



A Comparative Analysis of Email and Face-to-Face Communication in an Educational Environment

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ABSTRACT

Electronic mail (email) is an extremely important medium for web-based education. Due to the unique characteristics of email, there is reason to be concerned that students do not put appropriate care into writing messages that will be sent to others. This paper describes an empirical research project to investigate student perceptions of the amount of thought put into email communications versus traditional face-to-face communication. A survey was developed and administered to 220 students. The results of this survey indicate that students do put more thought into email communication with the instructor and groups of students than they would for strictly verbal communication. At the same time, most students tend to put about the same amount of thought or less into communication with individual peers. This implies rational use and a good understanding of the limitations of the email medium.

INTRODUCTION

Virtual universities and e-learning will be key components for progressive education in the twenty-first century. There is evidence that this trend is already well underway. In 1999, it was estimated that one million of the fourteen million total students in the United States had taken some sort of on-line course for credit and fully one-third of the universities in the country had at least one accredited degree program on-line. (Huffstuter & Fields 2000). This is not a passing fad. Improved technology and infrastructure combined with the economic benefits of e-learning all but guarantee the continued growth of web-based education.

Web-based learning depends upon electronic communication. The very nature of the internet as a medium for education requires the flow of electronic messages and images from the instructor to the students. Likewise, the students must communicate with the instructor and interact with peers in the class. The instructor and these student peers may not be physically located near one another. In some cases, they may not even reside in the same country. Because of this, teaching over the internet requires far more electronic interaction than traditional face-to-face classroom education.

Electronic mail (email) is the most widespread and commonly used tool for electronic communication (Bafoutsou & Mentzas, 2001). It has recently been estimated that 53% of all Americans use email for an average of 29 minutes every day (Festa, 2001). Consequently, it is reasonable to assume that email will be the communication tool of choice in web-based learning environments for the foreseeable future. Email is also a somewhat problematic medium. It is a hybrid form of communication that has the informal, free-flowing structure of conversation with the permanence of a written document. Further, the combination of written and oral elements in email tends to generate messages that are more spontaneous and less inhibited than traditional written communication (Rice, 1995). This raises some interesting questions about email as a communication tool in general and its use in web-based learning environments in particular.

The research described by this paper seeks to determine student perceptions about the amount of thought put into email messages compared to face-to-face verbal messages in an educational environment. In this usage, "thought" encompasses the writing style, structure,

and content of the email message. Knowing the answer to this is important because clear communication is necessary for effective education—especially in a web-based environment where face-to-face communication may be impossible. Failure to recognize potential communication problems that can arise due to careless email could jeopardize the success of web-based education programs.

CHARACTERISTICS OF EMAIL IN AN EDUCATIONAL SETTING

Email is an electronic communication tool that predates the internet. It was used initially for intra-corporate communication via mainframes and later by private dial-up networks. Once ARPAnet was developed, the tool was widely used by scientists and academics (Hardy, 1996). As the internet grew and the notion of a world-wide-web became reality, email was joined by a host of other, richer, media for communication. These included (but are not limited to) on-line text chat, audio chat, listservs, bulletin boards, streaming video, live web-casting, and video conferencing. Today, despite competition for these newer high-bandwidth media, email is still one of the most widely used communication tools in education (Le & Le, 2002). Some research has gone so far as to conclude that email is more popular than face-to-face interaction between students and instructors (Berge, 1997; Sherry, 2000).

As an educational communication medium, email has a number of advantages and disadvantages which are discussed below. These characteristics paint the picture of a very powerful education tool with some noteworthy drawbacks. Understanding these unique characteristics and limitations will illustrate the need for this project and will provide the basis for the research questions posed by this study.

Email Advantages

Email breaks down the barriers of distance and time by allowing students to conveniently communicate with the instructor and their peers when and where it is convenient. With this tool, it is no longer necessary for students to make appointments or queue up between classes at the instructor's office. A simple email question can be sent instead. From the teacher's perspective, email is also valuable because it helps leverage the instructor's efforts. It is impractical to expect an instructor who teaches several hundred students to have a face-to-face conference with each student (Le & Le, 2002). Quite often, students seeking these conferences all have the same basic questions and information needs. It is much more efficient for the instructor to write a general purpose global message that answers these common concerns and send it to all students. This leaves more time to deal with the problems that actually require individual attention. These advantages, and others, are well documented in the literature (Martin, 1996; Sharp, 2000).

Email Disadvantages

Email shares many characteristics with the spoken word; however, it should not be forgotten that it is still a text-based form of communication (Rice, 1995). Not only is it text-based, but it is electronic text that can be easily forwarded, attached to other messages, and kept forever on a disk or tape. Consequently, it should be created with more

care than either spoken communication or standard paper-based communication (Thompson & Lloyd, 2002).

Unfortunately, the nature of email as a medium of communication encourages writers to create messages that are more spontaneous and less inhibited than standard written text (Rice, 1995). According to Festa (2001), "people have discovered that their fingers often outrace their brains." This tendency is due the fact that email reduces contextual clues for the writer and forces them to concentrate on the only audience available—themselves (Rice, 1995). By concentrating so narrowly, email writers tend to produce messages with far less structure or semantic integrity than would be acceptable in either spoken or traditional written communication.

Email is not a private communication despite the common misconception that it is analogous to a private letter. A better analogy is that email correspondence is more like a postcard than a sealed letter (Thompson & Lloyd, 2002). Email communication is also potentially litigious, especially in a business environment. This point was recently brought to light when Microsoft co-founder Bill Gates was forced to defend himself against archived email messages that he had written years earlier. The same general concern holds true in an educational environment where a misstatement or careless phrase could have disastrous repercussions.

Taken together, the permanent nature of email, its tendency to induce writers to behave spontaneously and carelessly, and the potentially legally binding nature of the medium combine to create a communication tool that should be used with great care. One would hope that email users realize this and take far more care writing email messages than they do in traditional face-to-face communication. Translating these concerns to the environment of modern web-based teaching highlights the need for this research.

Email and Web-Based Education

If one accepts that email communication is a fixture in web-based education for the foreseeable future, then instructors involved in web-based education need to be concerned that students understand the special nature of email and treat it differently than verbal communication. Specifically, do students realize the potential problems inherent in email communication? Further, do students demonstrate an awareness of these problems by putting more thought into email communication than face-to-face verbal communication? The answers to these questions will go a long way toward predicting the eventual acceptance and success of web-based education programs. The answers will also bring insight to a speculation that students not only understand the potential problems of email communication, but behave rationally and put more thought into creating email to the instructor and groups of students than to individual student peers. This level of savvy by students would demonstrate a sophisticated understanding of the email communication medium and would be positive news for future web-based education programs.

THE RESEARCH STUDY

The previous section outlined the reasons why it is important to consider student perceptions concerning the amount of thought put into writing email messages in an educational environment. This section summarizes an empirical research project that was designed to determine these perceptions from an actual student group. The research questions for this study are shown below.

1. Do students put more thought into email communication with the instructor than they would put into verbal communication with the instructor?
2. Do students put more thought into email communication with an individual student than they would put into verbal communication with the same student?
3. Do students put more thought into email communication with large groups of students than they would put into verbal communication with the same group?

Table 1: Survey Questionnaire Results

Survey Question	N	Much less thought (%)	A little less thought (%)	About the same thought (%)	A little more thought (%)	Much more thought (%)	Chi-Sqr. Sig.
Thought put into e-mail with the instructor	220	.5	9.5	35.0	39.5	15.5	< .001
Thought put into e-mail to other students	217	1.4	15.7	49.8	25.3	7.8	< .001
Thought put into e-mail to a large group of students	218	.5	3.2	32.0	40.4	23.9	< .001

A survey instrument was developed to ask students these three questions. The actual survey questions can be found in the Appendix of this paper. The answers to these questions were designed around a 5-point nominal scale ranging from "much less thought" on one extreme to "much more thought" on the other. The intent of these questions was to determine 1) do students put more thought into email communication with these various groups and 2) is there a discernable pattern in the amount of thought that implies a rational use of email by the students.

The student sample was drawn from classes in a college of business administration. The college has approximately 1100 students and provides undergraduate only education in a state supported university of about 11,000 students. Students in the college can generally be described as "traditional", meaning that they typically fall into the eighteen to twenty-four year old age group, are away from home for the first time, and are pursuing their first degree. Entrance prerequisites into the college assure that all students in the population have at least a basic understanding of the Windows™ operating system and email.

Data were collected via a paper-based survey questionnaire that was administered during class to sections of the following courses: principles of accounting, tax law, management information systems, java programming, principles of marketing, and strategic management. These classes represented the full range of student majors within the college and a mixture of student classifications from freshman to senior. Given that the student population in the college is weighted toward the junior and senior year classifications, the sample also shares this characteristic.

Participation in the survey project was anonymous and completely voluntary. A total of 220 usable questionnaires were collected from the sections involved in the study. Data from these surveys were coded into SPSS and analyzed using basic frequency analysis and the chi-square goodness-of-fit statistic. The results of this analysis are shown in Table 1.

DISCUSSION

The results presented in Table 1 indicate that the majority of students perceive they put at least the same amount of thought or more into e-mail communications as compared to verbal communication. This applies to communication with instructors, other individual students, and groups of students. These results are significant at or below the .05 level using the chi-square goodness-of-fit test. This implies that there are non-random patterns associated with the amount of thought that students perceive they put into e-mail communication. In an effort to clarify these patterns, table 2 is provided to aid in this analysis. This table collapses the frequency data into three categories so that the lower two groupings concerning "less thought" are combined into one, the upper two groups dealing with "more thought" are grouped together, and the third group concerning "about the same thought" is left as the neutral point in the scale. This creates a three-point scale that shows perception patterns more distinctly.

Table 2 plainly shows that relatively few students put less thought into email communication with the instructor and groups of students (10% and 3.7% respectively) while a somewhat larger group (17.1%) put less thought into email that is sent to an individual student. At the same time, 55% of the students surveyed felt they put more thought into communication with the instructor and 64.3% put more thought into communication with groups of students. This is consistent with the general notion that students realize the unique characteristics of email and rationally put more thought and effort into messages going to the instructor and groups of students. At the same time, only 33.1% of

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