

# College Faculty Use and Perceptions of Electronic Mail to Communicate with Students

Robert L. Duran, Lynne Kelly, & James A. Keaten

*In spite of the potential of e-mail to enhance faculty–student interaction, there is a limited amount of actual research on instructional uses of e-mail, and even less research on e-mail exchange between faculty and students. The purpose of the present study was to examine faculty-initiated e-mail with students, their perceptions of students’ motives for using e-mail, and their views of the consequences of faculty–student e-mail. A survey was distributed to faculty at two institutions, a small private university and a mid-sized public university. Results revealed that faculty in general are receiving more than twice as many e-mail messages as they initiate and that female faculty report receiving more student e-mail than male faculty. Faculty motives for initiating e-mail appear to be utilitarian in nature such as to make course announcements. Faculty reported that students used e-mail to make appointments and to clarify and ask questions about course material but that a primary motive was to offer excuses such as for late work. In general, faculty perceive the use of e-mail as both beneficial and as a liability in the educational context. Finally, institutional differences were found for faculty perceptions of students’ motives for using e-mail and for the consequences of e-mail.*

*Keywords:* Faculty-student communication; Faculty use of e-mail; Out-of-class communication

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## **Introduction**

Not long ago a student who wanted to talk to a faculty member outside of class had to stop by for an office visit or pick up a telephone. With widespread use of electronic mail (e-mail), there is another option for faculty–student communication, which some scholars have predicted has the potential to increase faculty–student interaction (Bailey & Cotlar, 1994; D’Souza, 1992; Hartman et al., 1991; Haworth, 1999; Kelly, Duran, & Zolten, 2001; Kuehn, 1994; Manning, 1996; McComb, 1994; Zagorsky, 1997; Zolten, 1997). Based on a case study of a business information systems course in which students were required to use e-mail to communicate with the professor and their classmates, D’Souza (1992) concluded that, “E-mail creates a non-threatening, two-way communication link between student and instructor . . . [and] promotes students’ ability to express themselves more freely to the instructor” (p. 259). Furthermore, D’Souza claimed that:

The use of E-mail also provides an opportunity for the instructor to offer more personalized attention to students in meeting specific learning needs. Many students in the study used E-mail to ask for special help or additional information on class lectures and out-of-class assignments (p. 259).

In spite of the potential of e-mail to enhance faculty–student interaction, there is a limited amount of actual research on e-mail exchange between faculty and students, although there are academic papers presenting case studies of e-mail use in specific contexts. The few published studies in existence look at students’ use of e-mail (D’Souza, 1992; Haworth, 1999; Kelly et al., 2001; Kelly, Keaten, & Finch, 2004; Waldeck, Kearney, & Plax, 2001; Zagorsky, 1997). Yet “out-of-class communication (OCC)” (Jaasma & Koper, 1999) or “extra-class communication (ECC)” (Fusani, 1994; Waldeck et al., 2001), between faculty and students has been found to have a number of positive consequences such as student persistence in college (Milem & Berger, 1997; Pascarella & Terenzini, 1991), greater academic development (Terenzini, Pascarella, & Blimling, 1996), and increased student motivation (Fusani, 1994; Jaasma & Koper, 1999). E-mail, by providing an accessible, easy-to-use channel of communication, may be opening the door to much greater levels of out-of-class communication between faculty and students. How successfully e-mail has been fulfilling that potential remains to be determined. The purpose of the present study was to help address this question by examining faculty-initiated, individualized e-mail with students and their perceptions of students’ use of e-mail.

## **Review of Relevant Literature**

This review focuses on studies that examined e-mail as a means of communication between students and faculty. Although there is a growing body of literature on distance learning, that research is not included here because of our emphasis on

e-mail use as out-of-class communication rather than as the primary instructional delivery system.

Two studies of college student use of e-mail to communicate with faculty have focused on students with communication avoidance and anxiety problems. Research by Kelly and colleagues (2001, 2004) compared reticent and non-reticent students' use of e-mail to communicate with faculty and found that the two groups did not differ in the frequency with which they use e-mail with their instructors, nor in their motives for using e-mail. However, reticent students preferred e-mail rather than face-to-face communication to interact with faculty, were more comfortable using e-mail as opposed to speaking out in class or going to see their teachers, and found e-mail easier than the telephone or an office visit. Both studies revealed that reticent students engaged in less face-to-face communication with faculty than their non-reticent counterparts. Additionally, Kelly et al. (2004) concluded that the anxiety reticent students feel for face-to-face communication influences them to use e-mail to interact with their teachers, a channel which appears to mediate the anxiety of communicating. Finally, problems with anxiety, knowledge, timing, delivery, organization and memory all were related to the preference for using e-mail.

Rather than focusing on students with communication problems, some studies have focused on the general population of college students and their use of e-mail to communicate with faculty. In terms of frequency of use, students clearly vary, with some students sending many messages while others send very few (Atamian & DeMerville, 1998), with a sizable number not participating at all (Zagorsky, 1997). In terms of motives for e-mail use, Waldeck and colleagues (2001) found that students reported three main reasons for using e-mail with their teachers: procedural or clarification, efficiency, personal/social. Moreover, students were more likely to use e-mail with instructors whose online communication reflected greater immediacy.

Haworth (1999) focused on student use of e-mail and found several determinants. When students found it difficult to contact an instructor, such as when they had a part-time instructor, they were more likely to send e-mail messages (Haworth, 1999). Additionally, students sent more e-mail if they had prior Internet experience, off-campus access to e-mail, and if there was a course web site. A secondary concern of the study was whether students perceived e-mail as a substitute for or a complement to face-to-face communication with their professor. Results indicated that students tended to view e-mail as a substitute for face-to-face interaction, unless they were infrequent e-mail users, leading Haworth (1999) to conclude: "This leads to the question of whether e-mail significantly increases student-faculty interaction. It appears that it merely redistributes that contact to an alternative form" (p. 5).

Only one study has examined faculty-initiated e-mail communication with students, although the context was an online graduate course (Woods, 2002). Woods' purpose was to ascertain whether more frequent instructor-initiated e-mail messages influenced students' perceptions and behavior. Using a randomized control group post-test only design, Woods varied the frequency of personal e-mail messages across three treatment groups. Experimental group participants received 2, 4 or 15

messages averaging between 40 and 50 words providing expressions of interest in the student and approval of the student's performance. Surprisingly, results revealed that more frequent teacher-initiated e-mail did not affect students' perceptions of the faculty–student relationship or their sense of community in the course or their level of satisfaction with the learning experience, nor did it produce higher levels of participation in class discussion (Woods, 2002).

### **Rationale and Research Questions**

Given the lack of research on faculty use of e-mail to communicate with their students, yet the potential of e-mail to augment out-of-class communication, the present study was designed to begin to address several important initial questions. Speculation and faculty anecdotes suggest that faculty may be receiving much e-mail from students, but may be sending few individualized e-mail messages. With the existence of Blackboard and other course management platforms as well as other means to develop distribution lists, undoubtedly faculty are sending mass e-mails. Students, of course, recognize the difference between mass e-mails and personalized e-mails because of identification of recipients in the message header. Our intent was to examine the one-to-one use of e-mail because of its potential to develop the teacher–student relationship as well as to individualize instruction; thus, the use of Blackboard and mass e-mails are not addressed in the research questions. The first two research questions raised were:

*RQ1: From the viewpoint of faculty, how frequent is faculty–student e-mail interaction?*

*RQ2: How many of the e-mail exchanges do faculty perceive they initiate?*

Martin, Meyers, and Mottet (1999) developed an instrument for examining students' motives for communicating with instructors which Kelly et al. (2001) revised to assess students' motives for using e-mail with faculty. Their study found that students reported using e-mail primarily to fulfill the functional motive (i.e., trying to learn more about the material or assignments), followed by the excuse motive (e.g., explaining why work is late). Waldeck et al. (2001) found that students use e-mail with teachers for procedural or clarification reasons, for efficiency of communication, and for personal/social reasons. No research has investigated either faculty members' motives for using e-mail with their students or faculty perceptions of why students use e-mail with them. How faculty perceive students' choice of e-mail as a means of communication can influence their view of the students and their responses to the communication. As the dual-capacity model of media choice suggests (Sitkin, Sutcliffe, & Barrios-Choplin, 1992) and O'Sullivan (2000) reinforces with his model of channel selection, media have symbolic value; for example, the choice to explain one's need for an extension on an assignment by sending an e-mail message as opposed to a face-to-face interaction has meaning to the recipient of the message.

Thus, the following research questions were asked:

*RQ3: What motives do faculty report for initiating e-mail contact with students?*

*RQ4: What do faculty perceive to be students' motives for initiating e-mail contact?*

Finally, aside from hallway praises and complaints, little is known about faculty opinions about e-mail as a means of communication with students. Are they satisfied with the quantity and quality of such interaction? Do they perceive that it is increasing or decreasing their interaction with students? Is it causing communication overload? These and related unanswered questions raise the research question:

*RQ5: How do faculty members feel about the use of e-mail as a channel of communication between faculty and students?*

## **Method**

### *Procedure*

Faculty at two universities, one private and one public, were asked to complete a survey. Two universities were selected to generate a sufficient sample size and to produce a more diverse sample of faculty. The survey was distributed to faculty and returned to the researchers through the campus mail systems. Responses were anonymous. Thus, convenience sampling was used to generate a sample of 259 participants, 124 from the private university and 135 from the public university, representing response rates of 37% and 31%, respectively. The survey took approximately 10–15 minutes to complete.

### *Measures*

The questionnaire included four sections. The first section contained several questions to assess how extensively faculty use e-mail in general, how much e-mail they receive from students, how much they respond to student-generated e-mail, and how much e-mail interaction they initiate with their students. Section two examined motives for e-mail communication. Specifically, it included 9 Likert items (1 = strongly disagree, 5 = strongly agree) developed by the authors to assess faculty motives for using e-mail to communicate with their students (*Faculty E-mail Motives*) as well as 15 Likert items (1 = strongly disagree, 5 = strongly agree) to measure students' motives for using e-mail with their instructors (see Tables 1 and 2). These 15 items were derived from the scale used by Kelly et al. (2001) and Martin et al.'s (1999) measure of student motives<sup>1</sup> and were revised to ask faculty their perceptions of student motives for sending them e-mail (*Perceived Student E-mail Motives*). Section three included an open-ended item asking faculty for their overall feelings about e-mail as a channel of faculty–student communication and 14 Likert items (1 = strongly disagree, 5 = strongly agree), developed by the authors, to

**Table 1** Primary Factor Loadings, Means, and Standard Deviations for Faculty E-Mail Motives Items

Faculty motives items	Primary factor loadings	<i>M</i>	<i>SD</i>
Request student contact	.83	2.93	1.32
Make appointment	.80	2.92	1.34
Make announcements	.74	3.32	1.58
Clarify course material	.73	2.84	1.44
Problem with student's performance	.72	2.24	1.24
Build relationship	.60	2.27	1.19
Explanation of student's absence	.57	2.12	1.19
Problem with student's behavior	.57	1.51	.92
Announce teacher will be late	.47	1.52	.91

measure consequences of e-mail including its effects on face-to-face communication, teacher–student relationships, student learning, and faculty teaching (*Consequences of Faculty–Student E-mail*, see Table 3). The open-ended item asking for overall feelings about e-mail preceded the scale items to prevent responses from being influenced by the Likert statements. A second open-ended item asked those who do not use e-mail with students at all to provide reasons for that choice. The final section contained several demographic items.

**Table 2** Primary Factor Loadings, Means, and Standard Deviations for Perceived Student E-Mail Motives Items

Perceived student e-mail motives items	Primary factor loadings	<i>M</i>	<i>SD</i>
<i>Factor 1: Course-related contacts</i>			
Clarification about material	.81	3.16	1.16
Questions about material	.80	3.38	1.14
Assistance on assignments/exams	.77	3.13	1.17
How to improve in class	.70	2.20	1.07
Make appointment	.67	3.67	.99
Academic advising	.64	2.76	1.10
Approve idea for assignment	.64	2.59	1.15
Request letter of recommendation	.54	2.86	1.10
<i>Factor 2: Student excuses</i>			
Inform that student will miss class	.86	3.47	.99
Explain absences	.84	3.30	1.10
Inform that student will be late to class	.80	2.66	1.18
Explain late work	.66	2.97	1.09
<i>Factor 3: Concern for grade</i>			
Challenge grades	.85	1.86	.92
Grade status	.80	2.63	1.11
*Request extension on assignment		2.74	2.89

\*Item was deleted from further analyses.

**Table 3** Primary Factor Loadings, Means, and Standard Deviations for Consequences of Faculty–Student E-Mail Items

Consequences of faculty–student e-mail items	Primary factor loadings	<i>M</i>	<i>SD</i>
<i>Factor 1: Benefits</i>			
Know quiet students better	.85	3.25	1.15
Improved quality of face-to-face interactions	.84	3.24	1.14
Teaching has improved due to e-mail exchanges	.82	2.92	1.14
Students learned more of course content	.78	3.23	1.91
More face-to-face meetings	.63	2.68	1.18
Interact with more students	.57	3.00	1.19
<i>Factor 2: Liabilities</i>			
Poorer student performance on assignments	.94	2.89	1.55
Decreased quality of face-to-face interactions	.92	2.94	1.42
Don't know students as well	.91	2.87	1.43
Relationships with students not improved	.63	3.08	1.30
Replaced face-to-face meetings	.63	2.86	1.30
Students not learning more due to e-mail	.49	3.04	1.19
*Fewer face-to-face meetings		2.42	.98
*Few students send most e-mail		3.64	.98

\*Item was deleted from further analyses.

### Data Analysis

Questionnaire data were analyzed using descriptive statistics. Given the exploratory nature of the study, inferential statistical tests were computed to examine potential gender differences and institutional differences. The .05 level of significance was used for all statistical tests.

A thematic content analysis of the two open-ended questions was performed to identify faculty feelings about using e-mail as a faculty–student communication channel. Faculty responses tended to be quite brief—a word, a phrase, a sentence or two in most cases—thus, the entire response was coded. Additionally, since the purpose of the qualitative analysis was to identify faculty feelings regarding the use of e-mail with students, holistic coding of responses for valence of faculty perceptions was appropriate. As a result, responses were coded into three categories: positive perceptions, negative perceptions, and mixed perceptions. Mixed responses did provide more than one thought; hence the overall response was deemed as mixed. A graduate student research assistant, blind to the purpose of the study, and the authors coded 210 faculty responses with an intercoder agreement of 97% (Holsti, 1969).

In order to identify themes within the three categories, Strauss' (1987) qualitative thematic analysis procedure, involving three coding passes, was used to analyze the open-ended responses within each category. In the first pass, open coding, the authors read each response holistically and categorized responses as positive, negative, or mixed as described above. In the second pass, axial coding, the two authors jointly identified sub-themes within the larger categories. Finally, in the third pass, selective coding, the authors searched the data for specific responses

which illustrated the sub-themes. Any issues concerning the identification of sub-themes or the coding of an individual response were discussed and resolved by the two authors.

## Results

### *Preliminary Analyses*

Three Likert scales were constructed for this study to assess: (1) faculty motives for initiating e-mail contact with their students, (2) faculty perceived student motives for using e-mail, and (3) faculty perceptions of the consequences of faculty–student e-mail interactions. The dimensional structure of these measures was determined by a principal components factor analysis with oblique rotation, utilizing a 1.00 eigenvalue as criterion for factor selection.

Factor analysis of the nine-item *Faculty E-Mail Motives Scale* resulted in a one-factor solution accounting for 47% of the common variance. The scale was defined by items that request students to make contact with and make an appointment with the instructor, as well as make an announcement and clarify course material (see Table 1). Cronbach's alpha for the scale was .86 ( $M = 2.40$ ,  $SD = 1.32$ ).

Factor analysis of the 15-item *Perceived Student E-Mail Motives Scale* resulted in a three-factor solution accounting for 57% of the common variance (see Table 2). Factor one, course-related contacts, consisted of eight items and accounted for 36% of the variance. The factor was defined by items such as clarification of course material, questions about course material, assistance with course assignments and exams, and how to improve course performance. Alpha reliability for this dimension was .86 ( $M = 2.97$ ,  $SD = .79$ ). Factor two, student excuses, consisted of four items accounting for 12% of the variance. The factor was defined by items such as why a student will not be in class, why a student missed class, why a student was late for class, and why an assignment was turned in late. Alpha reliability was .81 ( $M = 3.10$ ,  $SD = .87$ ). Factor three, concern for grade, consisted of two items. The factor was defined by the statements: “to challenge the grade I gave” and “to find out the status of their grade.” One item was dropped from the scale because of a low primary factor loading. Alpha reliability was .61 ( $M = 2.24$ ,  $SD = .86$ ).

Factor analysis of the 14-item *Consequences of Faculty–Student E-Mail Scale* produced a two-factor solution accounting for 53% of the common variance (see Table 3). Factor one, benefits, consisted of six items accounting for 28% of the variance. The factor was defined by items such as, “I know my quiet students better as a result of e-mail,” “E-mailing students has improved the quality of my face-to-face interactions,” “My teaching has improved as a result of my e-mail exchanges with students,” and “I feel students have learned more about the course content as a result of our e-mail.” Factor two, liabilities, consisted of six items accounting for 25% of the variance. The factor was defined by items such as, “I feel students' performance on assignments has declined as a result of our e-mail exchanges,” “E-mailing students

has decreased the quality of my face-to-face interactions with them,” and “I don’t know my students as well as a result of e-mail.” Two items were dropped from the scale because of low primary factor loadings. Alpha reliabilities for the two dimensions were: .87 ( $M = 3.05$ ,  $SD = .90$ ) and .74 ( $M = 2.95$ ,  $SD = .91$ ), respectively.

#### *Research Question Results: Quantitative*

RQ1 asked about faculty members’ perceptions of the frequency of faculty–student e-mail interaction. Faculty ( $n = 257$ ) reported receiving an average of 15.15 ( $SD = 23.59$ ) e-mail messages from students a week. Additionally, faculty respond to 95% ( $SD = 16.95$ ) of those messages.

Because of the exploratory nature of this study additional analyses were performed. While there were no differences between the two universities that comprised the sample on the number of messages received, replied to, or initiated, a significant difference was found between male and female instructors with regard to the number of e-mail messages received,  $t(251) = 2.21$ ,  $p < .05$ ,  $d = .28$ . Female instructors received more e-mails ( $M = 16.85$ ,  $SD = 30.80$ ) from students than did male instructors ( $M = 13.27$ ,  $SD = 12.85$ ).

RQ2 addressed the issue of how many of the e-mail exchanges faculty perceive they initiate. Faculty ( $n = 257$ ) reported that they initiate an average of 6.72 ( $SD = 20.67$ ) e-mail messages to students a week, less than half the number they receive from students. A paired-samples  $t$  test indicated that faculty receive ( $M = 15.23$ ) significantly more messages than they initiate ( $M = 6.77$ ),  $t(254) = 5.09$ ,  $p < .0001$ ,  $d = .41$ .

Faculty members’ motives for initiating e-mail contact with students was the topic of RQ3. The predominant reasons faculty initiate e-mail with students (see Table 1) were to: make announcements about the course ( $M = 3.22$ ,  $SD = 1.58$ ), ask a student to contact the faculty member ( $M = 2.93$ ,  $SD = 1.31$ ), and make an appointment with the student ( $M = 2.92$ ,  $SD = 1.34$ ).

Similarly, RQ4 focused on what faculty perceive to be students’ motives for initiating e-mail contact. Results for the subscales of the *Perceived Student E-Mail Motives Scale* (see Table 2) revealed that faculty perceive the predominant reasons students send e-mail to be excuses ( $M = 3.10$ ,  $SD = .87$ ), followed by course-related contacts ( $M = 2.97$ ,  $SD = .79$ ), and then concern for grade ( $M = 2.24$ ,  $SD = .86$ ). Examining individual items indicated the primary student motives to be to: make an appointment with the faculty member ( $M = 3.67$ ,  $SD = .99$ ), inform the faculty member they will not be in class ( $M = 3.47$ ,  $SD = .99$ ), ask questions about the course material ( $M = 3.38$ ,  $SD = 1.14$ ), explain absences ( $M = 3.30$ ,  $SD = 1.10$ ), and clarify course material ( $M = 3.16$ ,  $SD = 1.16$ ).

The two universities differed significantly with regard to two of the dimensions of the *Perceived Student E-Mail Motives Scale*. The faculty from university 1 ( $M = 3.27$ ,  $SD = .92$ ), which is a small (enrollment = 5,500), private, northeastern university, reported that students are significantly more likely to use e-mail to make excuses to

explain absences and late work than at university 2 ( $M = 2.95$ ,  $SD = .80$ ), which is a mid-sized (enrollment = 10,471), public, western institution,  $t(253) = 2.93$ ,  $p < .01$ ,  $d = .40$ . The faculty of university 1 significantly differed from the faculty of university 2 with regard to the dimension, concern for grade,  $t(248) = 3.55$ ,  $p < .001$ ,  $d = .48$ . The faculty from university 2 ( $M = 2.42$ ,  $SD = .88$ ) reported more inquiries concerning student grades than did the faculty of university 1 ( $M = 2.04$ ,  $SD = .79$ ).

The final research question was concerned with how faculty members feel about the use of e-mail as a channel of communication between faculty and students. Examining items from the *Consequences of Faculty–Student E-Mail Scale* (see Table 3), overall faculty perceived e-mail to be about equally positive (benefits:  $M = 3.05$ ) and negative (liabilities:  $M = 2.95$ ). Individual scale items generating the highest means were: “A small number of students account for most of my e-mail with students” ( $M = 3.64$ ,  $SD = .98$ ), “I know my quiet students better . . .” ( $M = 3.25$ ,  $SD = 1.15$ ), “E-mailing students has improved the quality of my face-to-face interactions . . .” ( $M = 3.24$ ,  $SD = 1.14$ ), “I feel students have learned more about the course content . . .” ( $M = 3.23$ ,  $SD = 1.19$ ), “E-mail has not improved my relationships with my students” ( $M = 3.08$ ,  $SD = 1.30$ ), and “I have no evidence that my students are learning more as a result of e-mail” ( $M = 3.04$ ,  $SD = 1.19$ ).

Although there were not significant differences between the two universities on the number of messages received and responded to, there were significant differences between the universities with regard to the perceived consequences of e-mail usage. The two universities significantly differed with regard to the perceived liabilities of faculty–student e-mail interactions,  $t(244) = 16.89$ ,  $p < .001$ ,  $d = 2.29$ . The faculty from university 1, perceived significantly more liabilities ( $M = 3.65$ ,  $SD = .65$ ) than did university 2 ( $M = 2.32$ ,  $SD = .58$ ).

### *Research Question Results: Qualitative*

Results of the thematic content analysis provide additional insight into faculty perceptions of the use of e-mail as a means of interacting with students. Of the 259 respondents, 210 (81%) provided responses to the open-ended question regarding faculty opinions/feelings about e-mail. An initial pass of the open-ended responses by the research assistant resulted in four broad categories: positive responses ( $n = 131$ , 62%), negative responses ( $n = 13$ , 6%), mixed responses ( $n = 62$ , 30%), and other responses ( $n = 4$ , 2%).

#### *Positive responses*

Seven sub-categories were apparent in the positive responses, with the majority of responses falling into three. First, many positive responses focused on the functional aspects of e-mail ( $n = 43$ , 33%). Faculty responses were represented by statements such as, “Effective. Our students are busy just like us, e-mail is efficient”; “It is very efficient, effective, and asynchronous—a great tool”; “Very effective, quick, easy, and accessible”; “Great way to communicate. Saves time” and “Very helpful. Get

responses faster.” Faculty reported that e-mail exchanges provide a means of record keeping, “I have a hard copy as a record . . . rather than ‘you said’ comments later, if there is a problem” and “It easily allows me to keep records of questions and problems to help improve the course or track student progress.”

Almost a quarter of the positive responses reflected a general affect for e-mail ( $n = 30$ , 23%). Faculty responded that e-mail was “great,” “excellent,” or “good.” Indicative of this positive response are statements such as, “I think it is an excellent medium of communication,” “I love it” and “It is a tremendous asset.”

The third positive theme was that e-mail enhances faculty–student relations ( $n = 13$ , 10%). Faculty perceived that their relationships were improved with students in two ways. First, e-mail provided quiet students with a medium for communication. This sentiment was represented by statements such as, “For shy students this means of communication is less threatening than ‘face-to-face’ communication”; “It’s a way to talk to students who normally don’t talk much in class”; and “I’m communicating with students I wouldn’t ordinarily.” Second, faculty felt that the medium made the establishment of relationships easier, as reflected in statements such as, “It builds connections and makes it easy to maintain faculty–student communication” and “Very useful in helping establish rapport and relationships.”

Other positive sub-categories emerged, although each included relatively few responses: (1) preference for e-mail over alternative channels ( $n = 12$ , 9%); (2) essential new technology ( $n = 11$ , 8%); (3) extension of class time and faculty contact ( $n = 8$ , 6%); and (4) dissemination of course information ( $n = 7$ , 5%).

#### *Negative responses*

First, it should be noted that this category produced relatively few negative responses ( $n = 13$ ); as a result the emergent themes must be viewed cautiously. However, the provocative nature of the responses warrants mention. Three themes were identified. First was that e-mail decreased contact between faculty and students ( $n = 5$ , 38%). One faculty member wrote: “Fewer students show up in my office for conferences and face-to-face communication.”<sup>2</sup> Another noted: “E-mail reduces the development of personal contact.”

A second sub-category was that e-mail was too time-consuming ( $n = 2$ , 15%) and a third was that e-mail promotes poor student behavior ( $n = 2$ , 15%). One faculty member wrote, “I find very often students will challenge grades and act rather cocky on e-mail, but when I ask them to talk about a problem directly, the same students won’t do it.” Another suggested students will use it to excuse absences from class: “The best excuse ever invented. ‘Did you get the e-mail about my dead friend?’”

#### *Mixed responses*

The mixed responses ( $n = 62$ ) produced five sub-categories. As could be expected, some of the themes previously reported in the positive and negative categories were reflected in the mixed faculty responses. All the faculty comments in this group were prefaced with statements that the faculty liked e-mail and that it is an efficient and quick means of

communication but that it does have its limitations and drawbacks. First was the idea that e-mail is useful but is not a substitute for face-to-face or phone communication ( $n=16$ , 26%). Comments reflective of this sentiment are: "Quick but can't replace social interaction," and "Very impersonal but very efficient." One faculty member wrote, "Nothing beats face-to-face communication, then phone conversations, e-mail is way back as a distant third . . . it is convenient." Faculty were concerned that e-mail interactions were replacing faculty–student contact outside of the classroom.

The second theme evident in over 20% of the mixed responses is that e-mail is useful but it is time consuming ( $n=13$ , 21%). This sentiment is reflected in comments such as: "It is both a blessing and a curse. A blessing when it opens doors of communication. A curse because it takes a lot of time to respond to them." Others noted that they felt overwhelmed by the number of e-mails they receive from students and must respond to. Others reported that e-mail does not allow for a separation from work: "It is a useful tool to facilitate communication. However, it is also making the faculty member to be available 24/7 and therefore you're never far from work." The issue of time is both how much and when.

The third mixed theme reflected a perception that faculty–student e-mail interaction was efficient for procedural/instrumental classroom information but insufficient for more detailed communication ( $n=8$ , 13%). One faculty member stated, "It is an acceptable way to communicate 'nuts and bolts' information but not nuanced material." Another noted, "It is not a substitute for in-depth discussions, but it is an excellent means of clarifying assignments and dealing with practical matters." Others noted that they preferred to deal with "sensitive" student issues and performance evaluations face-to-face.

Additional mixed responses included the ideas that e-mail is useful but students do not use it or check it consistently ( $n=7$ , 11%) and e-mail is useful but students engage in inappropriate online behavior ( $n=6$ , 10%). Faculty claim that it encourages students to communicate too casually and informally. "It works well but students are much too informal in their writing." Others voiced a concern that students use it as a means of excusing absences and missed assignments that they would not attempt in a face-to-face context.

The second open-ended question asked faculty who did not use e-mail *at all* with their students to explain why. Of the 259 respondents, 27 (10%) indicated that they do not use e-mail to interact with their students. As a result of the small number and the idiosyncratic nature of responses, identification of sub-themes was deemed inappropriate. Some of the themes articulated in the negative and mixed responses were also noted in comments to this question. Faculty reported that e-mail was too impersonal and a poor substitute for face-to-face interaction with students. Also consistent with previous statements was that e-mail is too time consuming and that students do not check their e-mail messages. Unique to this question was the response that a few ( $n=5$ ) faculty members did not have access to e-mail. Additional reasons for not using e-mail were that faculty felt as a medium it is: intrusive, easily misinterpreted, and inappropriate for the discussion of confidential matters.

## **Discussion**

Although there is a growing body of literature about e-mail usage, there is a limited amount of research concerning the use of e-mail in the educational context. As noted previously little research has focused on the use of e-mail in faculty–student interactions. A few studies (D’Souza, 1992; Kelly et al., 2001, 2004; Waldeck et al., 2001) have investigated students’ use of e-mail but even less research has investigated faculty perceptions of faculty–student e-mail. The purpose of this study was to investigate faculty perceptions of e-mail exchanges with students. Because this is an exploratory study some fundamental questions must be addressed such as, how frequently do faculty engage in these interactions, for what purposes, and with what outcomes.

Results of the present study found that in a typical week faculty receive an average of 15 e-mails from students and respond to 95% of those messages. Additionally, faculty reported that, on average, they initiate seven messages a week to students. Thus, faculty in general are receiving more than twice as many e-mail messages as they initiate. Because there are no set standards as to an adequate level of faculty–student communication, it is difficult to judge whether the frequency of e-mail interaction is less than adequate. However, results of the qualitative analysis revealed that some faculty are unhappy about the quantity of e-mail, the time it takes to respond to student e-mail, and being “on call” 24 hours a day with no separation between home and work.

Another issue, of course, is whether or not e-mail interactions are replacing other faculty–student communication. In the current study, a substantial number of faculty disagreed that e-mail led to more face-to-face interactions (47%), agreed that e-mail had replaced face-to-face meetings (49%), and agreed that they had fewer face-to-face meetings with students (41%). Such sentiments were reflected in open-ended responses as well. In contrast, a sizable number (27%) of respondents felt that they had more face-to-face interactions as a result of e-mail. Although Haworth (1999) concluded that e-mail simply replaced other channels of faculty–student communication, suggesting that e-mail may not be fulfilling its potential of increasing faculty–student interaction, the study reported here reveals a more complex picture. The extent to which e-mail is augmenting or replacing other forms of faculty–student communication may be mediated by individual instructor and student variables. Future research is clearly warranted to identify such variables and bring clarity to this issue.

Results of the present study also suggest a potential gender difference in regard to frequency of student e-mail. Although the two groups did not differ with regard to the percentage of e-mail messages which they initiated or to which they responded, female instructors reported receiving significantly more e-mails from students than their male counterparts. Given that there was not a significant difference between male and female teachers on total number of students in their courses, it is unclear why female instructors are receiving, or at least perceive that they are receiving, more messages than male instructors. One possible explanation is that e-mail messages of

female faculty may reflect more immediacy, a variable that has been found to influence students' use of e-mail (Waldeck et al., 2001). Future research should investigate the actual content of faculty e-mail exchanges with students for degree of immediacy conveyed by male compared to female instructors.

Results derived from the Faculty E-Mail Motives Scale revealed that faculty motives for initiating e-mail appear to be utilitarian in nature. Faculty reported that they send e-mails to students primarily to make course announcements. Additionally, they e-mail students to request that the students contact them and to schedule appointments. Qualitative results were generally consistent with a utilitarian motive; a large number of open-ended responses identified e-mail's functionality (i.e., convenience, efficiency, speed) as a positive aspect of using e-mail with students.

Faculty perceptions of students' motives for e-mail exchanges were somewhat similar to the faculty's own motives. They reported that students primarily used e-mail to make appointments and to clarify and ask questions about course material. In contrast, quantitative and qualitative results were consistent in revealing that faculty also perceived a primary motive for students to use e-mail was to offer excuses, such as to state that they would not be in class and to explain why they failed to complete an assignment. These findings may in part explain why faculty perceived both positive and negative consequences of faculty–student e-mail exchanges. On the one hand, faculty see students as using e-mail for reasons that might enhance learning, such as to ask clarifying questions or make appointments. On the other hand, from the viewpoint of faculty, students are sending electronic excuses for poor performance or other behaviors counterproductive to learning. Thus, the conclusion to be drawn is that faculty perceive students' motives for using e-mail to be both positive and negative.

The final research question addressed how faculty members feel about the use of e-mail as a channel of communication between faculty and students. In general, faculty perceived the use of e-mail as both beneficial and as a liability in the educational context, a conclusion supported by both closed and open-ended measures. In terms of positive consequences, as a result of e-mail faculty perceived that the quality of their face-to-face interactions with students has improved and that students have learned more about the course content. Additionally, faculty feel that they know their quiet students better, a result consistent with the student motives reported in the Kelly et al. (2001) study. However, faculty also feel that their relationships with students have not improved as a result of e-mail and that a majority of their e-mails come from a few students, a result that probably does not come as a surprise to most instructors and which appears to be consistent with other research (Atamian & DeMerville, 1998; Zagorsky, 1997).

The generalizability of the above conclusions requires further study in light of the interesting differences found between the two sample institutions. First, faculty from the small, private institution reported that students were significantly more likely to use e-mail to explain missed classes and assignments, while students from the larger institution were significantly more likely to use e-mail to make inquiries about

grades. Second, faculty from the small private institution perceived significantly more liabilities of the use of e-mail than did the faculty from the larger institution. Faculty from the smaller institution reported that e-mail was replacing face-to-face interactions and that the quantity and quality of their face-to-face interactions had declined. As a result, they reported that they did not know their students as well.

These institutional differences suggest that the benefits and liabilities of faculty–student e-mail exchanges are impacted by the size and culture of the academic institution. In larger, public universities e-mail may enable much greater faculty–student communication than is feasible because of sheer numbers of students. In contrast, typically a small private institution “sells” itself and its faculty on the premise that they offer a personalized education with frequent and unobstructed access to faculty. Personalized attention and easy access to faculty are not only part of the mission of small, private institutions, but also become cultural values accepted by most of the faculty. Under these circumstances it is not surprising that the increased use of e-mail for faculty–student interactions is seen as a liability for these faculty. The challenge for faculty in these institutions is to utilize e-mail exchanges in such a way as to maximize face-to-face interaction rather than to replace it. Students who are not reticent indicate that they prefer face-to-face communication to e-mail with faculty (Kelly et al., 2004), yet some evidence suggests that e-mail is replacing in-person contact (Haworth, 1999). However, e-mail may be enabling communication between faculty and quiet or reticent students as the present study and research by Kelly et al. (2001) has found.

Thus, the challenge for faculty at institutions valuing close, personalized contact with students is to use e-mail to open up communication with shy students and to augment face-to-face interaction with more outgoing students. Perhaps new faculty orientation programs should include a discussion of these issues as well as how to utilize student e-mail contact as a means of improving faculty–student relationships. Some faculty wrote that e-mail had helped them establish rapport and relationships with students, but gave no indication of how e-mail served this function, a question future research should explore.

The results of the present study have several implications for the work life of a faculty member. In addition to in-class time, office hours, and phone messages, faculty now must respond to students’ e-mails ( $M = 15$  per week, for the present sample) sent at all hours of the day and night. Faculty are now expected by students to be available “24/7.” Time spent on e-mail may be offset, however, by fewer in-person interactions, as reported by approximately half of the faculty respondents. Yet, 27% of the sample felt that they had more face-to-face interaction with students as a result of e-mail. Regardless of the possible additional work e-mail may add to a faculty members’ responsibilities, it appears that this medium can provide some valuable educational opportunities.

Both the quantitative and qualitative results indicated that e-mail is an effective way to communicate with reticent or quiet students. Faculty reported that students are more likely to ask course-related questions via e-mail than in the classroom

because the students feel less inhibited. As a result, faculty expressed that they are better able to establish relationships with reticent students than they could otherwise.

Related to this increased contact with quiet students is the perception of a substantial number of faculty that e-mail provided them with the ability to extend “class time.” Because of the asynchronous nature of e-mail, not only are students able to ask questions at any time, faculty are able to provide information/knowledge at any time. Faculty are free to inform, query, and challenge students at any time. In essence e-mail is truly the medium through which faculty can achieve the 1970’s educational mantra of a “classroom without walls.”

A final implication of e-mail as a medium of communication with students is actually an educational responsibility. A number of respondents indicated that e-mail is “the wave of the future.” It is probably more accurate to state that it is the present. Faculty should help educate students on the proper and effective use of e-mail. Respondents voiced the concern that students use e-mail to make excuses about missed classes and assignments and that their writing is too informal and sometimes inappropriate. These behaviors could have adverse consequences for students’ professional careers. As a result, these problems provide educational opportunities for faculty to teach students about e-mail self-presentation and the potential consequences of inappropriate e-mail.

The limitations of this study revolve primarily around measurement of some variables. First was a lack of clarity in the measure of the frequency of faculty-initiation of e-mail. The item, “How many e-mail messages during an average week do you initiate and send to students currently in your classes?” was intended to assess the frequency of messages sent to individual students. However, a number of faculty noted that they used Blackboard or another e-classroom management program and their responses mixed individual e-mail messages and mass e-mail messages. Thus, in completing the *Faculty E-Mail Motives Scale*, some faculty who responded that they used e-mail as a means of making announcements may have been referring to their use of these broadcast programs. Future research focusing on faculty–student e-mail interaction needs to make it more explicit that the focus of the study is on individual student interactions and not on packaged electronic programs for classroom management or instructor-developed distribution lists. Because e-mail headers indicate message recipients, students can identify personalized vs. mass e-mails and may attend to and respond to them very differently. Future research needs to examine this possibility. Additionally, the *Faculty E-Mail Motives Scale* may not be adequately measuring motives since the scale produced a one-factor solution; perhaps it was merely tapping into frequency of faculty initiation of e-mail. Future research should be done to revise the measure to ensure its validity and dimensional structure. Finally, respondents’ answers to the two open-ended questions may have been influenced by their completion of the scales. The main open-ended question was placed after the two motives scales but before the consequences of e-mail measure, and the other was at the end of the survey. A follow-up study should redesign the survey to pose open-

ended questions first. Furthermore, future research is needed to determine if the primary and sub-themes that emerged in this study can be replicated.

A suggestion for future research is to investigate the impact of packaged electronic classroom programs upon faculty–student communication and relationships. These programs are becoming more available; however, their effectiveness as learning tools has not been evaluated. Additionally, little is known about the interpersonal consequences of the increased computer-mediated faculty–student interaction produced by these packages.

Hundreds of studies have been conducted concerning faculty interaction in the classroom, but fewer studies have been conducted regarding faculty–student interaction outside of the classroom, and even fewer have investigated computer-mediated faculty–student communication. It is apparent that this medium is increasingly available for such interactions. It is imperative, therefore, that we investigate how best to communicate with our students via e-mail, trying to understand how to match communication channels and content with student needs and communication styles.

## Notes

- [1] The following items from the Martin et al. (1999) 30-item Motives for Communicating with Instructor measure were reworded to reflect faculty perceptions of students' motives and were included in the 15-item measure used in the present study: "to ask questions about the material," "to explain why work is late," "to clarify the material," "to challenge a grade," "to get assistance on the assignments/exams," "to learn how I can improve in the class," "to explain absences," and "to get academic advice."
- [2] The positivity or negativity of an excerpt was apparent from the context provided by the complete written response. Most faculty provided a clear indication of whether they saw e-mail as positive or negative or both by their choice of adjectives or short phrases such as "I hate it" or "E-mail is great!" Excerpts were edited to reflect sub-themes succinctly, thus, qualifying phrases and sentences establishing context were deleted.

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