passive verbs, in direct response to the Clarity

Module identifying those verbs.” In other words, WriteLab often recommends prose tightening, including recasting passive voice, so it is unsurprising that students might choose such revision changes and that they might appear to be a preference.

Lester Faigley and Stephen Witte’s 1981 landmark revision-change research helps in understanding the kinds of changes students may make when they work with WriteLab. Faigley and Witte developed and tested a revision-change taxonomy:

**Faigley and Witte’s Revision Change Operations**

Surface Changes	Text-Based Changes
<b>1. Formal Changes</b> Spelling Tense Abbreviation Punctuation Paragraph Other Format	<b>1. Microstructure Changes</b> Additions Deletions Substitutions Permutations Distributions Consolidations
<b>2. Meaning-Preserving Changes</b> Additions Deletions Substitutions Permutations Distributions Consolidations	<b>2. Macrostructure Changes</b> Additions Deletions Substitutions Permutations Distributions Consolidations

Chart based on “Analyzing Revision” (408).

Surface changes address what would likely be called local, lower-order changes by writing center staff; the text’s overall meaning is not altered by such changes. Formal changes are what tutors and teachers typically are urged by research to ignore but that often are irritating to read and may obfuscate meaning. Spelling and grammar check software can help students address these changes when their proofreading is insufficient. Meaning-preserving change “includes changes that paraphrase concepts in the text but do not alter them.” Additions, deletions, and substitutions are fairly common changes while permutations (“rearrangements or rearrangements with substitutions”), distributions (“material in one segment is passed into more than one segment”), and consolidations (“elements in two or more units are consolidated into one unit”) are less common (403). Unlike surface changes, text-based changes affect meaning; some are impactful and others not, but generally they reflect global, higher-order concerns. Using the same revision sub-elements, microstructural changes work at the paragraph

level and change meaning locally, sometimes with great rhetorical force. Macrostructural changes can alter the thesis, argumentative reasoning, and details that may entirely change the text's meaning.

In Faigley and Witte's study of inexperienced students, advanced students, and professional writers, the majority of changes writers made (besides spelling) were surface meaning-preserving and were word/phrase additions, deletions, and substitutions. Only the advanced students and some professional writers added, deleted, and substituted text at the microstructural and macrostructural levels (407-8). Interestingly, what Faigley and Witte saw in 1981 appears to be repeated in the results WriteLab offers in their FAQs—that students' primary revision operations are surface meaning-preserving deletions to write more concisely and substitutions of active for passive-voice constructions. These results are not surprising in that WriteLab focuses on stylistic revision changes at the meaning-preserving level. Indeed, WriteLab appears to be designed to promote additions, deletions, and substitutions at the meaning-preserving change level.

Some example WriteLab comments demonstrate how it may encourage word-level deletion particularly. I question how students might read the comments and revise or not.<sup>1</sup> In fairness, please note that I have selected some of the most challenging comments; others were more helpful. In its analysis, the WriteLab software highlighted words as shown in the examples below.

#### **EXAMPLE 1: CLARITY**

**Writer:** "Abraham Lincoln *was* assassinated on April 14, 1865, when Tad was 12 and their oldest son Robert was 22."

**WriteLab:** *Clarity.* You might experiment with using a verb more descriptive than *was* to explain the action in this sentence. The verb *was* lacks detail or specificity: it could describe almost any action.

This comment about the "be" verb pops up occasionally. Sometime this verb is the appropriate choice. One wonders how to help students see when it is and when it is not.

**Writer:** "Interestingly, little *mention* is made of the preschool-aged Eddie in discussions of Mary Lincoln's life."

**WriteLab:** *Clarity.* There is a verb embedded in *mention*. How might using this verb increase or decrease the impact of your sentence?

I was confused about WriteLab's "embedded" (also labeled "hiding" or "hidden") nature of the verb in the noun. When I thought about it, I realized that changing my text to the active voice (*Interestingly, few mention the . . .*) would eliminate the noun form of "mention." Although inexperienced writers might benefit from this comment, they may need human interpretation.

**Writer:** "You can cut the jeans off above the knee—at the **point** of the hole."

**WriteLab:** *Clarity.* One of the words you use here (*point*) has a verb form. How might you use this verb to describe the action in your sentence? How would doing so increase or decrease the impact of your sentence?

In this case, the advice was unhelpful; I either needed the noun "point" or to have deleted "point" altogether (*at the hole*). The majority of "clarity" comments the submitted essays received were about verb/noun words. Although some comments were inappropriate, others caused me to rethink the message. Students without a big repertoire might default to simply using the verb form that the comments implicitly recommend.

**Writer:** "Many of these newcomers have strong traditions and beliefs which are strict and **are instilled** in their children."

**WriteLab:** *Clarity.* *Are instilled* is passive. It emphasizes what is acted upon rather than what is acting. You might experiment with using the active voice.

I wonder whether the student who wrote the essay I submitted to WriteLab would know the active form of this verb and how to make revisions to accommodate it. He *can* click an arrow in the comment to see the *WriteLab Guide's* explanation and examples. But will he? Also, WriteLab uses suggestive language, which is still common in tutoring pedagogy but not helpful in many cases, including for multilingual students and students receiving advice online through text. I recommend a linguistically direct imperative to encourage the student to enact otherwise implicit advice: *Experiment with using the active voice* (see Hewett 112-29, 183-91). Finally, WriteLab did not flag the misspellings, which

are merely surface formal changes. Realistically, the misspellings will annoy readers even though WriteLab's decision to ignore them is understandable pedagogically.

### EXAMPLE 2: COHESION

**Writer:** "Mary, however, was sent from his room more than once for lack of *womanly decorum*."

**WriteLab:** *Coherence*. This is an unusual phrase. What relation does *womanly* have to *decorum*? How familiar are readers with this relation? Will they be informed or confused by it?

WriteLab's questions are interesting. I know what I want to convey here and think the context will make sense to *human* readers. Students may need tutors to help them decide whether to keep the phrase or change it (and why). WriteLab counts such authorial ownership as a developmental benefit from using this software, stating on the website that such agency is, indeed, happening. My concern is that tutors might spend too much time parsing WriteLab comments for students, time that could be spent more profitably considering higher-order concerns.

### EXAMPLE 3: LOGIC

**Writer:** "The resteraunt makes outstanding buisness."

**WriteLab:** *Logic*. How does the resteraunt make outstanding buisness?

This question should help the student rethink his odd statement. Analytics-based research should show whether it does prompt new thought/revision. Nonetheless, if the student's focus is not about "how" the restaurant achieves its success, WriteLab, which is unable to assess context, may be sending him down an unhelpful digressive path.

### EXAMPLE 4: CONCISION

**Writer:** "However, immigrants seem to have *much more* stronger family values."

**WriteLab:** *Concision*. Experiment with reading this sentence with and without *much*. What meaning does *much* contribute to the sentence? Does removing it strengthen or weaken your sentence?

This comment mixes linguistically direct statements (an imperative and a genuine question) with a suggestion (per the rhetorical question beginning with "does"). Such tentative

questioning might seem appropriate in that machines cannot guess at a writer’s intention as human readers might. However, WriteLab does not indicate that “much more stronger” is not standard usage. The student could delete “much” and still have “more stronger,” prompting an awkward reading. A word-level approach to fluency is a key limitation of WriteLab.

### EXAMPLE 5: EMPHASIS

**Writer:** “Immigrants are what help make *America* be *America*; by being a multicultural society standing united.”

**WriteLab:** *Emphasis.* You make a persuasive appeal by repeating *america*.

WriteLab (which oddly used the lower case for “America”) addressed a number of repetitions in this student’s essay. Notice how confusing the responses become in the following examples, which are consecutively written sentences.

“Immigrants are what help *America be America*. They say that America is just a melting pot.”

**WriteLab:** *Emphasis.* You make this phrase intriguing and memorable by repeating *america*.

This text follows.

“This is what makes our country unique. We have many cultures, many Ideas, and traditions, but all of us have the same *dream*. That *Dream* is the American *Dream*.”

**WriteLab:** *Emphasis.* You repeat this word at the end of both sentences. What rhetorical effect does this have?

This text follows.

“The same *dream* that keeps Americans in America and immigrants to come here.”

**WriteLab:** *Clarity.* There is a verb embedded in *dream*. How might using this verb increase or decrease the impact of your sentence?

One wonders how this final use of “dream” is different from the others (or the oft-repeated “America”) such that WriteLab flags the first ones as repetition with an apparently positive rhetorical result and addresses the final one as a noun with a verb form. What will the student think given the broader context of the paragraph? Although I suspect that there is an NLP-based reason for making this selection—possibly the lack of a verb



in the sentence fragment—the intended lesson escapes me; I believe it will confuse writers.

#### **EXAMPLE 6: ELEGANCE**

**Writer:** “Her first loss of Eddie was somewhat overlooked, and the compounded nature of having two children die in twelve years’ time was ignored or treated as less than the cataclysm it surely was.”

**WriteLab:** *Elegance*. The symmetry you create here adds a note of grace to your thought.

This is the only sentence singled out for elegance in the three essays. The sentence has two passive-voice constructions, so given WriteLab’s consistent advice to avoid them, I am not certain why the sentence is considered elegant.

#### **EXAMPLE 7: COHERENCE**

**Writer:** “As for her stepmother, few women successfully substitute for a lost mother when they are considered warm and loving; how many fewer women never *rate* that *label* regardless of their actions?”

**WriteLab:** *Coherence*. You personify the inanimate object (*rate*) with an animate action (*label*).

This response does not make sense to me. The machine misread the verb “rate” for its noun form.

Despite their sometimes problematic features, these examples suggest that WriteLab can assist students in making stylistic meaning-preserving, surface-level changes. The software rightly leaves human readers to do meaning-intensive work with students, which is one reason WriteLab simultaneously can be helpful to students and not disruptive to the tutoring processes it purports to support. However, if students do not realize they are not receiving advice about correctness and the need for editing and if they are not reminded that making certain stylistic changes in response to WriteLab means that *some* and not *all* revision has been done, their writing likely will not meet the quality levels human readers still expect and WriteLab likely will not have saved them or their readers much time or future effort. More importantly, when writers revise only at word and sentence level, they miss significant meaning-based issues.

To best harness WriteLab’s strengths and mitigate its weaknesses, tutors can ask students to show them WriteLab’s

comments and discuss their revision choices. Such a discussion opens talk about revision choices, authority, and the need to consider how one's message conveys to human readers. However, this strategy requires clock watching to avoid spending too much time talking about inappropriate WriteLab responses. Tutors can remind students about the necessity to proofread and edit for surface formal changes and then spend the most time considering microstructural and macrostructural meaning-based changes that address message and audience.

Certainly, the WriteLab team should develop their materials to help students think about moving beyond sentences to deeper changes. Although human readers are necessary for helping students with microstructural and macrostructural changes of all types, minimally, the WriteLab team should consider whether and how machine learning and NLP can be engaged to encourage meaning preserving changes that are permutations, distributions, and consolidations. Additionally, it would help for WriteLab to explain to users what it is *not* responding to (e.g., topic focus, organization, supportive detail, etc.).

The example responses WriteLab offered my submissions have some worrisome, irregular features. When I spoke with McQuade, the company's Chief Learning Officer, he explained that the comment phrasing and the *WriteLab Guide* are being revised during the current beta period to develop fluid, clear text with a reader-friendly tone. My brief review demonstrates how some of this work needs to continue. Furthermore, machine learning is developed not only so that humans learn from the computer but so that it learns from humans. WriteLab's comments ask students to tell them which comments are not useful; if a comment is marked "not useful" enough times, eventually it will no longer appear for that student. If writing educators also learn *why* those comments are not useful (i.e., whether the student interpreted the comment differently from its intended meaning, did not believe such changes needed to be made per agency, or was tired of seeing it pop up), then what the machine learns also can teach tutors—provided the WriteLab team is transparent with the data they collect. WriteLab's team can do more, however, and I look forward to seeing it happen. For example, McQuade expressed that machine learning means eventually the comments/examples can be individualized to each student. I hope that WriteLab will teach students using discrete revised example sentences developed *from their own*

*writing*, which would be especially powerful if the program also would provide several revision choices to teach them what such revisions would look like and to demonstrate the rhetorical effects of making such changes.

### **GO RAD**

Even moving forward cautiously, writing educators can be excited about the potential for using WriteLab in studying student writing and revision. The analytics Writelab can provide about one's students will aid in replicable, aggregable, and data supported (RAD) research—so badly needed in writing center and other writing studies' research. In an email to me, company president Ramirez states:

Tutors, teachers, and WC directors will have access to analytics for students that share their drafts with them. So if a student is enrolled in a particular course and shares his draft with his teacher, that teacher will be able to view metrics around what decisions the student made about teacher comments, WriteLab comments, and peer comments. This teacher can view these decisions by module, by draft, by student, and by class. A lot of permutations are possible, and we hope that this data will 1) give teachers and tutors material to discuss with students and 2) provide information that can lead to pedagogical decisions in the classroom/tutoring session.

Perhaps my enthusiasm for WriteLab rests in my excitement about its potential contributions to research and how this tool—created and used by experts in our field—can assist an important research agenda. We simply know too little about the features of contemporary student writing and revision—onsite or online—and we must learn more to help twenty-first century students write (and read) better. We should learn from the analytics being asked of the system and then pose new questions to the WriteLab team. *What does the software identify as common features of student writing? How do students at various levels make revision changes? How can we support students in making microstructural and macrostructural meaning-based changes?* Additionally, WriteLab's analytical capabilities can be harnessed for a fraction of human labor costs; what once was counted and analyzed manually now can be done by machine, a fact that supports RAD research in the cash-poor humanities. As I have said before (Hewett and Warnock; Ehmann and Hewett), it is time to use automated, machine-based writing analytics to our advantage. WriteLab enables us to give it a try.

Frankly, despite the concerns I have expressed here, I think WriteLab is timely and viable, and writing centers should test it thoroughly with the understanding of what the software is intended to do and not with fear about how it might be used. We need to take hold of machine learning and direct it toward humanistic writing goals. We can use WriteLab ethically by harnessing its current strengths for students and exploiting its weaknesses by training tutors in helpful language choices and fruitful higher order feedback. Finally, we can collaborate with WriteLab to improve its product, benefitting all.

1. Some weeks after this article was completed, Les Perelman announced on the WPA listserv that he was no longer affiliated with WriteLab for reasons that included his own “personal constraints.”

2. Because clarity comments were most varied and frequent, I provide multiple examples of them.



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