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Can Email Communication Enhance Professor-Student Relationship and Student Evaluation of Professor?: Some Empirical Evidence

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Abstract

Four hundred and eight undergraduate students participated in this study that examined professor-student email communication, interpersonal relationship and teaching evaluation. Several findings have been gleaned. First, academic task was the most frequent email topic and social-relationship less frequent between professors and students. Second, professors emailed students more frequently than the reverse. Third, professors and students exhibited a higher degree of reciprocity for social-relationship communication than for task emails. Fourth, email communication contributed positively to both professor-student relationship and teaching evaluation. Fifth, professor email helpfulness, reply promptness and email frequency for social-relationship were the most significant predictors of both professor-student relationship and teaching evaluation.

Can Email Communication Enhance Professor-Student Relationship and the Evaluation of a Professor?: Some Empirical Evidence

Email has rapidly become a popular communication medium between faculty and students (Hassini; 2006; Jones, 2002; Waldeck, Kearney & Plax, 2001). Much of the research on professor-student email communication has either a) investigated the uses and impacts of email as a pedagogical tool in enhancing teaching effectiveness and learning outcomes (e.g., Althaus, 1997; Collins, 1998; Gatz & Hirt, 2000; Hassini; Jones, 2002; 2006; Kuehn, 1994; Manning, 1996;; Tao & Boulware, 2002; Yu & Yu, 2002) or b) examined the uses of email as a communication tool in increasing professor-student interactions (Bloch, 2002; Jones, 2002; Haworth, 1999; Waldeck, *et al.*, 2001; Wallace & Wallace, 2001). However, the extant research has neither compared email from professors with email from students and nor probed how such communication may relate to professor-student relationship and teaching effectiveness. Thus, the purposes of this study are to (1) discover and compare email communication patterns between professors and students and (2) examine relationships among email communication, interpersonal relationship and student evaluation of professor.

Overview of Professor-Student (P-S) Email Communication

Campus intranets have made email a popular medium for communication between professors and students. According to Jones (2002), almost all on-campus college students have received and/or sent email to their professors. However, students seldom have used email to interact with professors socially (Jones, 2002). Gatz and Hirt (2000) reported that only 4% of the total emails sent by students was exchanged with professors. In general, the use of email has not yet been extensively incorporated in classroom as less than half of the college students are required to use email for classes (Jones, 2002). Thus, the use of email between professors and students is common but infrequent. In light of the rapid changes in email technology since these reviewed studies, a

re-examination of professor-student email communication patterns is needed. One of the areas to probe entails the comparison of media used. Research Question 1 (RQ1) was thus posed.

RQ 1: Among the channels of face-to-face, email and telephone, which one conveys most amount of communication between professors and students?

Purposes of Professor-Student Email Communication

Dillard (1997) and Dillard and Solomon (2000) assert that human communication is purposeful. Interaction purposes, P-S communication included, typically consist of instrumental/task, relational and presentational goals (Canary & Cody, 1993). From the professor's perspective, instrumental goals are likely linked to educational tasks such as giving and explaining assignments, answering students' questions, and other course-administrative routines. A professor may use email to develop good relationships with students by engaging in social topics such as hobbies and interests, discussing extra curriculum activities, or disclosing personal problems. However, the same topics may also serve as a professor's self-presentational motive as he/she can selectively discuss issues and disclose information that could place him/her in the most desirable light in front of students (e.g., Frymier & Houser, 2000).

Similarly, instrumental, relational and presentational motives may guide students in their email communication with professors. The top four reasons behind students' emailing to professors were instrumental (Jones, 2002). These four reasons were asking to clarify an assignment, reporting an absence, discussing grades and setting up appointments. Martin, Myers and Mottet (1999) identified five factor-based reasons for communicating with professors. They were relating to professor, functional/task, excuse-making/grade-negotiating, participation to show interest and understanding of class materials, and sycophancy for gaining favorable impression. The first factor was obviously relational, the second, third and fourth easily instrumental, and the last self-presentational (see also Biesenbach-Lucas, 2005; Bloch, 2001). We posed the following research questions to compare

patterns of email communication between professors and students.

RQ2: To what degree, are professors perceived as being driven by their instrumental, relational and presentational purposes when emailing students?

RQ3: To what degree, are students driven by their instrumental, relational and presentational purposes when emailing professors?

RQ4: To what degree, professors and students reciprocate each other in email communication?

Email Communication and Interpersonal Relationship

If communication defines an interpersonal relationship (Knapp & Vangelisti, 1995), then email as a relatively new form of communication is likely to influence professor-student relationships as well. To assess how email might influence the P-S relationship, the five key relational aspects evoked here are familiarity, relational equality, trust, relationship closeness, and satisfaction (e.g., Millar & Rogers, 1976, Dobransky & Frymier, 2004). First, as email allows students and professors to transcend the distant and temporal barriers (Beniger 1996; Fulk & DeSanctis, 1995), more communication opportunities occur (Gatz & Hirt, 2000; Kuehn, 1994). Increased communication could enhance the familiarity between emailing professors and students. Second, email has been linked to status differential reduction (e.g., Ducheneaut, 2002; Garton & Wellman, 1994) and upward communication increase in organizations (e.g., Sproull & Kiesler, 1986). The imbedded hierarchy between the professor and students (e.g., Dobransky & Frymier, 2004; Frymier & Houser, 2000) may be mitigated during email communication to promote relational equality. Third, trust has been found to correlate with out-of-class communication (Jaasma & Koper, 1999; Dobransky & Frymier, 2004; Myers, 2004). Increased email outside classroom could contribute to greater trust. Fourth, email has the potential to cultivate psychological closeness between professors and students, who can get to know each better via more out-of-class communication (Waldeck *et al.*, 2001). Fifth, P-S email communication helps meet each other's instrumental, social and relational needs, which

could lead to greater relationship satisfaction. Hypothesis 1 (H1) was posed below.

H1: Professors' email communication positively contributes to the professor-student relationship in terms of familiarity, trust, equality, closeness and relational satisfaction.

Email Communication and Evaluation of Professor

Of all teaching quality criteria, individual competence, interpersonal skills and teaching effectiveness are found to be common across various teaching evaluation measures (Cohen, 1980; Marsh, 1983; Marsh & Dunkin, 1997; Johnson & Roellke, 1999). The issue here is whether email communication adds to teaching effectiveness and boosts teaching evaluation. Walther (1992) notes that email allows its users to take as much time as they want to compile messages. Both professors and students have the opportunity to convey clear, well-organized messages that enhance efficiency in communication. "Housekeeping chores" such as class announcements conveyed through email can serve as a retrieval reminder. Thus, email may have a positive impact on teaching evaluation. Yet, our literature review has not yielded definitive support for our speculation, RQ5 was asked.

RQ5: Does professors' email communication positively relate to teaching evaluation?

Email content alone may not be the only factor that influences student evaluation. The manner in which professors email students and email quality could also influence relationship and teaching effectiveness. For example, a delayed reply to a student inquiry could be deemed unsatisfactory. A reply message too brief may not be able to adequately address a complex question and could be deemed unhelpful. Thus we included professor email reply promptness and helpfulness as communication aspects in addition to content. We posed RQ6.

RQ6: Which email communication aspects, communication content categories, email promptness and helpfulness and communication amount, contribute the most to teaching evaluation?

Interpersonal Relationship and Teaching Evaluation

The literature indicates that better teacher-student relationships may enhance students'

motivation and learning outcomes (Frymier & Houser, 2000; Dobransky & Frymier, 2004). This may in turn influence how students evaluate their professors. A good relationship can increase mutual appreciation, which likely results in better student evaluation of professors. We proposed H3 that related the reviewed five relational aspects to teaching evaluation.

H2: Familiarity, trust, relationship equality, relationship closeness and relational satisfaction as aspects of the professor-student relationship are positively correlated to teaching evaluation.

Methods

Sample and Procedures

Four hundred sixteen undergraduate students at a university in Hong Kong voluntarily completed questionnaires in various classes and received no extra credit. The final sample size was 408 after eight unusable questionnaires were discarded.

Questionnaire and Measurement

Respondents were first asked to recall one professor with whom they had taken at least one class and had exchanged email. Respondents then indicated the gender of the recalled professor, estimated his/her age, and reported the number of classes taken with him/her. This process was designed mainly to place respondents in a mindful state of focusing on the recalled professor. The rest of the questionnaire consisted of items that measured the variables reviewed.

All measures were created based on the literature review or modified based on existing teaching evaluation items used in the university. Professor email use frequencies for various purposes were measured via 15 items that entailed task, social and personal relationship communication. To answer the question, “How often does/did the professor email you for the following?”, students rated these 15 items on a scale of 1 (very rarely) to 5 (very often). Principle component factor analysis with varimax rotation yielded two factors, “professor tasks” and “social relationship” with no double loading items, explaining a total variance of 55.8%. See Table 1 for

details. Professor email promptness and helpfulness were rated by two items: “The professor returns my email promptly” (promptness) and “The professor’s emails have been helpful” (helpfulness). The rating scale was 1 (very untrue) to 5 (very true).

Student email use frequencies for various purposes were measured with 25 items in the same manner professor use frequencies were done. The same factor analysis procedures produced three factors “student tasks”, “social relationship” and “negative events” with neither triple nor double loading items, explaining a total variance of 55.4%. See Table 2.

To compare amount of email communication with that of traditional media, three items were used as follows: “The professor and I have had a lot of email communication” (email communication), “The professor and I have had a lot of face-to-face communication” (FTF communication) and “The professor and I have had a lot of telephone communication” (telephone communication). The rating scale ranged from 1 (very untrue) to 5 (very true).

Professor-student relationship was measured by five items for five relational variables. Trust was measured by “I feel that I can trust the professor”, familiarity by “I feel I know the professor quite well”, equality by “The professor and I seem to have an equal relationship”, closeness by “I feel I am pretty close to that professor”, and satisfaction by “I enjoy my relationship with that professor”. The rating scale for five items was from 1 (strongly disagree) to 5 (strongly agree). There five items had significant intercorrelations that ranged from .38 to .72 with a mean of .55.

Student evaluation of professor comprised of three areas, individual competence, interpersonal skills and teaching effectiveness that were measured by 2, 2, and 4 items respectively. The rating scale ranged from 1 (strongly disagree) to 5 (strongly agree). A principle component factor analysis of these eight items yielded three clean-cut factors that corresponded to the three pre-conceived evaluation areas, explaining a total variance of 81.44%. See Table 3 for details. Additionally, the intercorrelations ranged from .60 to .71.

Results

Approximately 55.9% of the subjects recalled a male professor while 43.9% a female professor with a mean age of 40.1 years old. Respondents reported that 29.7% of recalled professors used email frequently, 26.% moderately, 24.4% rarely, and 18.8% never did.

Amount of Communication Conveyed in Media (RQ1)

For amount of communication, paired t -tests indicated that professors and students communicated more face-to face (Mean [SD] = 2.94 [1.11]) than through email (M [SD] = 2.24[1.00]), with $t(df) = 11.81(406)$ and $p < .0001$. Email (M[SD] = 2.24[1.00]) conveyed higher amount of communication than did telephone (M [SD] = 1.47[.77]), with $t(df) = 15.23 (406)$ and $p < .0001$. In addition, FTF and email communication had a correlation of .36 ($p < .01$), FTF and telephone .28 ($p < .01$), and email and telephone .36 ($p < .01$). For RQ1, the traditional FTF medium conveyed most amount of P-S communication, email second, and telephone last.

Professor Email Purposes (RQ2)

Professors' email use frequencies for educational tasks and social relationship had a correlation of .49 (see Table 4). A paired t -test showed that professors used email for tasks more frequently (M = .2.85) than for a social relationship with students (M = 1.57). See Table 5 for details. Interestingly, professors' email use for tasks, but not for social relationship, was correlated to email helpfulness ($r = .16, p < .01$) and reply promptness ($r = .30, p < .01$). To answer RQ2, professors' email use was mostly driven by tasks than by social-relationship; yet the more they used email for one purpose the more they would for the other purpose.

Student Email Purposes (RQ3)

Students' email use frequencies for course tasks, social relationships and negative events showed correlations that ranged from .29 to .64 (See Table 4). Paired t -tests showed that students used email (a) more frequently for tasks (M = 2.50) than for social relationships (M = 1.50), (b)

more frequently for tasks ($M = 2.50$) than for negative events ($M = 1.74$), and (c) more frequently for negative events ($M = 1.74$) than for social relationship ($M = 1.50$) (See Table 5). Additional paired t -tests indicated that professors used email slightly more often ($M = 2.85$) than did students for tasks and social relationships (See Table 5).

Professor-Student Reciprocity (RQ4)

For reciprocity, professors' email frequencies for tasks and social relationship correlated respectively to those of students' at Pearson's r 's of .49 and .62 ($p < .01$). Further, professor email reply promptness was positively related to student email communication frequency for tasks ($r = .28$, $p < .01$), for social relationship ($r = .15$, $p < .01$), and in negative events ($r = .15$, $p < .01$). Likewise, the helpfulness of professor emails was positively related to student email communication for tasks ($r = .20$, $p < .01$), for social relationship ($r = .11$, $p < .01$), and in negative events ($r = .10$, $p < .05$). Thus, moderate-high reciprocity existed between professors and students, and reciprocity was higher for relationship than for task communication.

P-S Email Communication and Interpersonal Relationship (H1)

H1 predicted a positive link between P-S email communication and their relationship. The five relational variables, familiarity, trust, relationship equality, relationship closeness and relational satisfaction were inter-correlated in the range of .50 to .78. Further, most of these variables were correlated to the professor and student email communication variables at low or moderate Pearson's r 's. Thus, H1 was largely supported. Additionally, FTF and telephone communication were generally correlated to the relational variables as well (Table 6). FTF communication had the highest average correlations, email came second, and telephone third.

Additional five regression procedures were performed for each of the five relational aspects (i.e., familiarity, trust, equality, closeness and satisfaction). Results detailed in Table 7 indicate that professors and students' email frequencies for social relationship, and professor email helpfulness

and reply promptness exerted the most impact on the P-S relationship.

Email Communication and Evaluation of Professor (RQ5 & RQ6)

RQ5 was about professor email and student evaluation. Correlational analysis showed that professor email frequencies for tasks and social relationships yielded low Pearson's r 's (.13-.24) with professor's interpersonal skills and teaching effectiveness but had no link with professor's individual competence (See Table 8). Further, professor reply promptness and helpfulness showed moderate correlations (.36-.44) with all aspects of the evaluation. P-S email amount had low correlations (.24-.28) with the evaluation three aspects. By and large, professor email communication was positively linked to the evaluation aspects. Additionally, P-S face-to-face but not telephone communication amount, was also correlated with all evaluation aspects (.29-.25). Student email frequencies were mainly correlated to teaching effectiveness (Table 8).

RQ 6 asked about the relative impact of P-S email communication variables on student evaluation. Three regressions for respective individual competence, interpersonal skills and teaching effectiveness were performed with all P-S email communication variables entered as independent variables (see Table 9). In general, professor email helpfulness and reply promptness and social-relationship email had key impact on student evaluation of professor.

Interpersonal Relationship and Evaluation of Professor (H2)

H2 predicted positive relationships between variables of interpersonal relationship and student evaluation of professor. Correlational results showed that familiarity, trust, relationship closeness, relationship equality and relational satisfaction all were positively related to the evaluation aspects. H3 was supported. See Table 10 for details.

Discussion

Our results indicate that for email-using professors, face-to-face (FTF) was the most used medium, email came as a second, and telephone a distant third. Our focus is on email

communication patterns.

Professor-Student Email Communication Patterns

Five major patterns have been discovered. First, email frequencies for various purposes were all positively correlated for professors and students. Possibly, great communication desire or familiarity with email might have driven users to engage in email communication of all sorts. Second, professor-student email communication was task-oriented. As the university context was primarily instrumental, predictably, professors and students frequently exchanged emails for such tasks as assignments and appointments and even in negative events (e.g., late work and an absence). Third, professors and students occasionally engaged in relational emailing, showing a lower frequency than any other email uses. Fourth, professors possibly were email initiators as they exhibited higher use frequencies for both tasks and relationship than did students. Fifth, reciprocity was demonstrated as professors' email frequencies were positively correlated to students', with the highest reciprocity in relational email communication.

P-S Email Communication and Interpersonal Relationship

Consistent with the extant literature, most of our email communication variables were positively linked to the five relationship variables. Professor email frequencies, helpfulness and reply promptness contributed positively to P-S relationships. Mirror patterns held true for student email frequencies for tasks and social-relationship but not for negative events. Possibly, negative events put students in a defensive mode that sometimes failed to contribute to relationships.

Our multiple regression analyses offered insight into email communication variables' relative contributions to relationship building. First, professor email helpfulness and/or reply promptness were the significant predictors of all relational variables. Second, either professor or student social-relational email or both was/were predictive of all relational variables. Understandably, social-relationship was the most relevant email substance for building professor-student

relationships even when such communication happened infrequently. Helpfulness, indicative of professor email quality, but not communication amount, was relevant to good relationships with students. Professor reply promptness, too, was an important predictor.

Email Communication and Evaluation of Professor

Professors' email communication, compared to students', had a greater positive correlation with student evaluation. Communication from professors seemed key to shape the P-S relationship. The importance of professor email on teaching evaluation was further evidenced in our regression analysis that spelled that professor email helpfulness and reply promptness and email frequency for social-relationship accounted for the most of the variance in each of the three evaluation aspects.

Professor-Student Relationship and Evaluation of Professor

Positive correlations existed between all five relationship variables and the three evaluation aspects. This could suggest that a good relationship with students adds to teaching evaluation favorably. Teaching may not be only a matter of effectively transferring knowledge to students. Rather, teaching perhaps also is about cultivating relationships with students.

Email Communication, Interpersonal Relationship and Evaluation of Professor

The positive correlations among the three categories of variables lead to a hypothesized diagram (see Figure 1). We argue that email communication affects teaching evaluation directly and feeds interpersonal relationship, which in turn, positively influences teaching evaluation. Interpersonal relationship has its direct, independent effects on teaching evaluation. We contend that both email communication and interpersonal relationship add to student evaluation of professor. For future research, we could examine further as to what constitutes helpful email through content analysis of actual emails. We could also compare the profile of email-using professors with those who do not to further probe the effects of email on relationship and teaching effectiveness.

References

- Althaus, S. L. (1997). Computer-mediated communication in the university classroom: An experiment with online discussion. *Communication Education, 46*, 158-174.
- Beniger, J. R. (1996). Who shall control cyberspace? In L. Strate, R. Jacobson, & S. B. Gibson (Ed.), *Communication and cyberspace: Social interaction in an electronic environment* (pp. 49-58). Cresskill, NJ: Hampton Press.
- Biesenbach-Lucas. (2005). Communication topics and strategies in email consultation: Comparison between American and international university students. *Language Learning & Technology, 9*(2), 24-46.
- Bloch, J. (2002). Student/teacher interaction via email: The social context of internet discourse. *Journal of Second Language Writing, 11*(2), 117-134.
- Canary, D. J., & Cody, M. J. (1993). *Interpersonal communication: A goals-based approach*. New York: St. Martin.
- Cohen, P. A. (1980). Effectiveness of student-rating feedback for improving college instruction: A meta-analysis. *Research in Higher Education, 13*(4), 321-339.
- Collins, M. (1998). The use of email and electronic bulletin boards in college-level biology. *Journal of Computers in Mathematics and Science Teaching, 17*(1), 75-94.
- Dillard, J. P. (1997). Explicating the goal construct tools for theorists. In J. O. Greene (Ed.), *Message production: Advances in communication theory* (pp. 47-69). Mahwah, NJ: Erlbaum.
- Dillard, J. P., & Solomon, D. H. (2000). Conceptualizing context in message production research. *Communication Theory, 10*, 167-175.
- Dobransky, N., & Frymier, A. B. (2004). Developing teacher-student relationship through out of class communication. *Communication Quarterly, 52*(3), 211-223.

- Ducheneaut, N. (2002). The social impacts of electronic mail in organization. *Information, Communication & Society*, 5(2), 153-188.
- Elasmar, M., & Carter, M. (1996). Use of email by college student and implications for curriculum. *Journalism and Mass Communication Education*, 51(2), 46-54.
- Emmers-Sommer, T. M. (2004). The effects of communication quality and quantity indicators on intimacy and relational satisfaction. *Journal of Social & Personal Relationships*, 21(3), 399-411.
- Fallows, D. (2004). *The internet and daily life*. Retrieved 06/07, 2006 from http://www.pewinternet.org/pdfs/PIP_Internet_and_Daily_Life.pdf
- Frymier, A., & Houser, M. (2000). The teacher-student relationship as an interpersonal relationship. *Communication Education*, 49(3), 207-219.
- Fulk, J., & DeSanctis, G. (1995). Electronic communication and changing organizational forms. *Organization Science*, 6, 337-379.
- Garton, L., & Wellman, B. (1994). Social impacts of electronic mail in organizations: A review of research literature. In B. R. Burleson (Ed.), *Communication yearbook* (pp. 434-453).
- Gatz, L., & Hirt, J. (2000). Academic and social integration in cyberspace: Students and email. *The Review of Higher Education*, 23(3), 299-318.
- Hassini, E. (2006). Student-instructor communication: The role of email. *Computers & Education*, 47, 29-40.
- Haworth, B. (1999). An analysis of the determinants of student email use. *Journal of Education for Business*, 75(1), 55-59.
- Jaasma, M. A., & Koper, R. J. (1999). The relationship of student-faculty out-of-class communication to instructor immediacy and trust and to student motivation. *Communication Education*, 48, 41-47.

- Johnson, S., & Roellke, C. F. (1999). Secondary teachers' and undergraduate education faculty members' perceptions of teaching-effectiveness criteria: A national survey. *Communication Education, 48*, 127-138.
- Jones, S. (2002). *The internet goes to college: How students are living in the future with today's technology*. Retrieved 01/2006, 2006 from http://www.pewinternet.org/pdfs/PIP_College_Report.pdf
- Kelly, L., Duran, R., & Zolten, J. (2001). The effects of reticence on college students' use of electronic mail to communicate with faculty. *Communication Education, 50*(2), 170-176.
- Knapp, M. K., & Vangelisti, A. L. (1995). *Interpersonal communication and human relationships* Boston : Allyn and Bacon.
- Kuehn, S. A. (1994). Computer-mediated communication in instructional setting: A research agenda. *Communication Education, 43*, 171-183.
- Manning, L. (1996). Economics on the internet: Electronic mail in the classroom. *Journal of Economic Education, 27*(3), 201-204.
- Marbach-Ad, G., & Sokolove, P. (2001). Creating direct channels of communication: Fostering interaction with email and inclass notes. *Journal of College Science Teaching, 31*(2), 178-182.
- Marsh, H. W. (1983). Multidimensional ratings of teaching effectiveness by students from different academic settings and their relation to student/course/instructor characteristics. *Journal of Educational Psychology, 75*(1), 150-166.
- Marsh, H. W., & Dunkin, M. (1997). Students' evaluation of university teaching: A multidimensional perspective. In Perry, R. & Smart, J. (Ed.), *Effective teaching in higher education: Research and practice* (pp. 241-320). New York : Agathon Press
- Martin, M., Myers, S., & Mottet, T. (1999). Students' motives for communicating with their instructors. *Communication Education, 48*, 155-164.

McComb, M. (1994). Benefits of computer-mediated communication in college courses.

Communication Education, 43, 159-170.

Millar, F., & Rogers, L. (1976). A relational approach to interpersonal communication. In G. Miller

(Ed.), *Explorations in interpersonal communication*(pp. 87-103). Newbury Park, CA: Sage.

Myers, S. (2004). The relationship between perceived instructor credibility and college student

in-class and out-of-class communication. *Communication Report, 17*(2), 129-137.

Nadler, M. K., & Nadler, L. B. (2001). The roles of empathy, credibility, and sex in out of class

communication between faculty and students. *Women's Studies in Communication, 24*(2),

241-262.

Pew Research Centre. (1999). *Technology triumphs, morality falters*. Retrieved 01/2006, 2006 from

<http://people-press.org/reports/print.php3?ReportID=57>

Sproull, L., & Kiesler, S. (1986). Reducing social context cues: Electronic mail in organizational

communication. *Management Science, 32*(11), 1492-1512.

Tao, L., & Boulware, B. (2002). Email: Instructional potentials and learning opportunities. *Reading*

& Writing Quarterly, 18, 285-288.

Waldeck, J., Kearney, P., & Plax, T. (2001). Teacher email message strategies and students'

willingness to communicate online. *Journal of Applied Communication Research, 29*(1),

54-70.

Wallace, F., & Wallace, S. (2001). Electronic office hours: A component of distance learning.

Computers & Education, 37, 195-209.

Walther, J. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective.

Communication Research, 19(1), 52-90.

Woods, R., & Keeler, J. (2001). The effect of instructor's use of audio email messages on student participation in and perceptions of online learning: A preliminary case study. *Open Learning, 16*(3), 263-278.

Yu, F., & Yu, H. (2002). Incorporating email into the learning process: Its impact on student academic achievement and attitude. *Computers & Education, 38*, 117-126.

Table 1

Factor Loadings for Professor Email Use Frequencies

Factors	Loadings
<u>1. Tasks</u>	
giving assignments	.68
explaining a course policy	.64
making announcements related to the subject	.81
giving feedback on student assignments	.62
clarifying student's questions	.70
wishing students good luck on exams	.55
Chronbach's Alpha = .78	
<u>2. Social-Relationship</u>	
making funny jokes	.62
sending e-cards for holidays	.54
discussing university activities	.63
expressing political views	.78
forwarding interesting news	.70
discussing his/her personal hobbies	.87
discussing his/her personal beliefs	.86
discussing his/her personal problems	.85
discussing his/her family situation	.80
Chronbach's Alpha = .91	

Table 2

Factor Loadings for Student Email Use Frequencies

Factors	Loadings
<u>1. Tasks</u>	
asking to clarify the material/assignment	.81
asking for assistance on assignments/exams	.76
asking for academic advice	.77
turning in assignments through attachments	.62
asking for feedback on my work	.67
making an appointment with the professor	.55
inquiring about my academic performance	.55
collaborating on a project	.54
thanking the professor for feedback	.55
Chronbach's Alpha = .87	
<u>2. Negative Events</u>	
explaining my late work	.75
asking for/explaining absences	.72
inquiring about a grade I received	.67
questioning grading criteria	.58
seeking help in resolving conflict in group projects	.56
Chronbach's Alpha = .92	
<u>3. Social-Relationship</u>	
asking for a recommendation letter	.60
asking for suggestions for extracurricular activities	.75
trying to learn more about the professor personally	.79
discussing my hobbies	.84
discussing my personal beliefs	.61
discussing my personal problems	.85
discussing my family situation	.78
inviting this professor to student activities	.50
sending e-cards for holidays	.71
saying things to impress the professor	.75
showing my interest in the subject	.73
Chronbach's Alpha = .92	

Table 3

Factor Loadings for Evaluation of Professor

Factors	Loadings
1. <u>Individual Competence</u>	
The professor is competent academically	.89
The is knowledgeable in his/her areas	.72
Chronbach's Alpha = .76	
2. <u>Interpersonal Skills</u>	
This professor is likeable	.85
The professor has good interpersonal skills	.78
Chronbach's Alpha = .82	
3. <u>Teaching Effectiveness</u>	
The professor is an effective classroom teacher	.78
The subjects he/she teaches are well designed	.83
I am motivated to learn in the class(es) the professor teaches	.86
I have learned a great deal from the professor	.80
Chronbach's Alpha = .91	

Table 4

Correlations of Professor and Student Email Use Frequencies

	1	2	3	4
<u>Professor Use Frequencies</u>				
1. Tasks	--			
2. Social-Relationship	.49**			
<u>Student Use Frequencies</u>				
3.Tasks	.47**	.29**		
4. Social-Relationship	.34**	.29**	.52**	
5. Negative Events	.39**	.45**	.60**	.64**

** Correlation is significant at the 0.01 level (2-tailed).

Table 5

Paired t-Tests for Email Use Frequencies by Professors and Students

Paired Email Use Frequencies	<i>M (SD)</i>	<i>t</i>	<i>df</i>	<i>p</i> <
<u>By Professors</u>				
Tasks	2.85 (.84)	32.60	404	.0001
Social Relationship	1.57 (.72)			
<u>By Students</u>				
Tasks	2.50 (.88)	26.27	403	.0001
Social Relationship	1.50 (.67)			
Tasks	2.50 (.88)	20.86	403	.0001
Negative Events	1.74 (.76)			
Social Relationship	1.50 (.67)	-8.00	403	.0001
Negative Events	1.74 (.76)			
<u>Tasks</u>				
By Professor	2.85 (.84)	7.96	403	.0001
By Student	2.50 (.88)			
<u>Social Relationship</u>				
By Professors	1.57 (.72)	2.45	404	.015
By Student	1.50 (.67)			

Table 6

Correlations among Communication and Interpersonal Relationship Variables

Communication Variables	Relationship Variables				
	Familiarity	Trust	Equality	Closeness	Satisfaction
Professor Email Frequency for Tasks	.09	.24**	.17**	.20**	.22**
Professor Email Frequency for Social-Relationship	.22**	.14**	.15**	.26**	.16**
Professor Email Reply Promptness	.15**	.37**	.28**	.27**	.35**
Professor Email Helpfulness	.13**	.43**	.33**	.34**	.41**
Student Email Frequency for Tasks	.16**	.17**	.06	.18**	.15**
Student Email Frequency for Social-Relationship	.31**	.18*	.018**	.33**	.23**
Student Email Frequency for Negative Events	.14**	.10	.010*	.18**	.07
P-S Email Comm. Amount	.33**	.25**	.24**	.42**	.35**
P-S FTF Comm. Amount	.43**	.37**	.29**	.46**	.44**
P-S Telephone Comm. Amount	.42**	.08	.18**	.30**	.11*

* and ** indicate correlations significant at the respective .05 and .01 levels (2-tailed).

Table 7

Regressions for P-S Interpersonal Relationship Variables with Communication Independent Variables

Dependent Variables	Significant Independent Variables	Beta	F (df ₁ , df ₂)	R ²
Familiarity with Professor	Student Social Relationship Professor Email Promptness	.28** .10*	22.07 (2, 395)***	.10
Trust in Professor	Professor Email Helpfulness Professor Social Relationship Professor Email Promptness	.31** .14** .16*	34.62 (3, 395)***	.21
Relationship Closeness	Professor Email Helpfulness Student Social Relationship Professor Social Relationship	.31** .20** .15*	34.38 (3, 394)***	.21
Relationship Equality	Professor Email Helpfulness Professor Social Relationship	.32** .15**	29.91 (2, 397)***	.13
Relational Satisfaction	Professor Email Helpfulness Student Social Relationship Student Negative Events Professor Email Promptness	.30** .26** -.13* .12*	26.52 (4, 395)***	.21

***, ** and * indicate significance at .0001, .001 and .05 respectively.

Table 8

Correlations among Professor and Student Communication Variables and Evaluation of Professor

Communication Variables	Evaluation of Professor		
	Individual Competence	Interpersonal Skills	Teaching Effectiveness
Professor Email Tasks	.08	.16**	.24**
Professor Email Social-Relationship	.04	.13**	.17**
Professor Email Reply Promptness	.40**	.39**	.36**
Professor Email Helpfulness	.43**	.44**	.44**
Student Email Tasks	.08	.09	.17**
Student Email Social-Relationship	.07	.16**	.21**
Student Email Negative Events	-.02	.05	.11*
P-S Email Comm. Amount	.24**	.25**	.28**
P-S FTF Comm. Amount	.29**	.35**	.35**
P-S Telephone Comm. Amount	.04	.08	.12*

* and ** indicate correlations significant at the respective .05 and .01 levels (2-tailed).

Table 9

Regressions of Professor and Student Email Communication on Evaluation of Professor

Dependent Variable	Significant Independent Variable(s)	Beta	F (df ₁ , df ₂)	R ²
Individual Competence	Professor Email Helpfulness	.30**	89.63 (3, 397)***	.21
	Professor Email Promptness	.20*		
Interpersonal Skills	Professor Email Helpfulness	.32**	38.27 (3, 395)***	.23
	Student Social Relationship	.17**		
	Professor Social Relationship	.14*		
Teaching Effectiveness	Professor Email Helpfulness	.43**	29.91 (2, 397)***	.21
	Professor Social Relationship	.17**		

***, ** and * indicate significance at .0001, .001 and .05 respectively.

Table 10

Correlations between Relationship Variables and Evaluation of Professor

Relationship Variables	Evaluation of Professor		
	Individual Competence	Interpersonal Skills	Teaching Effectiveness
Familiarity with Professor	.21**	.36**	.35**
Trust in Professor	.56**	.62**	.57**
Relationship Closeness	.42**	.62**	.57**
Relationship Equality	.35**	.47**	.43**
Relational Satisfaction	.51**	.62**	.61**

** indicates correlations significant at .01 levels (2-tailed).

Figure 1.

Hypothesized Relationships Among Email Communication, Professor-Student Relationship and Teaching Evaluation

