

## Online Writing as a Form of Electronic Communication in a Second Year Biology Course

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**Abstract** - This paper considers student use of an online discussion forum in a second year Biology course and how that participation may be an indicator of increased student success in the course. The authors discuss how participation in the online discussion forum is a form of public writing in which the students need to have an understanding of the topic about which they are writing. It is this practice of writing with a clear understanding that may increase students' success in the course and not simply the use of online communications.

### Introduction

One area where computers have made a significant impact is in the realm of computer-mediated communication or electronic messaging. According to Zack (1995), the term electronic messaging includes "several modes of computer-mediated communications, including electronic mail, electronic talk or chat, computer conferences or bulletin boards, and electronic document exchange." (p. 206) This definition is very broad in its scope and for the purpose of this study, electronic messaging will be limited to electronic mail, messages sent to an electronic listserver, and posts to a web-based discussion forum.

The course considered in this study was Biology 2040 – Modern Biology and Human Society I (Human Biology), a large enrolment second-year, non-major Biology courses which is regularly offered in on-campus lecture, off-campus correspondence and Web-based formats. During the period 1997-1999, student contributions to a Web-based discussion forum and e-mail messages sent to the instructor were collected. An analysis of these data was undertaken to determine whether or not a relationship existed between the use of electronic messaging and the final course grades of the students. A comparison of the performance of students in the different instructional formats of Biology 2040 is described in Collins (2000a).

### Student Achievement and Electronic Messaging Usage

Collins (1995) found that the electronic bulletin board had fostered "student-student interaction and student-professor interaction... of course student-professor interactions through computer conferencing will never be a total replacement for face to face interactions, but computer conferencing does provide another channel for such communication." (p. 189) More recently Collins (2000a) illustrated that while there was hardly any difference between the final course scores of e-mail users and non-users, there did seem to be a positive relationship between the level of web forum use and final course scores.

Collins (2000b) found that in the web-based version of Biology 2040 during the Spring 1996 semester, there seemed "to be a relationship between the level of web forum use and final course scores." More specifically,

that very frequent users achieved an 'A' for the course while frequent users achieved 'B's. It is interesting to note that those achieving 'C's and 'D's in the course were either infrequent users or did not post notes to the forum at all. None of the three students failing the course posted notes. There is, therefore, a relationship between web forum use and final course scores with very frequent users achieving higher marks, while students not using the web forum are more likely to fail. (p. 7)

The results in this study based on a larger number of students reinforced to those found in the previous study.

Since this earlier study examined just one individual class, the present study included all classes for which we had had during the period 1997-99. These data are illustrated in Table 1.

**Table 1 - Frequency of use of the web forum and final letter grade**

Level of use	Course grade				
	A	B	C	D	F
Very frequent	2	0	0	0	0
Frequent	1	2	0	0	0
Infrequent	18	10	4	1	2
None	21	17	7	2	4
Totals	42	29	11	3	6

Unlike the relationship between the letter grade achieved and the level of electronic mail use, which is discussed in Collins and Barbour (2001), this table indicates a clearer relationship.

[Table 1] shows that the relationship between the letter grade achieved and the level of web forum use is even clearer than for e-mail use. Only 'A's were very frequent users, and only 'A's and 'B's were frequent users. Only about one third of 'C's, 'D's and 'F's were infrequent users while two-thirds made no use of web forum. Students achieving an 'A' in the course were much more likely to be web forum users (21 of 42) than 'B's (12 of 29), who, in turn were more likely to be users than 'C's, 'D's, and 'F's (only 7 of 20). (p. 7)

Both this study and Collins (2000b) lend credit to the notion that students who participate in online discussion forums have a greater chance of success in the course than students who do not participate.

This notion may be explained by findings from two different areas of research. Over a decade ago, Chickering and Gamson (1987) put forward the concept that interaction is a key mechanism in enhancing learning. This concept could be applied to this study if one were to include electronic messaging as a form of interaction. However, a second area of research may prove a greater relationship. There is a growing body of research that indicates that students who write about their subject learn that subject better. One such piece of research is Moore (1993), who has shown the connection between writing in Biology and higher course scores as others have demonstrated for other subject areas.

Collins and Barbour (2001), speculate that while email messages are often short messages about non-content queries which are 'private' and only for the instructor's eyes, postings to the web forum are 'public' and open to the scrutiny of all class members. Students are more likely to be careful and deliberate about what they write on the web forum because they are for public consumption. (p. 8)

## Conclusion

While there was no apparent relationship between the use of electronic mail and student grades, this study found a positive, but not conclusive, relationship between the number of times students posted to the web forum and the grade that the student received. Students who received 'A's and 'B's in the course were more likely to be "frequent" or "very frequent" users of the web form, while students who received 'C's, 'D's and 'F's were more likely to be "infrequent" or "non-users."

The positive relationship with posts to the web forum and not electronic mail seems to confirm the assertion by Chickering and Gamson (1987) and Moore (1993) that interaction and public writing are key mechanisms in enhancing learning. This is based upon the premise that contributing to a web forum is a carefully planned, deliberate writing activity on the part of the student.

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