

E-Mail IN ACADEMIA:

Expectations, Use, and Instructional Impact

An exploration of e-mail communication between faculty and students at UNC Chapel Hill identified issues surrounding the use of e-mail to advance instructional outcomes

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“The more elaborate our means of communication, the less we communicate,” claimed theologian and educator Joseph Priestly.¹ Born in 1733, Priestly could hardly have imagined the Internet, e-mail, and instant messaging, although his prophetic statement presaged a dilemma now faced on college campuses worldwide. The popularity of and reliance on emergent computer-mediated communication technologies such as instant messaging, blogs, and social networks have arguably widened

the generation gap between faculty and traditional undergraduate students. Marc Prensky defined this generational technology divide by coining the terms *digital natives* and *digital immigrants*. He wrote,

The single biggest problem facing education today is that our Digital Immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language.²

The purpose of the study reported here was to explore differences between professors (digital immigrants) and undergraduate students (digital natives) at the University of North Carolina at Chapel Hill regarding their expectations and use of e-mail and its perceived impact on instructional outcomes and student success. The ubiquitous nature of e-mail presents an ideal opportunity to investigate its use along this generational divide. Additionally, the study of e-mail practice and perception in the context of higher education might foster more meaningful scholarly communication between teacher and student and, in turn, positively impact instructional outcomes and student success.

Literature Review

Regardless of the context and medium, the process of communication is complicated and multifaceted. Over the years, many have sought to better understand and explain the phenomenon. Ernest Pascarella, for example, has spent much of his career exploring faculty and student communication and its impact on academic achievement and the college experience. Although not set within the context of the digital environment, his studies reveal a strong association between student outcomes and the degree and quality of one-on-one communication between teacher and student.³ These outcomes reflect positive trends in academic achievement, personal growth (both intellectual and developmental), the degree of effort extended to studies, student connection and satisfaction with academic coursework and the institute, attrition, and attainment of educational and career goals.⁴

How does Pascarella's work fit within the context of a digital instructional environment? Recently, Robert Duran, Lynne Kelly, and James Keaten⁵ investigated faculty use and perception of communication via e-mail in correspondence with students. They found that faculty ($n = 257$) received more than

two times the number of e-mails they produced (faculty received an average of 15.15 e-mails per week compared to 6.72 e-mails per week they sent). Excuses for late work or missed class sessions were the most cited reasons for student-initiated e-mail communication. Despite some faculty dissatisfaction ($n = 13$, or 21 percent) with the amount of time and effort spent on e-mail communication, faculty overall perceived benefits (a mean of 3.05 on a 5-point scale) and liabilities (2.95) as roughly equal. Faculty found they could communicate better with reticent students (3.25) and relay pertinent and timely course information to classes using e-mail.

A 2003 study conducted by Michael Russell and his colleagues found that teachers use technology, including e-mail, more for preparation and work-related communication, and less often for instructional purposes.⁶ Interestingly, this finding seemed especially true among less experienced teachers, despite their self-reported high levels of comfort using technology. In John Savery's 2002 study, however, 90 percent of faculty surveyed reported using e-mail five times or more per semester for instructional use.⁷

Unfortunately, terms such as "instructional purposes" and "instructional use" are not consistently defined across studies. Studies in 2001 and 2004 identified the concept of *cognitive presence* in computer-mediated instruction,⁸ which we propose should be present for an instructional use of e-mail. Cognitive presence is defined as an atmosphere of inquiry and higher-order learning that supports critical thinking, reflection, knowledge construction, collaboration, and discourse.

Numerous studies further address the general use of e-mail, particularly in the corporate environment. These studies focus on e-mail etiquette,⁹ appropriate behavior, norms, and conventions,¹⁰ development of user expectations,¹¹ e-mail management and system design,¹² user productivity,¹³ and e-mail train-

ing.¹⁴ Though these studies investigated how e-mail is used and managed, studies related to e-mail use in the specific context of faculty-student communication and enhanced learning are limited and warrant further investigation.

Purpose of the Study

This study aimed to explore e-mail practice in academia between professors and undergraduate students in relation to their expectations and use of e-mail, along with its perceived impact on instructional outcomes and student success. Additional areas of investigation included survey participants' emotions regarding e-mail use and their formal e-mail training experiences.

The study addressed three questions:

1. What do faculty and students perceive as appropriate e-mail use in their communications with one another?
2. How do faculty and students actually use e-mail in communicating with one another?
3. Does e-mail communication have a perceived positive impact on learning, grades, and faculty-student familiarity?

Methodology

The study employed an exploratory quantitative and qualitative research design using an electronic survey tool. Two surveys were developed and administered to faculty and undergraduate students, respectively, in the fall of 2006. Each survey had approximately 74 parallel questions, presented in a mostly closed-question format. Participants had opportunities to provide comments regarding their responses on select survey questions.

Use of an electronic survey tool enabled gathering information from a large population in a systematic, efficient (both time and cost), and comparable manner. Additionally, participants could complete the survey at a convenient time and place. Prior to administering the

survey, a pilot survey checked for clarity of wording and time it would take participants to complete the actual survey.

Each survey consisted of four components:

- Introduction,
- Demographics,
- Style (referring to self-reported e-mail behaviors), and
- Perceived style (referring to a respondent's impression of another's e-mail behavior).

The introduction functioned as a filtering tool to eliminate participants who did not meet study specifications. Part-time students and faculty were not included in this study, for example, nor were faculty with titles other than assistant, associate, or full professor. In addition, participants were instructed to respond only in terms of their e-mail communications surrounding on-campus undergraduate courses (distance education interactions were excluded).

The student survey demographic section collected information about gender, age, ethnicity, residency status, class status, and major. The faculty survey demographic section collected information about gender, age, ethnicity, professorship status level, years teaching, and academic discipline.

The final two sections of both surveys collected core information regarding e-mail attitudes, perceptions, expectations, and behaviors. The style section investigated participant e-mail use in regard to the construction of e-mails, frequency of use, behaviors, responsiveness, attitudes, and expectations. The section on perceived style collected information about how participants viewed their counterparts' attitudes and expectations.

Survey Implementation

The survey was administered through a computer-mediated tool and promoted through the UNC Mass E-mail System, which distributes e-mail messages to the entire university community. The incentive for participating in the survey was the chance to win a \$20 gift certificate to a local shopping mall. Means of participant identification were limited

to IP addresses (collected as standard procedure with the survey tool) and an optional submission of an e-mail address to participate in the drawing to win the gift certificate.

Participants

Participants were recruited from a pool of UNC Chapel Hill undergraduate students and faculty from all disciplines. Access to this pool of participants was achieved through the UNC Mass E-mail System.

Only full-time undergraduate students and full-time on-campus faculty serving in an on-campus instructional role to undergraduate students were included in the study. This allowed the samples to more accurately reflect a clear distinction between what Prensky refers to as digital natives and digital immigrants, given that the majority of undergraduates are between the ages of 17 and 21.

Procedure

An introductory e-mail outlining the intent of the study directed participants to the survey link. Individuals who consented to participate and who met the specified requirements were asked to respond to a total of 73 questions (74 for faculty). With the exception of the introductory questions, which were designed to ensure that participants met the guidelines for the study, participants had the option of not responding to questions. Many of the questions also permitted comments.

Access to the survey remained open for one week. Participants were informed that the results of the study would be made available to the UNC Chapel Hill community.

Analysis of Data

After closing access to the survey site, we compiled data from both the faculty and student surveys and organized it by category and parallel questions. Coding of data occurred on questions in which respondents could indicate multiple answers. Data was cross-tabulated using descriptive statistics, performing a chi square analysis and using Fisher's exact test, when appropriate, to determine statistical significance.

Results

The UNC Chapel Hill undergraduate faculty population of 1,818 represents more than 60 disciplines. Of the 97 faculty who participated in the study, 56 met the study's specifications; 25 respondents did not teach undergraduate students, and 16 were not ranked as assistant, associate, or full professor. Roughly 43 percent of faculty participants identified themselves as full professors, 38 percent as associate professors, and 20 percent as assistant professors. The average age for a UNC faculty member is approximately 50 years,¹⁵ which is consistent with our survey participants because the majority of our faculty responders were between the ages of 41 and 60.

Of the UNC undergraduate student population, 178 participated in the study. Of those, 166 met study specifications, with roughly 4 percent freshmen, 30 percent sophomores, 24 percent juniors, and 41 percent seniors. Approximately 87 percent were under 22 years of age, and 12 percent were between the ages of 22 and 25. In regard to residency, 79 percent of student participants were in-state, 20 percent out-of-state, and 1 percent international. Table 1 summarizes the demographics of the study participants.

Appropriate E-Mail Use

Research question 1 asked, what do faculty and students perceive as appropriate e-mail use in communicating with one another? As Table 2 shows, both faculty and students generally agree on appropriate use of e-mail correspondence, although faculty are less likely to view lecture clarification as an appropriate use. Faculty additionally reported that providing career advice over e-mail was appropriate.

Faculty respondents provided additional information in open-ended questions regarding their perception of how e-mail can best be used. Comments included:

It is not a substitute for office hours, nor am I willing to answer long substantive questions in e-mail. It is an efficient way to communicate

Table 1**E-Mail Study Participants**

	Faculty	Students
Gender		
Female	50%	80%
Male	50%	20%
Ethnicity*		
American Indian or Alaska Native	2%	3%
Asian	2%	11%
Black or African American	2%	14%
Hispanic	0%	5%
White	96%	73%
Other	2%	2%
Range in Age		
Less than 22	0%	87%
22–25	0%	12%
26–30	0%	1%
31–40	14%	1%
41–50	25%	1%**
51–60	34%	**
61+	25%	**

* Participants could choose multiple ethnicities.

** One percent of student participants were over 41 years old.

with simple questions and schedule/remind/inform about in-depth opportunities for learning.

I prefer e-mails for some purposes (like excuses for absences) and not for others (like answers that will take a long time to formulate in writing).

I think students should primarily use e-mail to inform the instructor of valid excuses for missing class/assignments, getting clarifications on assignments, or setting up appointments. I think students should meet with instructors during office hours for lecture clarifications, questions about grading, advising, and meeting with prospective instructors.

The comments above seem to offer a possible explanation for student dissatisfaction. Students complained about incomplete explanations and brevity:

The professor not taking the time to thoughtfully read my e-mail. Often they will read parts, and assume one thing and respond to what they assume my concern/question is.

Professors usually send very short e-mails in response to my long

ones and don't answer all of my questions.

Too often professors will pop back a quick response when I have sent a well thought out but e-mailed [set of] questions. The habit of writing quick e-mails overrides the original goal of communication. When I e-mail a professor, I don't expect to have a 3 or 4 e-mail conversation; I think out my question in detail hoping they will do the same with their response.

It seems the two groups have different expectations for the appropriate use of e-mail.

Note that while these comments suggest a faculty preference for face-to-face meetings in regard to substantive information inquiry, students might not know this. Furthermore, although survey results indicate that majorities of students (93 percent) and faculty (82 percent) feel that e-mail is an appropriate venue for lesson clarification, communication expectations surrounding substantive e-mail conversations need clarification.

Actual E-Mail Use

Research question 2 asked, how do faculty and students actually use e-mail in communicating with one another? Both faculty (72 percent) and students (78 percent) concur that e-mail use is encouraged as appropriate for coursework correspondence.

Table 2**Perceived Appropriate Use of E-Mail**

	Faculty believe it is appropriate for students to use e-mail for:	Students believe it is appropriate for faculty to use e-mail for:
Assignment clarification	94%	99%
Question asking/answering	92%	93%
Excuses (missed classes, assignments, etc.)	94%	N/A
Lecture clarification	82%	93%
Relationship building	58%	66%

Forty-one percent of faculty indicated that they provide e-mail behavior expectations to their students at the beginning of the semester; another 39 percent indicated that although they did not extend these expectations to their students, they are open to the possibility; and 20 percent felt that providing e-mail behavior expectations was unnecessary. Fifty-seven percent of student respondents indicated that they would prefer to know faculty e-mail behavior expectations in advance. One student respondent noted,

I think it is fine that every professor has different standards/expectations about e-mail formality, but they should all make it clear at the beginning of the semester.

Both faculty and students agree that the primary purpose for using e-mail to communicate with one another relates to general housekeeping functions such as assignment clarification, explanations for missed classes or assignments, and question asking and answering. In open-text responses, faculty also reported using e-mail to send out course announcements, items of possible interest, guidance for research, reminders, and feedback on drafts of student work. Students responded that they also used e-mail to set appointments with professors, discuss assignment performance, and request grade clarification (see Table 3).

In regard to the amount of e-mail, a number of student respondents expressed some frustration:

I respond to all my e-mails the first time I receive them. I will forget to respond if I read them and log out of the session.

I just have to return e-mails as soon as I check them so that I don't forget; also so that my inbox isn't flooded (which it always is).

Faculty respondents had similar frustrations:

Table 3

Faculty and Student Use of E-Mail Communication

	Faculty use e-mail for:	Students use e-mail for:
Assignment clarification	87%	83%
Excuses (missed classes, assignments, etc.)	78%*	58%
Question asking/answering	83%	83%
Lecture clarification	46%	28%
Relationship building	26%	13%

* Responding to student excuses

I think you should have asked if the increasing volume of e-mails from students is posing a problem for the faculty, who are having to spend hours extra a week in answering e-mails, but get no credit for this in their departments or in the university—the answer is a resounding YES!!!

I would like students to ask themselves if the question can wait until my next office hours. I'm simply too busy to reply to all of the e-mails I get from students.

I would like for them not to ask questions that require long, thoughtful answers. I get hundreds of e-mails a day and am swamped with work. If they need that kind of answer they should talk to me after class or come to office hours (which almost no one does any more).

Results from the study seem to validate faculty frustration in regard to the large amount of e-mail messages they receive. Ninety-four percent of student respondents indicated that they e-mail their professors between one and 10 times a month. With an average class size of 30 students, that equates to a minimum of 30 e-mails a month per class, with the potential for 300 e-mails a month per class. Note also that approximately 5 percent of undergraduate classes at UNC have an enrollment of more than 100 students per instructor.¹⁶

Table 4

Perceived Positive Impact of Increased E-Mail

	Faculty	Students
Learning	50%	67%
Grades	6%	30%
Relationships	49%	68%

Perceived Impact of E-Mail

Research question 3 asked, does e-mail communication have a perceived positive impact on learning, grades, and the faculty-student relationship? As Table 4 shows, both students and faculty agree that increased e-mail communication contributes to learning and teacher-student relationships. Students, however, more often believe that it leads to higher grades.

Little narrative information was available regarding improved learning and grades as a result of increased e-mail communication between faculty and students. Respondents had much to say, however, about the idea of e-mail communication and relationship building. As students noted:

Faculty should express some interest in getting to know the student academically/personally more often, and I think e-mail is a good way to get started.

I wish that they would become more personal with students, ask questions and try to get to know the student.

On the flip side, professors indicated:

Relationship building and career advice should be done in person, but setting up appointments for this by e-mail is fine.

I think e-mail communication is great, convenient, and helpful in many ways, but I am concerned that it replaces face-to-face contact with me in too many instances. Fewer students come to office hours because of e-mail, and I think that is a potential problem, especially for students who aren't doing as well in the class as they could be.

It was not clear from survey results whether the increased amount of e-mail communication correlates with a decrease in faculty office hour visits.

When questioned about their views on whether student-faculty e-mail communication was formal or informal, the majority of faculty and students believe it can be either. Analysis of data, however, found a significant difference ($p = 0.0$) in the beliefs held by faculty and students in regard to the other being "too friendly" in communicating via e-mail. Fifty-three percent of faculty members believe that students are often or sometimes too friendly, while only 5 percent of students feel this way about faculty. Perhaps students—as digital natives brought up in an Internet world filled with opportunities for online relationship building—are simply more seasoned in developing online relationships and more apt to view computer-mediated conversations as a means to that end.

Two additional survey components captured interesting results: apprehension about using e-mail to communicate with faculty and reactions to the idea of formal e-mail training.

Apprehension. Clearly, faculty at UNC underestimate student apprehension about initiating e-mail communications with professors. While 35 percent of faculty indicated they perceive students to be apprehensive, 66 percent of student respondents in-

dicated that they were apprehensive. In contrast, 100 percent of faculty responders said they did not feel apprehensive the first time they e-mail a student, while 13 percent of student responders reported believing their professors are at least sometimes apprehensive in initiating e-mail communication. Nonetheless, several students noted comfort using e-mail over other forms of communication. For example:

Because I am shy and don't like to speak on the phone first, I prefer e-mails so I can really think out my message and construct what I want to say so I can avoid miscommunication or sending a garbled message on my part. So I typically use e-mail as a communication mode more than office hours or anything.

Another student noted that the more casual an e-mail conversation, the less intimidating it is for the student to respond:

I noticed my computer science professors are much more casual in their e-mails to me. (Don't always use a lot of formality, sometimes don't use complete sentences, address me by my first name, and sign with their first name.) I like this better than the more formal e-mails I have received from other professors because it makes it less intimidating for me to write them back, and it makes me more comfortable with communicating with them via e-mail.

A student also noted that e-mail is often used when a student is anxious about speaking in front of his/her peers:

E-mail is a method of communication that can reduce anxiety for a student who needs additional help or who wants to express an idea without the judgment of peers.

E-Mail Training. Both students (43 percent) and faculty (64 percent) believe e-mail training would benefit

others, but neither group indicates a strong desire for their own personal training in e-mail use. Only 14 percent of faculty and 31 percent of students indicated interest. Faculty's major objection seemed to be time:

Nice idea. Yet another of those desirable things (like training on using PowerPoint or other computer programs) that I'd love but absolutely don't have time for.

One student was enthusiastic about the possibility:

Please!!!! I'm so bad at e-mail etiquette, and I can't handle the sheer number of e-mails. I would love to attend training on using e-mail productively.

Other students noted,

I do not think that real training is necessary; if professors do receive a lot of lazily-composed e-mails, perhaps a few guidelines on the matter, presented at the beginning of the course, would suffice.

It sounds interesting, but I would have to be convinced that it is relevant and necessary in my life.

Limitations and Implications for Future Research

This exploratory study examined e-mail communication between faculty and students. The primary limitation of the study is sample size. Before results can be generalized to other institutions, further research conducted in multiple academic institutions is necessary to confirm, expand, or revise findings and propagate development of a model of best practice for instructional e-mail use in academia to enhance learning.

We also believe that future studies would benefit from a more-even gender distribution, relative to enrollment, among student responders. It is not clear why female students responded at higher rates than male students in this initial study.

Another limitation of the study was the exclusion of other instructional members of the academic community such as graduate students, adjunct professors, and practitioner instructors, as well as those participating in distance education courses.

It is also prudent to consider the possibility of survey bias in terms of those who chose to participate in the survey. If, as Presky notes, digital immigrants (in this situation, professors) lack a proclivity toward technology use, many might not have read the e-mail calling for participation or might have chosen not to participate in the web-based survey. Future studies, therefore, might benefit from including an alternate method of information gathering for those who are averse to e-mail or Internet interaction.

Discussion

Without question, e-mail has grown to be a viable and indispensable means of information exchange in academia. Results of this initial study unfortunately indicate that e-mail has yet to reach its full potential as a meaningful instructional tool for inquiry and higher-order learning. Survey results and narrative responses, however, offer insight into possibilities for expanding the role and functionality of e-mail as an instructional tool.

We propose that professors can greatly improve e-mail communication and alleviate frustration simply by taking a few minutes at the beginning of each semester to set clear expectations and guidelines for e-mail use. Survey responses indicate that both faculty and students believe this initiative would be helpful. Topics to address during this discussion might include apprehension about using e-mail, appropriate use of e-mail communication, hours during which faculty will respond to e-mail, formality of the communication, grammar standards for the messages, information necessary to include in messages, ways faculty prefer to be addressed and to address students in return, expectations of responsiveness, and appropriate subject lines (see Table 5).

We believe e-mail communication has the potential to greatly enhance learning. As survey results indicate, fac-



ulty and students agree that increased e-mail communication can have a positive impact on learning. To realize this impact, though, e-mail communication between professor and student must be seen as an extension of instruction. A paradigm shift from viewing e-mail communication solely as suited for housekeeping functions to viewing it as a means to further scholarly discourse and cognitive challenge is needed.

We suggest that appropriate e-mail use be reframed into an instructional conversation. Students, for example, might be encouraged to ask substantive questions over e-mail without expecting answers. A professor might instead respond with a series of questions or suggest a different angle from which the student could begin to research the answer. The professor might also bring a student's e-mail question to the classroom for discussion or post it on an online discussion board for class collaboration. If this type of exchange is a clearly set expectation at the beginning of the semester, both parties will benefit. Faculty will not feel burdened to answer all questions, and students would not expect them to. Instead, students will be challenged to find their own answers, leading to a truly scholarly exploration that extends the classroom experience.

Finally, as our study revealed, many students feel uneasy or intimidated when initiating face-to-face conversations with faculty; they prefer using e-mail to ask questions or relay information. It is important for faculty to recognize this. Addressing these issues, conveying a sense of openness and

availability, and engaging students in positive one-on-one conversations may alleviate some of these feelings and create richer and more meaningful scholarly interactions in the classroom and digital environment.

Conclusion

The ubiquitous use of e-mail in academia coupled with the strong relationship between student achievement and faculty-student one-on-one communication necessitates continued exploration of the influence of instructional e-mail correspondence. It is also a compelling reason for faculty to proficiently, thoughtfully, and strategically craft their e-mail messages to students. In doing so, faculty may increase the scope of their influence, establish a cognitive online presence, and extend scholarly dialogue and thought. Additionally, we propose that the development, communication, and adherence to agreed-upon e-mail expectations, norms, and guidelines would improve communications, lessen faculty and student frustrations, and alleviate student anxiety.

Achieving these goals requires instruction in e-mail use, however. Despite objections to attending e-mail training, both faculty and students agree that it would be beneficial—for each other. By raising awareness of the association between student success and one-on-one communication with faculty in an environment where e-mail serves as one of the primary methods of contact, we hope that both faculty and students will begin to see the value of e-mail training and become more willing to attend. Moreover, we believe it is critical for faculty to realize that learning how to better use e-mail can save them time, assuage a number of their current frustrations, and alleviate student communication concerns.

Clearly, unless training options are flexible in method of delivery, efficient, and relevant to each audience, high attendance will be a challenge. We believe, however, that faculty trained in the optimal use of e-mail can better expand and reframe the use of e-mail communication to enhance teaching and learning and thereby improve student outcomes. *C*

Table 5

Suggested Expectations and Guidelines for E-Mail Use

Topic	Expectations and Guidelines
Apprehension	Shared expectations and guidelines can ease student apprehension about communicating with the professor over e-mail.
	Assuage student fears about approaching the professor with questions in person, during or outside of class.
Appropriate uses	Housekeeping, such as assignment clarification, excuses, question asking/answering, announcements.
	Instructional, such as lecture clarification and question asking/answering. Explain guidelines for such requests.
	Mentoring, such as relationship building and career advice.
Inappropriate uses	Debating grades. Under what circumstances if any is this appropriate over e-mail?
	Long, substantive question asking with the expectation of an e-mail "answer."*
	When is e-mail an inappropriate substitute for office hours or in-class discussion?
Concluding an e-mail	Should students always end with a thank you or some acknowledgment?
	Would faculty prefer students only respond when further action is requested (to avoid e-mail overload)?
E-mail hours	When the professor will or will not respond to e-mail.
Emoticons**	Does the professor appreciate and feel comfortable with their use?
	Will faculty use them when communicating with students? Does this help students understand tone?
Formality	How formal or informal the professor believes e-mail communications should be.
	Does this depend on the context of the message? Or how well the professor and student know each other?
	What does the professor perceive as "too informal" or "too formal" when it comes to e-mail communication with students?
	Appropriate tone.
Grammar, etc.	Are proper grammar, spelling, and complete sentences expected all the time?
	Are one-word answers acceptable?
Information to include	Full name, course, section, semester, etc.
Proper address	How the professor prefers to be addressed.
	How the professor plans to address students.
Responsiveness expectations	The amount of time a student should expect to wait before receiving a response.
	The amount of time the professor expects to wait to receive a student's response.
Subject line	What constitutes an acceptable subject line? One word? Complete description?
* It might be appropriate to set the expectation that the professor will either respond in such a way to aid the student in researching the answer or bring the question to the classroom or online discussion board for class collaboration. ** Groups of keyboard characters that typically represent a facial expression or emotion.	

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