# The impact of web-assisted instruction on student writing outcomes in business communication

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**ABSTRACT**

This study investigates the impact of McGraw-Hill's *Connect™ LearnSmartAchieve* (*LSA*) on student writing outcomes at a regional AACSB-accredited business school. The authors analyzed a total of 172 student writing samples before and after the introduction of selected *LSA* modules in six junior-level business communication courses from 2015 to 2016. This study targets grammatical, mechanical, and sentence-level errors that employers and educators have identified as potentially damaging to a student's professional image. In 2015, a control group (pre-*LSA*) of 85 online and face-to-face students was given standard teacher-led grammar/mechanics instruction in these problematic areas in multiple contexts throughout the semester. In 2016, instructors introduced 87 online and face-to-face students (post-*LSA*) to the selected *LSA* modules to be completed within a six-week period early in the semester at the students' own pace and outside the classroom. When comparing the average number of errors in the pre- and post-*LSA* groups, the authors noted statistically significant differences; overall, the average number of most writing errors was lower in the post-*LSA* group. These findings indicate that web-assisted instruction, such as McGraw-Hill's *Connect™ LearnSmartAchieve*, can provide students and instructors with a valuable resource for improving writing outcomes in business communication.

Keywords: Web-assisted instruction, business communication, writing instruction, assessment

**INTRODUCTION**

Business schools recognize the importance of having graduates who have content knowledge in their disciplines *and* the ability to communicate that knowledge effectively. Yet for many business students, grammar and mechanics, along with sentence-level errors, pose a major challenge and obstacle to effective writing. Moreover, strategic writing objectives in the business communication course leave little opportunity for review or additional instruction by faculty of these basic writing skills.

Web-assisted instruction can offer additional resources for students to address these basic skills without competing for valuable in-class instructional time with the professor. Ideally, such web-assisted instruction would contain algorithms that identify specific strengths and weaknesses that target individual student needs. These online study tools and tutorials provide students an opportunity to work on exercises that reinforce content or provide additional course material of interest. Certainly, textbook publishers like Pearson (MyCommunicationLab) and McGraw-Hill (Connect) recognize the value of these web-assisted course ancillaries in marketing their products in virtual and other learning environments.

Documenting the impact of such web-assisted instruction on student learning outcomes in business communication is important for both teaching and learning. The Eligibility Procedures and Standards for Business Accreditation published by the Association to Advance Collegiate Schools of Business (AACSB) shifts the focus from what teachers are teaching to what students are learning (Martell, 2007); moreover, "…if students have not learned certain information or a particular knowledge or skill, they must be taught those things" (p. 192). Web-assisted instruction can become a means of providing a custom learning experience for students to address these learning gaps. However, in order to satisfy AACSB's Assurance of Learning (AoL) and effectively "close the loop," direct measures must be taken to determine the extent of students' developing skills and knowledge. This study examines the impact of McGraw-Hill's *Connect™ LearnSmartAchieve* (*LSA*), specifically in reducing the number of grammar, mechanics, and sentence-level errors, on student writing outcomes at a regional AACSB-accredited college of business.

**LITERATURE REVIEW**

The term, "web-assisted instruction" describes a blending of online and traditional instruction that "offers a richer learning environment than either offered alone" (McEwan, 2001, p. 103). Interest in web-assisted instruction, now in various multi-modal forms, has become a popular area of inquiry as educational trends have shifted dramatically over the last quarter of a century from a traditional teacher-centric approach to learning to a more contemporary student-centric approach. (See Guy and Lownes-Jackson (2013) for an extensive review of the literature.)

In the early stages of inquiry, the topic of web-assisted instruction began as scholarly reflection about the pros and cons of online and hybrid instruction to student learning (Dyrud, 2000; Wardrope, 2001; Sauer and Walker, 2004) and whether students (individual, as opposed to

groups) had sufficient motivation to engage or complete such courses (LaRose and Whitten, 2000; Worley, 2000; Mabrito, Dyrud & Worley, 2001).

As the popularity of online education increased, other researchers began to investigate the rapidly developing technologies, tools, and tutorials themselves (Dina & Ciornei, 2015.; Clark, Human, Amshoff & Sigg, 2001; Austin, Biss, & Wright, 2010), along with instructor or student satisfaction in using those tools (Sigmar & Cooper, 2011).

In addition, many studies touted increased student performance in various academic courses that incorporated web-based tutorials and other ancillaries either as a supplement to, or even as a replacement for, traditional face-to-face lectures (Beerman, 1996; Schutte, 1996; Koch and Gobell, 1999; Cheng and Swenson, 2011; Sargent, Borthick, and Lederbert, 2011). Other studies, however, questioned the benefits derived from web-assisted instruction (Elicker, O'Malley, & Williams, 2008; Peroz, Beuche, & Peroz, 2009; Farley, Jain, and Thomson, 2011).

Significantly, while most of these studies measure this increase in performance by testing, few studies attempt to determine the impact that these web-based tutorials have on student learning outcomes by application; and only a scant number of publications measure the impact of these tools on business communication. Of these, Guy and Lownes-Jackson's (2013) four-year study compared two units of study on grammar and mechanics on 375 business students, one unit delivered by lecture and the other delivered using web-based tutorials. Their data suggest that web-based instruction is as effective as the traditional lecture method.

Our study investigates the impact of McGraw-Hill's *Connect™ LearnSmartAchieve* (*LSA*) on student writing outcomes at a regional AACSB-accredited business school. The authors analyzed a total of 172 student writing samples before and after the introduction of selected *LSA* modules in six junior-level business communication courses from 2015 to 2016. This research, however, targets grammatical, mechanical, and sentence-level errors that employers and educators have identified as potentially damaging to a student's professional image.

## METHODOLOGY

The impetus for this investigation began in response to a COBA-wide writing initiative. This initiative encouraged faculty in all business disciplines to include writing assignments in their courses. If individual faculty members desired, the College provided "graders" who reviewed and marked the writing assignments. Previous research (Hairston, 1981; Conners & Lunsford, 1988; Beason, 2001; Gray & Heuser, 2003; Lunsford & Lunsford, 2008) and subsequent research by business communication faculty (Sigmar & Austin, 2013 & 2015) provided the basis for a rubric that incorporated grammatical, mechanical, and sentence-level errors that were identified as potentially damaging to a student's professional credibility. These concepts also pose a challenge for many business students and include:

Status-Marking Errors (the most serious errors that may indicate a person's social or economic status):

- Nonstandard verb forms in past or past participle
- Lack of subject-verb agreement
- Double negatives
- Objective pronoun as subject

Very Serious Errors:
- Sentence fragments
- Run-on sentences
- Non-capitalization of proper nouns
- Non-status-marking subject-verb agreement errors
- Misspelling
- A comma between the verb and its complement
- Non-parallelism
- Faulty adverb forms

Serious Errors:
- Verb form errors
- Dangling modifiers
- "I" as object pronoun
- Lack of commas to set off interrupters
- Lack of commas in a series
- Tense switching
- Use of a plural modifier with a singular noun (Hairston, 1981).

Table 1 (Appendix) shows the rubric, designed by business communication faculty and named "Credibility Killers," used for the college-wide writing initiative.

As instructors know, effective writing involves much more than avoiding grammar and mechanics errors; however, because COBA (and its ongoing communications assessment) required clearly identifiable measures, we opted in this first phase of the writing initiative to concentrate on basic writing skills that were a major obstacle for our regional and first-generation students in writing coherent messages in business communication.

**About McGraw-Hill *Connect™ LearnSmartAchieve***

Another important component in this study was identifying web-assisted instruction in grammar and mechanics that would specifically help address these writing deficiencies. McGraw-Hill's *Connect™ LearnSmartAchieve* is an interactive study tool that adaptively assesses students' skill and knowledge levels. The tool adjusts the learning content based on student responses to questions as well as on the degree of confidence the student expresses regarding his or her answer. For subscribers, *LSA* provides students the option of working at their own pace to improve their knowledge of topics with learning resources on: the writing process; critical reading; the research process; reasoning and argument; grammar and common sentence problems; punctuation and mechanics; style and word choice; and a section for multi-lingual writers.

Research Question: *Does the use of web-assisted instruction have a positive impact on student writing outcomes?*

During the fall semester of 2015, the authors began using the McGraw-Hill *Connect™ LSA* in lieu of in-class instruction in grammar and mechanics. The LSA modules were used in conjunction with the required course textbook, *Business Communication: Developing Leaders*

*for a Networked World, 2ⁿᵈ Edition* by Peter Cardon.  Students were given the option of purchasing the combined ebook and McGraw-Hill *Connect™* for a total price of $85, and adding a loose-leaf copy of the textbook for an additional $15.

For purposes of this study, students were assigned *LSA* learning resources that addressed areas in which they were the most challenged:  grammar and common sentence problems, and punctuation and mechanics. The following *LSA* modules address the issues in the Credibility Killers rubric:

- Fused (Run-on) Sentences and Comma Splices
- Phrases, Clauses, and Fragments
- End Punctuation
- Verbs and Verbals
- Semi-Colons
- Commas
- Wordiness
- Parallelism
- Apostrophes
- Capitalization

Each *LSA* module consists of three phases. In the first, "Tune In," the system determines students' knowledge of the material and identifies which specific lessons would be most beneficial to them. In this phase, students answer a series of questions and also indicate their degree of confidence in their answers. Once this phase is complete, students move on to the "Focus" phase, which provides reading material and videos on the topics in the module. Finally, students enter the "Practice" phase, in which they are given a new set of questions and the opportunity to indicate their degree of confidence in their answers. Students with strong skills in an area covered by a module tend to complete that module more quickly, while students with weaker skills will be given more instruction and practice.

Each *LSA* module was assigned 5 to 10 course points, for a total possible 100 points. The total of all of the modules comprised more than 10% of the final course grade. The students' scores for individual modules were based on how well they understood the material as well as how much work they accomplished in those modules. Once they reached a certain percentage of progress in a module, they earned full points; therefore, they were not necessarily penalized for "wrong" answers. While the significant number of course points assigned to the LSA modules provided motivation for the students to complete the activities, the scoring system allowed students to earn a high grade even if they struggled with the material initially.

By assigning these self-paced learning outside of class, the authors hoped that students would be better able to identify their technical and grammatical weaknesses and improve the overall quality of their writing. In addition, students would gain more one-on-one interaction with instructors on higher-level business writing strategies.

In this study, the authors reviewed a persuasive message submitted by 85 students the previous academic year, before the McGraw-Hill *Connect™ LearnSmartAchieve* activities were implemented in the course. The number and severity of the errors in these samples were compared to persuasive messages submitted by an additional 87 students after the McGraw-Hill *Connect™ LearnSmartAchieve* assignments were implemented the following fall semester.

Both the pre-*LSA* and post-*LSA* assignments had the same parameters: students were asked to create a message between 250 and 400 words and to write a self-analysis of their message between 75 and 150 words. The pre-*LSA* messages averaged 461.7 words per document, while the post- *LSA* messages averaged 467.5 words per document. Both the messages and the self-analyses were reviewed for grammatical and mechanical errors.

The writing samples were evaluated using the "Credibility Killers" rubric by an independent grader (separate from the instructors) to insure consistency. The number and averages of errors in each category in each group of assignments were then compared.

**RESULTS**

The authors noted an insignificant number (i.e., fewer than five in all 80+ documents in each group) of errors in the categories of non-standard verb forms, lack of subject-verb agreement, double negatives, and object pronouns as a subject. However, a significant number of errors were noted in these categories in both groups:

- Sentence fragments
- Run-on sentences
- Non-capitalization of proper nouns
- Misspelled words
- Comma errors

When comparing the average number of errors in the pre-*LSA* and post-*LSA* groups, the authors noted significant differences. In virtually every category, the average number of errors was lower in the post-*LSA* group. Sentence-level errors (fragments and run-on sentences) were reduced by half, while the authors observed a noticeable reduction in spelling and comma errors. However, results showed a marked increase in the number of capitalization errors from the pre-*LSA* to the post-*LSA* assignments, perhaps attributable to the assignment itself in the post-*LSA* analysis, in which students necessarily discussed a number of product and company names in pitching an invention. The pre-*LSA* assignment did not require this extent of proper nouns usage.

For additional analysis of the results, an Independent Sample t-test was used. Table 2 (Appendix) shows the results. Based on the results of the table above, there was significant improvement on the students' writing outcomes after using McGraw-Hill *Connect*™ LearnSmartAchieve web-assisted instruction. The difference was very marginal in the case of Sentence Fragments errors (p-value <0.10). In the case of Run-on Sentences, Non-capitalization of Proper Nouns, Misspelled Words and Comma Errors, the improvement of students not making those errors was significant (p-value <0.01).

Based on these preliminary results, it appears that the McGraw-Hill *Connect*™ *LearnSmartAchieve* web-assisted instruction had a positive impact on student writing outcomes.

**Limitations and Opportunities for Further Study**

While this study reached its goals, opportunities for further study exist. For example, the substantial weight given to the grammar and mechanics activities in the post-*LSA* courses could have increased student awareness of the importance of these skills—and therefore increased

student attention to, and diligence in, learning and applying the lessons in the *LSA* activities, thereby creating a Hawthorne Effect. The authors plan to survey students in upcoming courses to identify the degree to which course emphasis on the *LSA* activities may impact student motivation and success in learning the material.

A fuller picture may also be obtained by examining the detailed demographic profile of the students in the business communication courses as well as by compiling a thorough accounting of the students' previous exposure to grammar and mechanics instruction. The University itself has a diverse and growing student population. As of 2015, 53.2% of undergraduate students were white, 19% were African-American, and 20.2% were Hispanic. In the same year, 61% of the undergraduate student body were female and 39% were male (Texas Higher Education Coordinating Board, 2016). In the courses studied, all students are juniors or seniors; they are required to have had six hours of composition instruction in the Department of English before taking the business communication course, though the scope of grammar and mechanics instruction in those courses is unknown. The nature and scope of grammar and mechanics instruction the students may have received in elementary and secondary school is also unknown. The authors plan an additional study to determine the possible impact of these factors on the level of student success with the *LSA* activities.

**CONCLUSIONS**

While much work has been done on web-assisted instruction, few, if any, studies attempt to determine the impact these technologies have on student learning outcomes. For colleges of business, this is a crucial issue, because student learning outcomes form a central tenet in AACSB accreditation standards. The McGraw-Hill *Connect™ LearnSmartAchieve* activities can provide a useful tool for instructors and administrators looking to assess and document AoL protocols required for AACSB accreditation.

In addition, the McGraw-Hill ancillaries allow grammar and mechanics instruction to be incorporated into the course with little or no class instruction time devoted to these basic writing topics. This leaves more time for students to engage with higher-level principles and strategies of business communication during the course. Teacher-led, in-class instruction grammar and mechanics instruction is also not personalized, as the instructors have to address the needs of the class as a whole; for students with strong grammar and mechanics skills, this may be too much instruction, while it may not be enough for students who are weak in these areas. Incorporating McGraw-Hill *Connect™ LearnSmartAchieve* into a course insures that students receive the grammar and mechanics instruction and practice that they truly need.

Finally, the interactive and personalized nature of the *LSA* modules also gives students a great deal of control over the pace of their learning as well as the content; this sense of control can contribute to success in learning. As John Hattie says in *Visible Learning*, ". . . the greatest effects on student learning occur when the teachers become the learners of their own teaching and when students become their own teachers" (2012, p. 22).

[Note: The authors conducted this research independently of the publisher and received no compensation for this study.]

**REFERENCES**

Austin, T., Biss, J., & Wright, C. (2010). Student use of online study tools in business communication courses. *Journal of Strategic Innovation and Sustainability, 6*(4), 42-49.

Beason, L. (2001). Ethos and error: How business people react to errors. *College Composition and Communication, 53*(1), 33-64. doi:10.2307/359061

Beerman, K. (1996). Computer-based multimedia: New directions in teaching and learning. *Journal of Nutritional Education, 28*(1), 15-18.

Cardon, P.W. (2016). *Business Communication: Developing Leaders for a Networked World*. 2nd Ed. New York: McGraw-Hill Education.

Cheng, J. & Swanson, J. (2011). An examination of the effects of web-based tutorials on accounting student learning outcomes. *Review of Higher Education and Self-Learning. 4*(10), 14-28.

Connors, R.J., & Lunsford, A.A. (1988). Frequency of formal errors in current college writing, or Ma and Pa Kettle do research. *College Composition and Communication, 39*(4), 395-409.

Clark, T.D., Human, S.E., Amshoff, H., & Sigg, M. (2001). Getting up to speed on the information highway: Integrating web-based resources into business communication pedagogy. *Business Communication Quarterly*, *64*(1), 38-62.

Dina, T.A. & Ciornei, S.I. (2015) Developing good academic practice on learning business English with open web-based educational study: The results of a pilot study. *Procedia - Social and Behavioral Sciences, 203*, 310-315.

Dyrud, M. (2000). The third wave: A position paper. *Business Communication Quarterly*, *63*(3), 81-93.

Elicker, J., O'Malley, A., & Williams, C. (2008). Does an interactive WebCT site help students learn? *Teaching of Psychology*, *35*, 126-131.

Farley, A., Jain, A., & Thomson, D. (2011). Blended learning in finance: Comparing student perceptions of lectures, tutorials, and online learning environments across different year levels. *Economic Papers, 30*(1), 99-108.

Gray, L. S., & Heuser, P. (2003). Nonacademic professionals' perception of usage errors. *Journal of Basic Writing, 22*(1), 50-70.

Guy, R. & Lownes-Jackson, M. (2013). Web-based tutorials and traditional face-to-face lecture: A comparative analysis of student performance. *Issues in Informing Science and Informative Technology*, *10*, 241-258.

Hairston, M. (1981). Not all errors are created equal: Non-academic readers in the professions respond to lapses in usage. *College English, 43*(8), 794-806.

Hattie, J. (2012). *Visible Learning for Teachers: Maximizing Impact on Learning*. London & New York: Routledge.

Koch, C. & Gobell, J. (1999). A hypertext based tutorial with links on the web for teaching statistics and research methods. *Behavior Research Methods, Instruments, & Computers, 31*, 7-13.

LaRose, R. & Whitten, F. (2000). Rethinking instructional immediacy for web courses: A social cognitive exploration. *Communication Education*, *49*, 320-338.

Lunsford, A. A., & Lunsford, K. J. (2008). 'Mistakes are a fact of life': A national comparative study. *College Composition and Communication, 59*(4), 781-806.

Mabrito, M., Dyrud, M., & Worley R. (2001). Facilitating interactivity in an online business writing classroom. *Business Communication Quarterly*, *64*(3), 81-86.

Martell, K. (2007). Assessing student learning; Are business schools making the grade? *Journal of Education for Business*, *82*(4), 189-195.

McEwen, B.C. (2001). Web-assisted and online learning. *Business Communication Quarterly*, *64*(2), 98-013.

Peroz, I., Beuche, A., & Peroz, N. (2009). Randomized controlled trial comparing lecture versus self-studying by an online tool. *Medical Teacher, 31,* 508-512.

Sargent, C., Borthick, A., & Lederberg, A. (2011). Improving retention for principles of accounting students: Ultra-short online tutorials for motivating effort and improving performance. *Issues in Accounting Education, 26*(4), 657-679.

Sauer, D. & Walker, R. (2004). A comparison of traditional and technology-assisted instructional methods in the business communication classroom. *Business Communication Quarterly*, *67*(4), 430-443.

Schutte, J. (1996) *Virtual teaching in higher education: The new intellectual super-highways or just another traffic jam?* Retrieved from http://www.csun.edu?sociology/virexp.htm

Sigmar, L.S. & Austin, T. (2013, October). Impression management: The professional's guide to relevant grammar. Paper presented at the 78th annual international convention of the Association for Business Communication, New Orleans, LA.

Sigmar, L.S. & Austin, T. (2015, March). The professional's guide to relevant grammar: The sequel. Paper presented at the 42nd annual meeting of the Federation of Business Disciplines (Association for Business Communication-Southwestern U.S.), Houston, TX.

Sigmar, L.S. & Cooper, T. (2011). Incorporating web-assisted instruction into the business communication curriculum. *Academy of Educational Leadership Journal, 15*, Special Issue, 1-14.

Texas Higher Education Coordinating Board. (2016). *Sam Houston State University Accountability Report*. Sam Houston State University, Huntsville, TX.

Wardrope, W., Dyrud, M. & Worley, R. (2001). A communication-based response to distance learning in business communication. *Business Communication Quarterly*, *64*(2), 92-97.

Worley, R. (2000). The medium is not the message. *Business Communication Quarterly*, *63*(3), 93-103.

**APPENDIX**

Table 1. COBA Credibility Killers Rubric*

| 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 U.S. flag is red, white, and blue. |
| | ● Comma splice | He concentrated on his job, he never took vacations. |
| | ● Missing comma in conjoined sentences | He concentrated on his job and he never took vacations. |

*COBA Credibility Killers rubric by Lucia Sigmar, Traci Austin, and Kathryn O'Neill (based on research by Hairston, 1981, et al.)

Table 2: Comparison of Errors in Pre- and Post-*LSA* Persuasive Messages

| Error | Pre-& Post - LSA | Mean | Std. Deviation | Independent Sample t-test | p-value |
|---|---|---|---|---|---|
| Sentence Fragments | Pre-LSA N=87 | 0.16 | 0.479 | 1.938 | 0.055* |
| | Post-LSA N=85 | 0.05 | 0.263 | | |
| Run-on Sentences | Pre-LSA N=87 | 0.75 | 0.943 | 4.705 | 0.000** |
| | Post-LSA N=85 | 0.20 | 0.530 | | |
| Non-capitalization of Proper Nouns | Pre-LSA N=87 | 0.08 | 0.463 | -3.224 | 0.002** |
| | Post-LSA N=85 | 0.34 | 0.589 | | |
| Misspelled Words | Pre-LSA N=87 | 1.41 | 1.483 | 6.276 | 0.000** |
| | Post-LSA N=85 | 0.31 | 0.708 | | |
| Comma Errors | Pre-LSA N=87 | 3.34 | 2.415 | 6.300 | 0.000** |
| | Post-LSA N=85 | 1.47 | 1.350 | | |

\*   p-value <0.10
\*\* p-value <0.01