Abstract

Writing support programs for students in writing-intensive, disciplinary courses are well established and take many forms, including communication centers, web-based skill development programs, and embedded writing consultants. This paper assesses the effectiveness of a program that embeds a writing grader, who assesses only the grammar of students' submissions, to encourage and support business faculty in including written assignments. Our analysis of grammar errors across three writing assignments showed that students rarely included Status Marking Errors (e.g., nonstandard verb forms and double negatives) and did reduce errors from the first to last assignments. However, the cause of the error reduction and the program's long-term effectiveness in improving students' grammar skills is inconclusive. Based on our findings, we offer recommendations to program organizers for better aligning a program's stated and practical goals when providing writing support.

AUTHORS

Lindsay C. Clark, Ph.D.
Sam Houston State University

Zijun Luo, Ph.D.
Sam Houston State University

Ashly Bender Smith, Ph.D.
Sam Houston State University

Effects of Course-Embedded Grammar Graders: Evidence from a Business College Writing Initiative Program

Initiatives to support and develop student writing skills have a long history in composition, writing studies, writing center, and writing across the curriculum (WAC) research and pedagogy. These support programs may function at the university level through writing centers, working with students one-on-one to improve their writing skills, and through WAC programs that help faculty integrate writing into their courses. In discipline-based courses, other student-focused services like writing fellows or embedded tutors or consultants serve to bridge the gap between writing assistance and writing instruction (Carpenter et al., 2014). Specifically, the role of this embedded support is to guide students through course-specific writing assignments by engaging students in the writing process and providing feedback.

Feedback on student writing is widely discussed across many higher education disciplines, with research on the scope, format, and type of feedback most impactful for strengthening students' writing skills. To encourage students to engage in the writing process, many researchers have studied the potential for alternative feedback formats, including written versus digital comments (Grouling, 2018) and written versus audio feedback (Keane et al., 2018). Additional studies have explored how corrective and formative feedback might incentivize or motivate students to engage in revision processes, as well as facilitate communication skill development (Bitchenor & Knoch, 2010; Yu et al., 2020).

CORRESPONDENCE

Email
lclark@shsu.edu

Best practices for improving students' communication skills continue to be an important discussion in higher education, as many studies have reported both increased value for, as well as deficiencies in, the writing ability of college students entering the workforce [Addams & Allred, 2015; National Association of Colleges and Employers (NACE), 2018]. These findings place particular pressure on colleges of business aiming to prepare students to be effective communicators in various professional industries. In response, many business schools have integrated a variety of writing support interventions, including in-house communication and writing centers (Caldwell & Al-Ajmi, 2018), web-based writing skills programs (Austin et al., 2018), and grammar and mechanics instructional strategies (O'Neill, 2018; Quible, 2006; Willis et al., 2012).

Additional research on written communication skills reiterates the importance of administering a writing support initiative focused on assessing common grammar errors to focus feedback, revision, instruction, and assessment strategies.

Still, grammar and mechanics instruction remains a highly debated and frequently identified area of improvement for college students entering the workforce. Willis et al. (2012) administered a survey to over 600 business undergraduates, determining that students' abilities to identify and correct common grammar and mechanical errors were severely lacking. Several studies have demonstrated how simply telling students how many errors they made without providing formative feedback actually results in increased writing anxiety, especially if students previously had low self-efficacy about their writing (Ekholm et al., 2015; Mascle, 2013; Zumbrunn et al., 2016). Similarly, O'Neill (2018) assessed which grammar errors her business students made most frequently, arguing that most students make errors in only a few concentrated areas of punctuation and style. She argued that with "critical and analytical thinking, but without mechanics to ensure conciseness and clarity, writers can miss the opportunity to bring their ideas to wider audiences" (p. 9). Additional research on written communication skills reiterates the importance of administering a writing support initiative focused on assessing common grammar errors to focus feedback, revision, instruction, and assessment strategies.

In the authors' college of business, concern regarding business majors' grammar knowledge led a business communication faculty member to create a resource, a Credibility Killers handout, which describes ten grammar errors found to be most noticed by a business professional (see Appendix A). The included errors were developed based on research in Business Communication and Rhetoric and Composition (e.g., Beason, 2001; Gray & Heuser, 2003; Hairston, 1981; Lunsford & Lunsford, 2008; O'Neill, 2018; Sigmar & Austin, 2015). The Credibility Killers handout includes two categories of errors: Status Marking Errors and Serious Errors. The Status Marking Errors include a) nonstandard verb forms, b) lack of verb-subject agreement, c) double negatives, and d) object pronoun as subject. The Serious Errors include e) sentence fragments; f) run-on sentences; g) non-capitalization of proper nouns; h) misspelled words; and i) comma errors, such as clause and comma series errors. These categories and included error types seem to have been first delineated in Maxine Hairston's 1981 article, "Not All Errors are Created Equal: Nonacademic Readers in the Professions Respond to Lapses in Usage," and researchers have continued to test the effect of grammar errors using Hairston's categories (e.g., Gray & Heuser, 2003).

Developed from a desire to support students' writing development in upper-division business courses, the Credibility Killers handout was circulated across the college and soon after was used as a "rubric" for a new writing support initiative focused on helping students identify and correct grammar errors in their writing. This writing support program, named the Writing Initiative, is the focus of this study[1]. As part of the business college's communication assessment committee, we offer preliminary findings regarding if and how this initiative influences students' written communication skills, specifically the correction of grammar and mechanical errors.

The Writing Initiative Overview

The Writing Initiative (WI) at the authors' university is intended to support students' writing skill development by encouraging faculty to incorporate writing assignments into their courses. The program was developed in response to communication assessment results

[1] The authors thank Dr. Christopher Cassidy, Jennifer Ormond, the involved student-workers, and the Communication Goals Assessment Team for their assistance in collecting and coding the Writing Initiative assessment samples.

for the college's business majors and research conducted by other business communication faculty. The perceived need for a writing-skills intervention first arose following an internal assessment of 352 business majors' writing samples showing that the most common errors in the students' writing were grammar, mechanics, and/or punctuation errors (see Sigmar & Hynes, 2012). These results sparked efforts in the authors' business school to create resources that faculty could use to help students improve the grammar and mechanics in their writing, including workshops for the business faculty (O'Neill & Sigmar, 2014), further investigations into the most frequently noticed writing errors (O'Neill, 2018; Sigmar & Austin, 2013, 2015), and the WI.

The WI supports participating faculty by providing a grader who assesses only the grammatical correctness of the students' writing, while the faculty member focuses on the submissions' disciplinary content. Thus, the WI is intended to have minimal disruption in a faculty member's course and to reduce faculty's resistance to adding such assignments based on the argument that the provided grader alleviates the faculty member's grading burden or hesitancy about providing feedback on topics beyond their perceived expertise.

The administration promotes and organizes the WI as part of the college's initiative to improve students' communication skills, in this case, writing skills. In the administration's regular sign-up reminder emails, which are sent the week before each semester begins, the WI is described as a way to "help our students become more proficient in this extremely important 'soft skill'" (K. Jesswein, personal communication, January 4, 2019). The WI graders are described as "'expert' graders who can grade whatever types of writing exercises you wish to assign to your students" (K. Jesswein, personal communication, January 4, 2019). The graders, hired by the college administrators, hold degrees in English and Communication and have workplace experience as administrative assistants. The graders' training includes a review of the WI rubric and Learning Management System (LMS) tools for providing feedback. Faculty often describe the WI as a tool for incentivizing students to improve their skills and to write correctly.

When participating in the WI, faculty are required to assign at least 10% of the assignment grade to grammatical correctness. Faculty provide the assignment information to the graders at the beginning of the semester and create a submission location in their course's LMS section. The graders divide the participating faculty among themselves. Then, the grader is added as an instructor in the LMS section and uses the in-line and comment box tools to provide students with feedback about the error location; error type; and quantity of total, major, and minor errors. Otherwise, the grader does not interact with the students.

The [Writing initiative] supports participating faculty by providing a grader who assesses only the grammatical correctness of the students' writing, while the faculty member focuses on the submissions' disciplinary content.

The college does not indicate if or how faculty should inform their students of the WI, but, anecdotally, participating faculty tend to provide students with the WI grading rubric and explain how the WI grading will affect a student's total assignment grade. The aforementioned Credibility Killers handout (Appendix A) was ultimately adopted as the "rubric" for the WI grading. Students are provided the Credibility Killers handout and told that a portion of their assignment grade will be based on their ability to avoid the listed errors. The WI grader assesses the grammatical correctness of the students' assignments by counting the number of errors made in each assignment. The grader reports the number of "major errors," which are those listed on the Credibility Killers list, and also often provides the number of "minor errors." Minor errors include other concerns noted by the grader that are not included in the Credibility Killers list, such as concerns with clarity, verb-tense consistency, and other grammar or punctuation rules based on the grader's knowledge. The grader makes notations on the students' submissions to indicate which "major errors" were made and also often leaves additional corrective feedback about "minor errors." The impact of the error total on the students' scores is determined by the faculty member, provided it accounts for at least 10% of the assignment grade.

This article reports on a study of this writing support initiative and explores its impact on business students' communication skills. Using data collected from the WI grader, we analyze results and assess the overall impact. Anecdotally, participating faculty and the WI grader claim that the program improves students' writing quality throughout a semester when multiple writing assignments are used. However, a systematic assessment of

the WI's effect on participating students' performance had not been completed. Therefore, we investigated if and how the WI might influence students' grammatical correctness, and herein we report the results of our assessment and discuss implications for both future assessment and classroom instruction. The results revealed opportunities for improvement of our writing support initiative. We conclude with suggestions on ways organizers can improve writing support programs to ensure alignment between support goals and practices.

Method

During the assessment semester, 10-12 faculty participated in the WI but only two used the program for multiple assignments, allowing the assessment of error trends. One of these two faculty members was teaching an Executive Master of Business Administration (EMBA) course with 10 enrolled students. The other faculty member was teaching two sections of the senior-level capstone course required of all business majors, Strategic Management and Policy. The professor assigned four independent writing assignments throughout the semester that were submitted to the WI. Each assignment required a written submission of approximately 1,000 words from the student. Fifty-three students submitted a paper for one or more of the four assignments, with a total of 174 graded submissions. Overall, the Strategic Management and Policy course provided an opportunity to identify the potential influence of the WI across multiple assignments submitted by a selection of students from across the business major who were at or near the end of their program.

Overall, the Strategic Management and Policy course provided an opportunity to identify the potential influence of the WI across multiple assignments submitted by a selection of students from across the business majors who were at or near the end of their program.

The WI grader tallied the majors errors in all submissions for the four assignments. For each assignment, each student's errors were tallied in an Excel file. In addition to recording the total error count for each student, the number of each type of error was recorded. Only the errors from the Credibility Killers list, the "major errors," were counted for the assessment, though the grader did provide additional feedback to the students. Only one WI grader evaluated the assignments submitted in the two sections included in this assessment.

The statistical analysis was carried out at two levels. We first analyzed aggregate trends with the full sample. For each assignment, we computed the mean, standard deviation, maximum, and the percentage of students with no or only one error. We also conducted a comparative study between our findings and those in Lunsford and Lunsford (2008). We then looked at the 30 students who submitted all four assignments. This individual analysis allowed us to investigate the number of students that have improved throughout the semester and to parse errors by assignment. Detailed results of this statistical analysis are presented in the next section.

Results

The Credibility Killers rubric categorizes writing errors into nine areas (A-I). However, hardly any students made mistakes in areas A through D, the Status Marking Errors. As a result, this analysis focuses on categories E through I, the Serious Errors: e) sentence fragments, f) run-on sentences, g) non-capitalization of proper nouns, h) misspelled words, and i) comma errors.

The following analyses focus on Assignments 1, 3, and 4. Due to the structure of the assignments, Assignment 2 showed peculiar behavior and hence has been excluded from the analysis. In addition to analyses of the full sample of 174 assignments from 53 students, a sub-set of the sample is analyzed. The sub-set includes a group of 30 students who submitted to all four assignments.

Aggregate Analysis (Full Sample)

Table 1 shows the mean, standard deviation, and maximum of the five Serious Errors categories for Assignments 1, 3, and 4, from the full sample. The first panel shows that the average number of errors that occurred per assignment in each category declined between the first and fourth assignments. From Assignment 1 to 4, there was over 30% reduction in errors in all categories, with the smallest change in category I (Comma Errors) at 32.76% and the largest change in category G (Non-capitalization) at 70.59%.

Table 1
Summary Statistics for Assignments 1, 3, & 4

	A1	A3	A4	% Reduction from A1 to A4
Mean				
E (Sentence Fragments)	.76	.49	.43	43.42%
F (Run-on Sentences)	.78	.56	.49	37.18%
G (Non-capitalization)	.51	.24	.15	70.59%
H (Misspelled Words)	3.07	2.84	1.87	39.09%
I (Comma Errors)	10.47	7.98	7.04	32.76%
All Errors Combined[2]	15.58	12.13	9.81	36.05%
Standard Deviation				
E	1.65	1.18	.97	
F	1.29	.92	1.21	
G	.87	.48	.47	
H	3.71	2.84	2.12	
I	6.17	5.07	4.24	
All Errors Combined	9.37	7.55	5.53	
Maximum				
E	8	5	4	
F	5	4	5	
G	3	2	2	
H	15	17	9	
I	31	19	16	
All Errors Combined	51	36	24	

In addition to the average number of errors declining across the categories, the second panel shows that the variations, measured by standard deviation, among students have also declined. Coupled with the reduction in average, the decline in variation implies that students who used to make many errors were no longer doing so by the end of the semester. This trend is also shown in the third panel, which reports the maximum number of errors in each category.

From Assignment 1 to 4, there was over 30% reduction in errors in all categories, with the smallest change in category I (Comma Errors) at 32.76% and the largest change in category G (Non-capitalization) at 70.59%.

It is instructive to compare our results with the findings in Lunsford and Lunsford (2008), hereafter LL2008, wherein the authors identify the 20 most common errors in a nation-wide sample of 877 student papers.[3] Our writing assignments are similar to LL2008 in length. LL2008 estimated an average length of 1,038 words, while the average in our sample is around 900 words. Based on Table 7 in LL2008 (p. 795), we mapped the 20 categories of errors considered in their study into the five categories in ours and calculated the percentage and average number of errors. The calculations are shown in columns (4) and (5) of Table 2. We also calculated the percentages in the first three assignments in our studies, and those are reported in columns (1) through (3) in Table 2. Lastly, column (6) in Table 2 is the same as the means for Assignment 4 in Table 1, which is comparable to the numbers in column (5) from LL2008.

Several observations are worth mentioning. First, our study is similar to LL2008 in category E, Sentence Fragments. About 4% of the errors are in this category, and on average, about 0.5 mistakes were made in each assignment. The average of category E in A4, 0.43, is not statistically different from the 0.61 calculated from LL2008 in column (5) at 5% significance level. Based on the standard deviation reported in Table 1 and a sample size of 47, which is the number of students who turned in Assignment 4, we can test the null hypothesis of the equality of the two values 0.43 and 0.61. The p-value for the alternative

[2] "All Errors Combined" in Table 1 refers to the total number of errors students made in each submission. In the calculation of the means (i.e., 15.58, 12.13, 9.81) the average total errors per student is equal to the summand of the averages of each category because the total number of errors an average student makes is mathematically equivalent to the summand of errors this average student makes in each category. This is true based on the distributive law of multiplication. The distributive law does not hold for standard deviation and maximum because they are not linear combinations of different categories in their computation.

[3] Appendix B shows the full mapping of the "Credibility Killers" categories to the top 20 LL2008 categories.

Table 2
Comparison with Lunsford and Lunsford (2008)

	(1) A1	(2) A3	(3) A4	(4) Lunsford & Lunsford (2008) %	(5) Lunsford & Lunsford (2008) Average	(6) A4 Average
E	4.85%	4.03%	4.34%	4.29%	.61	.43
F	4.99%	4.58%	4.99%	10.55%	1.5	.49
G	3.28%	2.01%	1.52%	9.30%	1.33	.15
H	19.69%	23.44%	19.09%	36.14%	5.17	1.87
I	67.19%	65.75%	71.80%	39.71%	5.69	7.04
Total					14.3	9.98

hypothesis of the two-sided test is .204, which means that the null hypothesis of equality is not rejected at the traditional 5% level of significance.

Second, students in our sample made significantly fewer errors in categories G (Non-capitalization) and H (Misspelled Words) than those in LL2008. We postulate that this has to do with the content of the writing. In our assignment, most capitalization would be company names, and since students' submissions were based on sample cases, they are unlikely to miss too many of these capitalizations. As for misspelled words, improvements in spell check functions in software such as Microsoft Word may be the reason behind improvement from LL2008, which was done in 2006, to our study.

Third, while we were concerned that our students made significantly more errors in category I, Comma Errors, a comparison between columns (5) and (6) reveals that the average numbers per assignment (or per about 1,000 words) are not significantly different from those in LL2008. During our assessment meetings, a question arose as to how Run-on Sentences and Comma Errors are being distinguished during grading. It seemed like it was unclear as to how our grader has distinguished between the two. Interestingly, since our students performed similarly to LL2008 in category E (Sentence Fragments), there is good reason to believe that our students may also perform similarly in category F (Run-on Sentences). The gap in category F between the two studies is about 1 error per assignment. If that is the error margin between categories E and I, then the number of comma errors in our assignments should be around 6 (1 fewer from 7.04) which is very similar to 5.69 as reported in LL2008.

When assessing writing, it may be misleading to think in terms of "how many" errors or types of errors are made. Instead, an effective writing sample should have no or only a very small number of errors.

When assessing writing, it may be misleading to think in terms of "how many" errors or types of errors are made. Instead, an effective writing sample should have no or only a very small number of errors. Table 3 identifies the percentage of students with one or fewer errors in a given category in the students' submissions for Assignments 1, 3, and 4. The four panels of Table 3 correspond to the following cases: (1) Full sample; (2) Full sample but treated a single error as no error; (3) Sub-sample with the 30 students who submitted all writing assignments; (4) Sub-sample and treated a single error as no error.

The improvement in category F (Run-on Sentences) depends on which panel of Table 3 we consider. The percentage of students without run-on sentence errors improves 9.36 percentage points for the entire set when a single error is marked as no error (Panel 2) and 26.67 percentage points when analyzing the 30 students who completed all four assignments (Panel 3).

For category G (Non-capitalization), the percentage of students without capitalization errors improves 11.3 percentage points for the entire set when a single error is marked as no error (Panel 2) and 20.47 percentage points in the full sample. Moreover, among the students who turned in all four writing assignments, by the last assignment, none of the students had made more than one mistake in category G (Non-capitalization).

Individual Analysis (n=30)

While aggregate results may have shown improvement throughout a semester, it may be more informative to look at individual data for the 30 students who completed

Table 3
Percentage of Students with One or Zero Errors, by Category and Assignment

	A1	A3	A4
Full sample with 0 error			
E (Sentence Fragments)	71.11%	80.00%	76.60%
F (Run-On Sentences)	62.22%	64.44%	78.72%
G (Capitalization)	68.89%	77.78%	89.36%
H (Misspelled Words)	31.11%	17.78%	31.91%
I (Comma Errors)	0	4.44%	2.13%
Full sample with 1 or 0 error			
E	82.22%	86.67%	91.49%
F	80.00%	86.67%	89.36%
G	84.44%	97.78%	95.74%
H	35.56%	31.11%	51.06%
I	0	6.67%	4.26%
30 student sample with 0 error			
E	70.00%	80.00%	73.33%
F	53.33%	63.33%	80.00%
G	73.33%	80.00%	93.33%
H	23.33%	10.00%	30.00%
I	0	3.33%	3.33%
30 student sample with 1 or 0 error			
E	80.00%	86.67%	90.00%
F	73.33%	83.33%	86.67%
G	86.67%	96.67%	100.00%
H	26.67%	20.00%	40.00%
I	0	6.67%	3.33%

all four assignments. In Figure 1, we plot the total number of mistakes in Assignment 1 (X-axis) and Assignment 4 (Y-axis) and examine their correlation. A fitted line (dash) that is less than 45-degree sloped shows that overall the total number of mistakes has declined. The fitted line plots the predicted number of Assignment 4 total errors resulted from a linear regression of Assignment 4 total errors (dependent variable) on Assignment 1 total errors (independent variable). We also show the 45-degree line (solid) in Figure 1. A dot on the 45-degree line indicates that a student has made the same number of mistakes in the two assignments, while a dot above/below indicates more/fewer mistakes. Only six students made more mistakes in the last assignment compared to the first.

Figure 1
Comparing Assignments 1 and 4 (n=30)

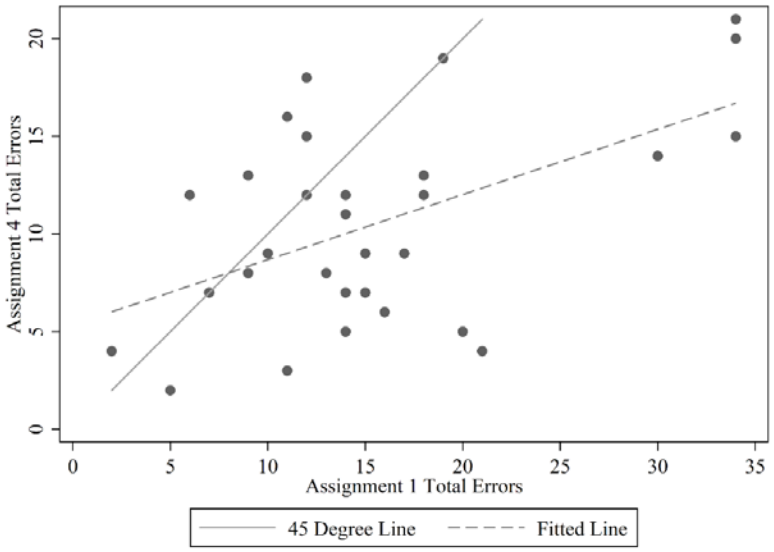
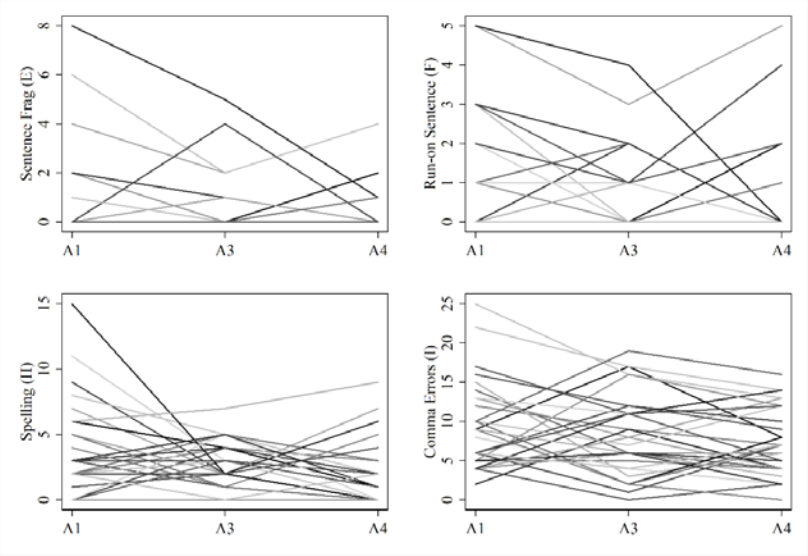
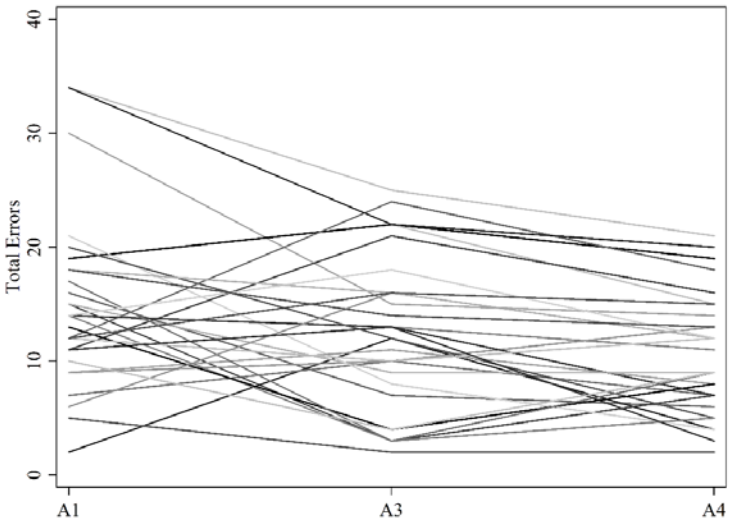


Figure 2
Movements in Errors in Categories E, F, H, and I (n=30)



Only Assignments 1, 3, and 4 are shown. Capitalization (G) is skipped.

Figure 3
Movements in Total Number of Errors (n=30)



In Figure 2, we plot the movements in errors in categories E, F, H, and I (Sentence Fragments, Run-on Sentences, Misspelled Words, Comma Errors) for the 30 students who completed all four assignments. Category G (Non-capitalization) is skipped in Figure 2 because its number tended to be small and invariable. As mentioned before, Assignment 2 is skipped due to peculiar behaviors.

Figure 2 suggests that students could have taken the previous WI feedback as a signal rather than a tool of learning and improvement. Many students' error counts exhibit a *V* or *inverted-V* shape. In other words, students who made many mistakes in the first assignment tended to make fewer mistakes in the third assignment but rebounded in the fourth assignment—indicated by a V-shaped line. In contrast, students who made few mistakes in the first assignment tended to make more mistakes in the third assignment but improved in the fourth assignment. A similar phenomenon can be seen also in the total number of errors as shown in Figure 3.

Table 4 summarizes the number of students who exhibited V or inverted-V movements in categories E, F, H, I, as well as in all errors combined. Note that the All Errors row is not an aggregation of the four categories.

Table 4
Summary of Inverted- and V-shape Patterns

	V Shape	Inverted-V Shape	Total
E (Sentence Fragments)	5	2	7
F (Run-On Sentences)	6	5	11
H (Misspelled Word)	6	13	19
I (Comma Errors)	9	7	16
All Errors Combined	5	4	9

Table 4 shows that the frequency of V shape versus inverted-V shape responses is similar for category F and I, as well as for total errors. However, there are many more V-shaped patterns in category E and many fewer V-shaped patterns in category H.

The assessment of the WI's grading results shows that, on average, a group of students can decrease their frequency of errors over a semester (as shown in Table 1).

While it is encouraging that students generally reduced their errors across the assignment sequence, several questions are raised by students' V and inverted-V shaped trend patterns. There are many potential explanations for such trends, including but not limited to cognitive overload (Bean, 2011), individual proclivities (O'Neill, 2018), or exacerbation of writing anxiety (Ekholm et al., 2015). The following section further discusses potential implications and connections to existing research on students' writing skills and skill development.

Discussion

The WI encourages faculty to incorporate writing assignments into their courses by providing some assessment support to the faculty regarding students' grammar and punctuation usage. The results provide insight into the potential influence of the WI on the participating students' performance as a group, providing implications about the overall effectiveness of the program on reducing the occurrence of errors in students' writing. The results also provide some insight into the grammar errors that the students make, tend to avoid, and have the most opportunity to improve.

Broad Trends in Error-Making

The assessment of the WI's grading results shows that, on average, a group of students can decrease their frequency of errors over a semester (as shown in Table 1). Also, generally, the proportion of students including each error type decreases between Assignments 1 and 4, showing that most students are reducing their common grammar and punctuation errors over time. The overall decrease in error frequency between the first and last assignments suggests that the WI may support the improvement of students' grammar and punctuation usage. Although the feedback is limited, the feedback from the WI grader does provide students with some grammar instruction that is contextualized within their writing, following research-based recommendations (e.g. Lancaster & Olinger, 2014; Myhill et al. 2013). However, research showing the value of teaching grammar in context typically refers to instruction that involves more student-instructor discussion and student revision of their work. Studies testing the influence of corrective feedback that is accompanied by little to no explanatory feedback showed less long-term effectiveness in improving students' grammar usage (Bitchener & Knoch, 2010; Yu et al., 2020). In this study, the WI grader did not have direct contact with the students to discuss their feedback, an area of attention for future discussions.

The trends between the full sample of 54 students and the sub-sample of 30 students who completed all four assignments are similar in that both sample sets showed a general reduction in errors between Assignments 1 and 4. However, an examination of the sub-sample offers more nuanced implications about the influence of the WI feedback. Of the 30 students who submitted all four assignments, 21 decreased their total number of errors between the first and last assignments (70%). When tracking the frequency of errors across assignments, some of the sub-sample students increased their total number of errors between either Assignments 1 and 3 or Assignments 3 and 4. These spikes, visualized previously by the V and inverted-V lines in Figures 2 and 3, raise questions about the influence of the WI feedback.

One assumption of the WI is that students will see the frequency and type of errors they include in their writing, learn the correct way to avoid such errors, and then reduce or eliminate the error(s) in the future. It is possible that students with V-shaped trend lines took a signal from the WI feedback and reduced their errors in the third assignment, but then, when completing the fourth and final assignment, faced some other challenge. Students may have experienced cognitive overload due to the challenge to both avoid grammatical errors and master Assignment 4's required content knowledge. Schwalm's landmark study revealed that "grammatical competence begins to drop off as the tasks become more complex" (cited in Bean, 2011, p. 77). Additionally, extensive or unclear corrective feedback can also trigger students' writing anxiety, which can increase errors that students might otherwise be able to avoid (Bean, 2011; Ekholm et al., 2015; Mascle, 2013; Zumbrunn et al., 2016). Ultimately, without qualitative feedback from the students, it is unclear how the students used the WI feedback in this situation, and further investigation would be useful.

The results show that the four Status Marking Errors were nearly absent from the entire sample: all students avoided using nonstandard verb forms and double negatives across all four assignments.

Rule-Specific Error Trends

The results show that the four Status Marking Errors were nearly absent from the entire sample: all students avoided using nonstandard verb forms and double negatives across all four assignments. There was only one "Subject-Verb Agreement" error in Assignment 2 and one "Object Pronoun as Subject Usage" error in Assignment 3. While research shows that these types of grammar errors have a negative influence on a reader's impression of the writer (Boettger & Emory Moore, 2018; Gray & Heuser, 2003; Gubala et al., 2020), these students seem to know to avoid these errors, at least when writing. The absence of these errors is mirrored in studies testing the 20 most frequent errors in college student writing. While Connors and Lunsford (1988) found "wrong verb form" ranked 13th and subject-verb disagreement ranked 14th, none of these four Status Marking Errors appeared in the top 20 most common errors in Lunsford and Lunsford's (2008) study.

Most students also showed an improved ability to avoid three other grammar errors from Assignment 1 to Assignment 4: sentence fragments, run-on sentences, and capitalization errors. The percentage of student papers that included one or fewer of these errors increased between Assignments 1 and 4, where:

- Avoiding sentence fragments increased 9.27 percentage points from 82.22% to 91.49%,
- Avoiding run-on sentences increased 9.36 percentage points from 80.00% to 89.36%
- Appropriate capitalization increased 11.30 percentage points from 84.44% to 95.74%

These improvement trends show that while 80% or more of students were successfully avoiding these errors at the beginning of the semester, students were still able to improve their ability to avoid these errors.

Based on these trends, faculty might expect most students to understand the rules regarding these grammar constructions, suggesting that additional support and instruction on these aspects are not necessary. However, we urge caution, as these results show only that these students improved their avoidance of the errors, rather than their understanding of the rule. Studies of professionals' perceptions of these errors show that sentence fragments and run-on sentences are among the most bothersome and serious errors (Boettger & Emory Moore, 2018; Gray & Heuser, 2003; Gubala et al., 2020; Hairston, 1981). Moreover, Lunsford and Lunsford (2008) found that sentence fragments were ranked as the 20th most common error and that the 15th and 16th most common errors were both versions of run-on sentences (fused sentences and comma splices, respectively). Thus, even while students in this study generally avoided these errors, this research on perceptions of error and error frequency shows the continued importance of discussing these rules with students.

Interestingly, students showed the least improvement in avoiding misspellings and comma errors. Students demonstrated a stronger ability to avoid spelling-related errors than comma errors, reducing the number of misspelled words between Assignments 1 and 4. In

the full sample, the percentage of students who included one or fewer misspelled words increased by 15.5 percentage points from 35.56% to 51.06%. This trend is promising, yet only about half of the students were able to include one or fewer spelling errors in their assignments. Error-marking by the WI grader conflated a variety of spelling errors into this category, including general misspellings, "typos," homophone errors, and wrong word errors. Research on professionals' perceptions of errors typically separate spelling-related errors into different categories, but multiple spelling-related errors have been identified as bothersome or serious errors. "Wrong word" errors are among the most bothersome, and general misspelling errors typically appear near the middle of "most bothersome" lists (Boettger & Emory Moore, 2018; Gray & Heuser, 2003; Gubala et al., 2020).

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Despite the negative perceptions of spelling-related errors, Lunsford and Lunsford (2008) found that "wrong word" errors and spelling errors, including homonym errors, are the first and fifth most common errors that appear in their study of student writing. In Connors and Lunsford's (1988) study of common student errors, the only spelling-related error in the top twenty errors was "wrong word" errors, ranked as fourth most frequent, suggesting a potential increase in spelling-related errors. Our results and the corresponding research raise concerns about students' inclusion of spelling-related errors. Lunsford and Lunsford (2008) found that many of the "wrong word" errors in their study seemed to be due to auto-corrections or spell-checker suggestions offered by word processing programs. Nevertheless, in Gubala et al.'s (2020) study, even though misspellings received a mean "bothersome" score of 2.94/5.0 from professionals, the comments regarding misspellings indicated a strong negative evaluation of the writer's intelligence, care, and competence. Thus, the improvement shown by students in this study is promising, but students' spelling-related errors continue to be an area for improvement.

The most recurring errors and least change in error frequency occurred in the Comma Errors category (category I). Nearly every submission in all four assignments included comma errors. Only 4.26% of the full sample included one or fewer comma errors by Assignment 4. Still, this small percentage is an improvement since 0% of the submissions in Assignment 1 included one or fewer comma errors. These results may not be particularly surprising given that in Lunsford and Lunsford's (2008) study, four of the top twenty errors are comma usage errors.

As a whole, students showed notable improvement in avoiding spelling-related errors, even if only half of the final assignments included one or fewer of these errors. There were practically no Status Marking Errors in the full set of writing samples, and most students showed an ability to generally avoid using sentence fragments, run-on sentences, and inappropriate capitalization. Though comma usage seems to be an area of deficiency for these students, we discuss in the following section potential limitations of our study based on WI grading protocols.

Implications and Conclusion

Overall, the preliminary analysis of grading reports from the Writing Initiative showed some positive trends for upper-level business students. However, limitations and questions emerged during the analysis that suggest the need for additional research. As previously mentioned, the comma rules category of the rubric includes only two usage rules, though we know the grader identified additional comma errors in students' writing. Also, comma-splice errors may have been marked inconsistently in different categories, thereby skewing the results. The results might also have been influenced by variance in grammar instruction. The business communication standard is to use the Oxford or Serial Comma (the last comma in a series; e.g., I enrolled in Economics, Marketing, and Communication courses). Some students, however, may have been taught to not use this comma because in some industries, it is considered optional. Moreover, professional and academic evaluators have shown significant inconsistencies in their marking of grammar errors (e.g., Gray & Heuser, 2003; Lunsford & Lunsford, 2008). Therefore, this variance might cause difficulties for students learning "correct" comma usage and in our assessment of the frequency and correction of those errors consistently across the disciplines.

Additionally, we acknowledge that grammar and punctuation are only two aspects of effective written communication. Grading for grammar and punctuation alone could send the signal—to students and other faculty—that the overall argument, organization, cohesiveness, and clarity of the writing sample are less important. The feedback procedure used in the Writing Initiative, wherein the WI grader indicates every error and type and rarely includes developmental explanations, could also be overwhelming for students. This situation is likely compounded by the lack of guidance for faculty about how to discuss writing skills and the WI with students, since the administration's messaging to faculty focuses on grading percentages and implementation logistics. Though our results indicate a potential need for increased classroom intervention towards the end of the semester, we do not know definitively what contributed to the resurgence in error-making. Further study on students' perceptions of the feedback would better illuminate how they are using the marks from the grader to improve their writing. These efforts would also allow for more precise pedagogical interventions and assessment measures.

In our college, we plan to continue addressing these questions through our assessment efforts. The college's communication assessment committee, on which the authors serve, assesses the majors' communication skills once every two years. This article presents the results of the college's first assessment of the WI in its current format. Based on these preliminary results, and other communication assessment results, we plan to implement three adjustments that may influence the WI. First, the curriculum in the college's business communications courses will be adjusted to reduce focus on the errors that students do not make as often and increase developmental attention on areas in which students show deficiencies, including grammar and other areas. Second, the college administration and business communication faculty are collaborating to develop a better rubric for the WI that will provide further clarity to both students and the graders. The updated rubric will parse categories further like those in Lunsford and Lunsford (2008). The college's communication assessment committee also plans to investigate how students use the WI grader feedback, which will provide more robust insight into the initiative's effect. Last, a plan is being developed to track and assess students' progress in writing through their academic careers. This plan will involve collecting data for multiple years in both lower- and upper-level classes that have a writing component. Through such efforts from the college administration, assessment committees, and faculty, our college aims to refine students' communication skills and align programmatic efforts with best practices.

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Based on these preliminary findings, we encourage organizers of support programs like this one to consider conducting preliminary research to customize grading criteria focused on the most common writing concerns for their student population, which might account for more than just grammar and mechanics. For example, the inclusion of the Status Marking Errors from the Credibility Killers rubric might have been unnecessary for our students, based on the 174 assignments included in this sample. The Writing Initiative grader marked only 2 errors in the Status Marking Errors category (nonstandard verb forms; lack of subject-verb agreement; use of double negatives; and object pronoun as subject) across all submissions. While these errors are important ones to avoid, the rarity with which these errors appear in student writing suggests that students', graders', and faculty members' time would be better spent on the more frequent error types. Removal of these infrequent errors may provide an opportunity to include other more frequent types of errors, potentially leading to clearer and more professional writing from our students. Moreover, Boettger and Emory Moore's 2018 study of professionals' evaluation of errors found that half of the errors that participating professionals indicated were most bothersome related to design rather than word usage. We suggest a more focused approach to feedback that is based on timely research and institutional evidence of students' most frequent errors, plus support through classroom instruction that addresses common errors identified by the grader. Nevertheless, using a support program like the Writing Initiative may incentivize students to take more care with the "correctness" of their writing, potentially leading to increased competency in written communication.

Finally, when considering a similar writing support initiative, organizers should concretize the purpose of the program. Our Writing Initiative's stated purpose is to develop student writing but, in fact, it seems to function in a way that is focused on faculty and encouraging them to integrate writing into their discipline-based courses. If the program was to be truly student-focused, we would consider modifications in both the application and assessment of the grading feedback, to ensure alignment between the purpose of a writing support program and the practices integrated to achieve that purpose.

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Appendix A
Writing Initiative Grading Rubric

Credibility Killers: Ten Writing Errors Your Boss Hates to See

Credibility Killers	Criteria	Examples
Status Marking Errors	A. Nonstandard verb forms	*Had went* instead of *had gone*, *brung* instead of *brought*
	B. Lack of verb-subject agreement	*We was* instead of *we were*, *he don't* instead of *he doesn't*
	C. Double negatives	*He didn't have no money left after shopping.*
	D. Object pronoun as subject	*Him and Richard were the last ones hired.*
Serious Errors	E. Sentence fragments	*The company is prepared to raise prices. In spite of warnings.*
	F. Run-on sentences	*He concentrated on his job he never took vacations.*
	G. Non-capitalization of proper nouns	*I was last employed by texas instruments company.*
	H. Misspelled words	*When mangers make decisions, their often coping with deadlines.*
	I. Comma errors	
	• Clauses/phrases	*An employee no matter how good his record must perform well.*
	• Words/phrases in a series	*The museum bought a valuable old marble statue.*

Appendix B

Mapping of "Credibility Killers" Error Categories to Lunsford & Lunsford (2008) Error Categories

The following table shows which error categories from Lunsford and Lunsford's 2008 study matched with the error categories from the "Credibility Killers" list used by the WI grader. Mapping was partially informed by the grader's feedback on how various errors were labeled, for example, Misspelled Word (H) was used for use of the wrong word and spelling errors.

Top 20 Formal Errors (Lunsford & Lunsford, 2008)	Corresponding "Credibility Killers" Category
Wrong Word	(H) Misspelled Word
Missing comma after an introductory element	(I) Comma Error
Incomplete or missing documentation	
Vague pronoun reference	
Spelling Errors (including homonyms)	(H) Misspelled Word
Mechanical error with a quotation	
Unnecessary comma	(I) Comma Error
Unnecessary or missing capitalization	(G) Non-capitalization of proper nouns
Missing word	
Faulty sentence structure	
Missing comma with a nonrestrictive clause	(I) Comma Error
Unnecessary shift in verb tense	
Missing comma in a compound sentence	(I) Comma Error
Unnecessary or missing apostrophe (including it's/its)	
Fused (run-on) sentence	(F) Run-on Sentences
Comma splice	(F) Run-on Sentences
Lack of pronoun-antecedent agreement	
Poorly integrated quotation	
Unnecessary or missing hyphen	
Sentence Fragment	(E) Sentence Fragments