23 Mar 1994

E-mail and Writing

Karlynn D. Herman

E-mail and Writing

Karlynn D. Herman, English Dept.

ABSTRACT

This project was conducted to determine the effects of e-mail, used in class assignments, on student writing. Essays from two English 20 classes, one using e-mail and one not using e-mail, were examined at intervals over the course of one semester and graded holistically to determine improvement in student writing. These essays were also graded by computer to objectively measure writing improvement using the Grammatik program. Surveys were administered to the two classes at the beginning and end of the semester to gauge the students' confidence with and interest in writing. These same surveys were also administered to an upper-level, writing-intensive economics class at the beginning and end of the semester. Results showed that students' writing improved markedly over the course of the semester in the class using e-mail compared to the class not using e-mail. The students using e-mail were also more confident in their ability to write at the end of the semester than the students who did not use e-mail.

EXPERIMENT SETUP

This project was designed to compare the writing of students in two freshman English (English 20) classes over the course of one semester. In order to accomplish this, the two classes needed to be as similar as possible, thus eliminating all possible variables other than the presence or absence of e-mail in the curriculum.

The two sections finally chosen, section C and section Q, had only a few differences between them: section C was slightly larger than section Q (22 students compared to 18) and section C was a day class, while section Q was a night class. Therefore, section C met three times a week for one hour per meeting, while section Q met one time a week for three hours. Other than these differences, the classes were kept the same--they followed the same syllabus, received the same choice of essay topics for each essay, and were taught by the same professor.

Students in section C were required to obtain e-mail accounts and write e-mail responses to both in-class discussions and to each other. The class was registered on

a listserver so that their responses were delivered to all the other students in the class. These e-mail responses counted as a portion of their class grade, and ranged from simple inquiries about grammar or the effectiveness of a particular sentence or paragraph to debates over paper topics. For example, at one point in the semester the class debated back and forth about gays in the military in response to a student's decision to use that subject as the topic of one of his papers. Section Q, on the other hand, was not exposed to e-mail as a part of their class curriculum in any way.

To measure students' writing, then, three of their essays were collected over the course of the semester (Essays 2, 4, and 6). These three essays were chosen because they were evenly spaced apart--essay 2 was written about one month after the semester started, essay four about a month and a half after that (about halfway through the semester) and essay six about a month after that (a few weeks before finals). These essays were evaluated by computer using Grammatik for Word Perfect, and were also graded holistically by a group of student readers.

Surveys which measured the students' confidence in their ability to write were administered to the two English 20 classes. The same surveys were also given to a writing-intensive Economics course using e-mail within the curriculum, to see if the presence of e-mail affected students similarly in two different classes. These surveys were filled out by the students at the beginning and end of the semester to gauge the change in their feelings about their writing over the course of the semester.

RESULTS

Grammatik scores

Essays in both classes were first graded by computer, using Grammatik for Word Perfect, in an effort to remove the subjective human element from essay scoring. Readability of the essays was graded according to three different formulas, the Flesch Reading Ease score, Gunning's Fog Index, and the Flesch-Kincaid Grade Level. The first of these formulas, the Flesch Reading Ease score, was determined by the equation:

1.015 (average sentence length) + .846 (number of syllables per 100 words) = Total

206.835 - Total = Flesch Reading Ease score (1)

This score appears as a value on a scale of 1-100, with a lower number representing a more difficult reading level. Using this scale, scores can be interpreted in the following way:

90-100 = Very Easy (4th grade reading level)
80-90 = Easy (5th grade reading level)
70-80 = Fairly Easy (6th grade reading level)
60-70 = Standard (7th-8th grade reading level)
50-60 = Fairly difficult (Early high school)
30-50 = Difficult (Late high school to college)
0-30 = Very Difficult (College level and up).

The second readability score, Gunning's Fog Index, was determined according to the following equation:

average words per sentence + number of words three syllables or more = Total

Total x .4 = Gunning's Fog Index (2)

In this case, a higher score is equivalent to more difficult work.

The third measure of readability was the Flesch-Kincaid Grade Level. It was determined using this formula:

[.39 x average number of words per sentence + 11.8 x average number of syllables per word] - 15.59 = Flesch-Kincaid Grade Level. (3)

The ideal Flesch-Kincaid Grade Level score is one that falls between 6th and 10th grade.

Because all three of these formulas are based on ratios that measure sentence length and syllables per word, they evaluate only a small portion of the elements that constitute effective writing. All three formulas ignore such factors as audience, complexity of subject matter, syntax, and clarity. Their ideal is not a first year college level, but rather a junior high level. Consequently, the results of their evaluations were spotty and inconsistent, in some cases showing greater overall improvement in section C and, in other cases, showing more improvement in section Q. For this reason, their results proved of little use in the project's comparison.

Holistic scores

Holistic scoring was performed by a group of student volunteer readers, primarily English majors. Names were removed from the essays, and they were printed in identical fonts with the same spacing and formatting cues in each essay. Readers

were paired up and the group read sample essays comparable to the English 20 students' essays. In this way, they learned general criteria for grading and were "calibrated" to score in a similar manner. They then were given a group of twelve student essays--essays 2, 4, and 6 from four different students. This procedure ensured that the same group of readers evaluated all three student essays using the same criteria. Readers were asked to read through each essay only once and then to give it a score from 1 (low) to 6 (high). This score was based on content and clarity of writing and, to a very small degree, on grammar and mechanics. Each essay was read twice (once by each member of the pair), and if their scores differed by more than one number, the essay was given to a third reader for scoring.

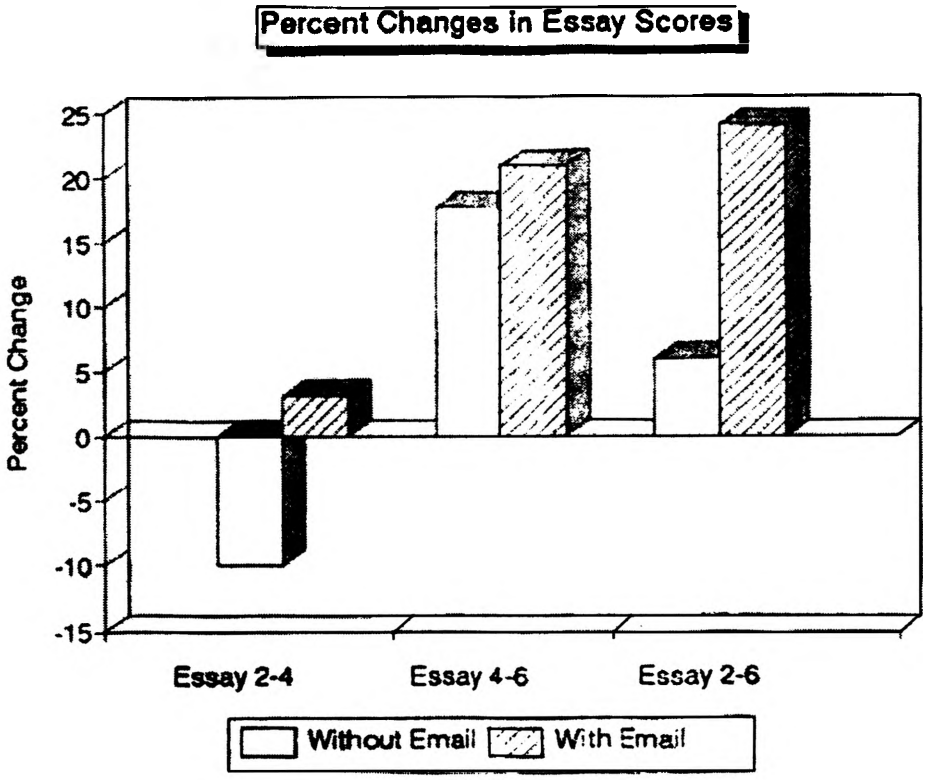


Figure 1. Percent Changes in Essay Scores

Holistic scoring of students' essays showed a considerable difference between the writing improvement of section C and section Q (see figure 1). For section C, the mean between the scores of essay 2 and 4 increased from 3.416 to 3.524, while in section Q the mean was reduced from 4.167 to 3.750. Between essays 4 and 6, section C's mean increased from 3.524 to 4.239, while section Q's mean score rose from 3.750 to 4.417. Table I displays the mean scores and standard deviations for essays 2, 4, and 6 in sections C and Q. From this data, improvement in section C's scores compared to those of section Q becomes more obvious.

TABLE I. MEANS AND STANDARD DEVIATIONS FOR ESSAY SCORES IN ENGLISH 20 SECTIONS C AND Q

	SECTION C		SECTION Q	
	Mean	Standard deviation	Mean	Standard deviation
Essay 2	3.4164	.81566	4.1667	1.36626
Essay 4	3.5236	.94245	3.7500	.61237
Essay 6	4.2386	1.04148	4.4167	.49160

A Chi square test (a statistical test used to show the relationship between a set of factors which could affect one another) was performed on the improvement in essay scores between the two classes. Results of this test showed the correlation between e-mail and writing to be significant, meaning that improvement in writing was directly linked to the presence of e-mail.

Survey Index

Surveys were administered to both classes at the beginning and end of the semester. Students were asked five questions regarding their enjoyment of and confidence with writing. Because the surveys had to be administered with teacher evaluations, they were left anonymous, and only an overall class evaluation can be made regarding their results.

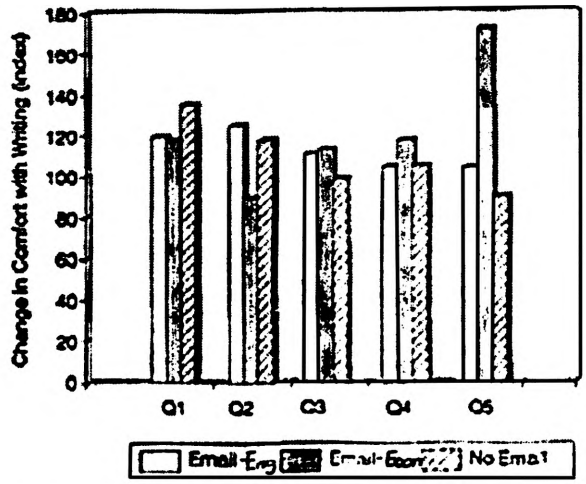
An index of "Comfort with Writing" ratings was prepared comparing the English 20 class using e-mail (section C), the Economics class using e-mail, and the English 20 class not using e-mail (section Q). This index was determined by dividing the mean response value for survey two by the mean response value for survey one, and then multiplying by 100. The results of this index are shown in Figure 2.

Interestingly enough, for **question 1, "How much do you enjoy writing?,"** the class not using e-mail improved more than the classes using e-mail. Perhaps section Q's increased improvement in writing enjoyment over section C was due to the fact that section C did more writing (e-mail assignments plus essays), and thus had more time to "get tired of writing" than did section Q.

For question 2, "How comfortable do you feel writing?," the score of English 20, section C improved over that of section Q. However, the economics class felt less comfortable writing at the end of the semester; probably resulting in part from the fact that the economics class, while writing intensive, did not center around writing instruction.

Question 3 was **"How confident do you feel in your ability to find good word ideas and perceptions?"** Both of the classes using e-mail showed a much greater improvement in this area than the class without e-mail; the economics class improved by a slight margin over the English class. The improvement of the e-mail classes indicates that work with e-mail allows students to feel more confident in their ability to analyze and explain concepts, perhaps because of the consistent feedback they receive from their peers.

Question 4, "How confident do you feel in your ability to generate lots of words fairly quickly and freely on a topic of interest to you?," showed almost no difference in improvement between English 20 sections C and Q. The economics class showed improvement over both classes. These results are explainable because the students associated the words "fairly quickly and freely" with the process of freewriting. All of section C's e-mail assignments were geared toward producing reflective responses, more in the essay style than the freewriting style. Students had to think about their writing and prepare it before sending it off. Since both sections did the same amount of freewriting in class, then, it would make sense that their confidence in this area would improve equally. The economics class, on the other hand, was not given assignments over e-mail which would be evaluated as a part of their class grade. Their primary use of e-mail was to pose questions about concepts or assignments to the professor or to classmates. Thus, their e-mail experience would be closer to freewriting, and would bring about their improvement in scores for this particular question.



Question 1: How much do you enjoy writing?
Question 2: How comfortable do you feel writing?
Question 3: How confident do you feel in your ability to find good word ideas and perceptions?
Question 4: How confident do you feel in your ability to generate lots of words fairly quickly and freely on a topic of interest to you?
Question 5: How confident do you feel in your ability to generate lots of words fairly quickly and freely on a topic not of interest to you (perhaps an assigned topic)?

Figure 2. Index of "Comfort With Writing" ratings

Question 5 was **"How confident do you feel in your ability to generate lots of words fairly quickly and freely on a topic not of interest to you (perhaps an assigned topic)?"** The response of the economics class to this question showed marked improvement over both of the English 20 classes--probably because their writing experience in class involved primarily assigned topics and very few personally chosen topics. Section C improved more than section Q, again by a fairly large margin. This is also probably a reflection of the fact that the e-mail responses were over assigned topics, and thus section C was exposed more to this kind of writing than section Q.

Survey Correlation Analysis

Two additional questions were added to the surveys for section C of the English 20 class to judge their confidence with e-mail at the beginning and end of the semester. These two questions were:

- How comfortable do you feel using e-mail to send personal messages to friends and professors?
- How comfortable do you feel using e-mail to send messages which the whole class will read?

The same questions were added to the survey administered to the economics class, only the first question was broken up into "How comfortable do you feel using e-mail to send personal messages to friends?" and "How comfortable do you feel using e-mail to send messages to professors?," since the class was not registered on a listserver, and thus their e-mail responses were not sent to both peers and professors simultaneously.

A correlation analysis was then run between all of the questions in the surveys, to see how well the responses correlated with one another. In this analysis, correlation values range between +1 and -1. A value of +1 signifies perfect correlation between the two responses (if the value of one goes up, the value of the other goes up by exactly the same amount). A value of -1 shows perfect opposition between the two responses (if the value of one goes up, the value of the other will go down by exactly the same amount). Table 2 shows correlation test values for the surveys in all three classes.

Most questions in the first survey given to section C showed almost perfect correlation, with values ranging between .82 and .94. The second survey showed similar results, with correlation values ranging between .80 and .97. In section Q, the questions were also in almost perfect correlation, with values ranging from .84 to .94 in the first survey, and from .70 to .94 in the second survey. These close positive correlations indicate that, as students become more confident in one area of their writing, they will become more confident in other areas of their writing as

well. It also indicates that (for section C) student confidence with writing improves as their confidence using e-mail improves.

In the economics class, the first survey again produced a high correlation between all the questions, with values ranging from .80 to .95. However, in the second survey, correlation values changed drastically, in several cases becoming negative values. This change, while apparent everywhere, was most dramatic in the questions dealing with confidence in generating words freely on topics of interest or topics not of interest to the student. An explanation for the inconsistent correlation results in the economics class may lie in the focus of the professor on her students' writing. She taught students to write as concisely as possible, staying strictly to their assigned topic, and keeping responses below one page in length. This focus, while valid, does not lend to "generating words freely"-- instead, students must consider carefully what they write through each step of the writing process. The difference in focus of the two professors was thus reflected quite dramatically through the students' survey responses.

TABLE II. RESULTS OF CORRELATION ANALYSIS

*Each number in these tables is a correlation value between the question number of its row and column. For example, a number (like .900) in column 1, row 2 is a value for the correlation between question one and question two.

Section C--Survey 1

	1	2	3	4	5	6
2	.918	*				
3	.882	.889	*			
4	.900	.851	.866	*		
5	.856	.888	.864	.827	*	
6	.928	.924	.899	.907	.945	*
7	.889	.904	.822	.908	.885	.901

Section C--Survey 2

	1	2	3	4	5	6
2	.922	*				
3	.810	.769	*			
4	.900	.831	.852	*		
5	.807	.802	.973	.848	*	
6	.811	.765	.941	.894	.940	*
7	.891	.882	.883	.956	.885	.923

Section Q--Survey 1

	1	2	3	4
2	.947	*		
3	.928	.889	*	
4	.870	.904	.852	*
5	.911	.910	.700	.859

Section Q--Survey 2

	1	2	3	4
2	.925	*		
3	.844	.942	*	
4	.924	.905	.852	*
5	.864	.911	.701	.859

Economics--Survey 1

	1	2	3	4	5	6	7
2	.810	*					
3	.908	.877	*				
4	.858	.872	.861	*			
5	.834	.800	.873	.818	*		
6	.888	.875	.900	.898	.879	*	
7	.869	.867	.881	.913	.878	.950	*
8	.903	.865	.872	.890	.872	.958	.955

Economics--Survey 2

	1	2	3	4	5	6	7
2	.475	*					
3	.055	.143	*				
4	.037	.074	.002	*			
5	.056	-.169	.020	.072	*		
6	.386	.139	.008	-.033	.070	*	
7	.405	.014	.069	-.114	.256	.410	*
8	.368	-.050	.062	.027	.306	.430	.715

ANALYSIS

This project demonstrated two important things about the use of e-mail within the classroom to enhance student writing. First, e-mail does have a significant effect on student writing. Second, the focus of the professor in the classroom also has a significant effect on how e-mail affects student writing.

The holistic scoring of student essays in two different composition classes, one using e-mail and one not using e-mail, showed that e-mail did cause student writing to

improve over the course of the semester. Probably a large part of this improvement results directly from increased written contact of students both with their professor and with their peers. Students communicating by e-mail received feedback on paper topics and ideas from the entire class, while students without e-mail were likely to get ideas and revisions only from a few select classmates or from their friends. E-mail gave students a forum outside of the classroom with which they could express their ideas and quickly get responses from 21 other classmates. This added communication also gave students exposure to new ideas and new writing styles as they read the responses of their peers to writing assignments over e-mail. In a class without e-mail, copying the responses of all the students in the class to each writing assignment throughout the semester would be time-consuming and result in an unreasonable paper load for everyone. But with e-mail, student responses are quickly and easily transmitted to everyone in the class. Thus, students receive more feedback from their peers and increased exposure to writing--both good and bad.

The differing correlation results between surveys in the English and economics classes using e-mail shows that the professor's focus on writing within the course also plays a significant role in student writing development. Students learn to feel more confident with different styles of writing depending on what they are exposed to in the classroom. The use of e-mail makes the effect of the professor on student writing and confidence even more pronounced.

In conclusion, then, it is important to note that electronic mail can be an incredible asset to students as they learn to write in the classroom. Hopefully, students who have learned to use e-mail within the classroom to augment the writing process will take these skills with them into their next writing classes, gaining even more from the availability of increased contact with other students and different ideas. Also, they may be more likely to get in touch with students and professors outside of their writing courses, benefiting from the use of e-mail not just in writing but across their entire curriculum. However, instructors play a large role in the way e-mail affects their students, and they should be aware of this when planning an e-mail based curriculum for their classrooms.

ACKNOWLEDGMENTS

I would like to thank my faculty advisor, Dr. Gene Doty, for his constant help and support. Special thanks also go to Dr. Linda Manning and Dr. James Wise; I could never have finished this project without them.