PROJECT MUSE®

Academic and Social Integration in Cyberspace: Students and E-Mail

Lisa B. Gatz, Joan B. Hirt

The Review of Higher Education, Volume 23, Number 3, Spring 2000, pp. 299-318 (Article)

Published by The Johns Hopkins University Press
DOI: 10.1353/rhe.2000.0009

For additional information about this article
http://muse.jhu.edu/journals/rhe/summary/v023/23.3gatz.html

Access provided by Virginia Polytechnic Inst. __ACCESS_STATEMENT__ St.University __ACCESS_STATEMENT__

Copyright by the Johns Hopkins Univ Press. Gatz, L. B.; Hirt, J. B. (2000). Academic and social integration in cyberspace: Students and e-mail. The Review of Higher Education 23(3), 299–318. doi: 10.1353/rhe.2000.0009

The Review of Higher Education
Spring 2000, Volume 23, No. 3, pp. 299–318
Copyright © 2000 Association for the Study of Higher Education
All Rights Reserved (ISSN 0162-5748)

Academic and Social Integration in Cyberspace: Students and E-Mail

Lisa B. Gatz and Joan B. Hirt

Conceptual models related to the increasingly important issue of student retention have emerged in the past 15 years, and campuses have employed them to provide programs and services designed to enhance student success in college. Two such models have been widely cited in the literature on higher education. The first (Astin, 1984) focuses on student involvement in the campus environment. Essentially, Astin postulates that involvement can be measured by the amount of physical and psychological energy students exert in any given educational endeavor. The model further asserts that involvement can be measured both quantitatively (e.g., the number of hours spent studying for a class) and qualitatively (e.g., how much of that time is spent reading versus contemplating material). The greater the energy expended, the greater the degree of involvement. The greater the degree of involvement, the more likely the student is to persist and succeed in college.

Lisa B. Gatz is a Residential Learning Coordinator in the Office of Housing Residential Life at Valparaiso University in Indiana. Joan B. Hirt is an Associate Professor of Higher Education and Student Affairs in the Department of Educational Leadership and Policy Studies at Virginia Tech in Blacksburg, Virginia. This article is based on a paper presented at the annual conference of the Association for the Study of Higher Education, November 1998, at Miami, Florida. Address queries to Lisa B. Gatz, Residence Learning Coordinator, Valparaiso University, Valparaiso, IN 46383; telephone: (219) 464-5763; fax: (219) 464-5381; e-mail: lisa.gatz@valpo.edu

Closely related to the Astin model is Tinto's (1993) framework. Tinto identifies four factors related to student persistence in college. The first (pre-entry characteristics) includes family background, skills, and attributes developed prior to college along with the students' high school education. The second, institutional characteristics, focuses on the campus in which the student is enrolled (e.g., size, academic offerings). The third characteristic (academic integration) describes the student's academic performance and his or her interactions with faculty and staff. The fourth factor, social integration, focuses on interactions among students and extracurricular activities. The combined effect of these four factors, according to Tinto, contributes to students' persistence in college.

That persistence is explained through three stages of academic and social integration (Tinto, 1993). During the separation stage, the values and norms of families, high school friends, and prior educational settings are challenged by the values and norms of the campus environment. The student's task is to reconcile this dissonance during the second, or transition, stage in which he or she has disassociated himself or herself from the old norms but has not yet adopted new norms that integrate individual goals and commitment to higher education with the programs and services offered in the campus environment. Once those new norms and behaviors have been adopted, students are said to have achieved the third stage in the model, incorporation, meaning the degree to which students are academically and socially integrated into campus life.

Both the Astin (1984) and Tinto (1993) models imply that involvement, or academic and social integration, is closely tied to student behavior. Indeed, instruments widely used to measure academic and social integration have focused primarily on students' behavior. For example, the Student Opinion Survey (SOS) (American College, 1990) is a 42-item instrument which measures the frequency with which students use programs and services on campus and the degree to which they are satisfied with those programs and services. The College Student Experiences Questionnaire (CSEQ) (Pace, 1990) consists of 190 items which measure social and intellectual development and involvement. It examines how students spend their time in college and the nature and quality of their activities. The Student Development Task and Lifestyle Inventory (SDTLI) (Winston, Miller, & Prince, 1987) is a 140-item instrument that measures the behaviors in which students engage to achieve purpose, mature relationships, and academic autonomy. Typical items on all three instruments ask students how frequently they meet with faculty outside of classes and how often they spend time with friends and peers in social activities. Such items measure how students spend their time and the degree to which students have achieved academic and social integration.

While these instruments provide insight into traditional college student behaviors, the proliferation of technology in higher education has changed the ways in which education is delivered to students (Holden & Mitchell, 1993; Kurshan, 1990; Zhu, 1996). For example, administrators use technology not only to admit students but also to advise them and assist them in making career choices. Students can access information about the institution through campus Web pages that link them to many campus electronic services. These electronic services allow students to register for classes, apply for on-campus housing, learn about campus events and resources, and even search for career-related information.

Technology is also being used more extensively in classroom activities. Faculty use technology in designing class presentations, creating assignments, and developing laboratory exercises. Web pages about courses are proliferating on campuses. Instructors can publish syllabi on such pages rather than distributing hand-outs in classes, notify students of changes in class assignments, post additional readings or lecture notes, and administer quizzes and exams. Many faculty create listservs for their classes, enabling students to pose questions about the class to the instructor and classmates. Such questions are designed to promote discussion among members of the classroom community.

Technology has also changed the ways in which students spend their time (Farquhar, McGinty, & Kotcho, 1996; Russell, 1996; Swartz & Walters, 1995). Students use technology to access the Internet to explore topics of interest to them or to investigate topics related to classes they are taking. They participate in on-line chatrooms where they communicate with any number of other people about a common interest. They engage in listserv discussions with an established group of people about a variety of topics. In general, technology has changed the nature of communication and communication patterns among students and between students, faculty, and administrators.

One form of technology is electronic mail (e-mail). E-mail is a fairly recent phenomenon and its use in higher education has brought about dramatic changes in the way students, faculty, and staff communicate with one another (Wishnietsky, 1991). Student use of e-mail is rising at a significant rate (DeLoughry, 1996). If students are spending more time using various forms of technology, including e-mail, it is reasonable to hypothesize that they have less time available for the behaviors traditionally used to measure academic and social integration but that they may be reaching the same level of integration by using e-mail. For example, students may be communicating with faculty outside of the classroom electronically, rather than in person. They may be chatting with peers through e-mail, rather than meeting them after classes. Do these forms of electronic communication enhance academic and social integration into campus life?

Instruction on how to use e-mail is abundant (Caswell, 1988; Trudell, Bruman, & Oliver, 1984; Wilson, 1983; Wishnietsky, 1991), and research on the use of e-mail in higher education has been fairly extensive. Some scholars have examined the conditions that promote the use of e-mail. Results suggest that students need a reason to start using technology and must overcome their fear of using new technology properly before they will use it extensively (Wilson, Ryder, McCahan, & Sherry, 1996). E-mail is most beneficial when students have easy access to and free use of the necessary technology (Holden & Mitchell, 1993). If such conditions exist, they find it an effective way to communicate with others. Other researchers have focused on e-mail in classroom settings. In some instances, e-mail promotes discussion between faculty and students outside of class (Holden & Mitchell, 1993). Students ask more questions of instructors through e-mail than they do in class and ask questions they are reluctant to raise in class. Evidently, the impersonal nature of asking questions electronically enables students to pose a broader array of inquiries (DeLoughry, 1993). In other cases, dialogue momentum (the ability to access e-mail and respond to messages in a timely fashion) falters because participants do not have convenient access to the necessary technology (Farquhar, McGinty, & Kotcho, 1996).

Investigations suggest three reasons why faculty and students use e-mail: personal use, class use, and collaboration (Hawley, Moore, Chuang, & Angeli, 1996). Others have reported mixed feelings about e-mail. While users believe e-mail is unobtrusive, convenient and efficient, they are also overwhelmed, at times, with the number of messages it generates and find it difficult to communicate feelings and complex issues electronically (Wilson, 1983).

It would seem, therefore, that research has explored conditions that promote or discourage the use of e-mail, the use of e-mail in classrooms, the purposes for which e-mail is used, and its advantages and disadvantages. Noticeably absent in the literature, however, are studies that investigate the outcomes associated with the use of e-mail. This study seeks to fill this gap by exploring how traditional-age, residential, first-year students use e-mail. Specifically, we investigated the types of people with whom participants communicated by e-mail and whether they used e-mail in lieu of traditional behaviors to achieve academic and social integration. These research questions guided our study:

1. With whom do college students correspond electronically?

2. Do college students use e-mail in lieu of traditional behaviors that lead to academic integration?

3. Do college students use e-mail in lieu of traditional behaviors that lead to social integration?

Data consisted of print-outs of participants' e-mail records and corresponding log sheets. The log sheets detailed (a) the relationship between participants and the senders/recipients of messages and (b) the general nature of the messages sent and received. We compared the results reported on the log sheets to lists of traditional behaviors in which students engage to achieve academic and social integration, as drawn from three well-established and reputable survey instruments.

Method

Participants

We conducted our study at a large, public, research university located in a mid-Atlantic state. The university considers itself to be on the cutting edge in providing access to technology for faculty, staff, and students. All faculty and office personnel have computers and access to ethernet connections. All faculty, staff, and students are automatically assigned e-mail accounts upon arriving on campus. Over 75% of students bring personal computers to campus upon matriculation, and those without computers have easy access to over 90 computer labs located in campus buildings and residence halls. We made the assumption that e-mail activity among students on this campus was typical of e-mail activity among students in general.

At the time of the study, the campus enrolled 18,000 undergraduates, of whom 4,000 were first-year students who were required to live in on-campus housing. Because we wished to explore the academic and social integration process, we wanted to study participants who might be engaging in behaviors that would lead to such integration. Therefore, we elected to study e-mail activity among traditional-age (18-19 years old), residential, first-year students who were more likely to be dealing with integration issues. Additionally, our purpose was to examine *how* these students used e-mail, not *whether* they used e-mail. To that end, we selected a purposeful sample of traditional-age, residential, first-year students who used e-mail.

We posted flyers in campus residence halls to solicit participants. Since all residence hall rooms had no-cost computer connections, all residential students presumably had reasonable access to e-mail and could have volunteered to participate in the study. We screened the prospective respondents who contacted us to ensure that they met the selection criteria: first-year student, 18 or 19 years old, residing on campus, used e-mail, and willing to maintain e-mail logs. The first 12 men and 12 women who met these criteria became our sample. One male subsequently failed to complete the study, rendering a total sample of 23 participants.

We offered participants an incentive of $40 if they fully participated in the study. Full participation included attending an informational meeting about the study, printing out copies of incoming and outgoing e-mail activity during the three-week data collection period, maintaining logs on that e-mail activity, and responding to a series of survey questions that we sent them electronically at spaced intervals throughout the data collection period.

Materials

Participants submitted three sets of materials to the researchers. The first set consisted of print-outs of their incoming and outgoing e-mail mailboxes for the data collection period. "Mailboxes" are summary records about all incoming and outgoing e-mail messages for a particular user. These records report the date and time each message was sent or received, the name of the person who sent the incoming message or to whom the outgoing message was sent, and the subject of the message that appeared in the "Re:" portion of the message. These mailboxes are automatically created and maintained by the e-mail software program used on the campus where the study was conducted. At the informational meeting, we trained participants on how to save their mailboxes and print them out during the data collection period. Using these print-outs, participants recorded details on log sheets about each message received or sent during the data collection period.

Their log sheets were the second set of materials that we required of participants. Its format, developed specifically for the study, required two types of information for each message. The first was the respondents' relationship to the sender/recipient of the message. We provided a list of possible categories of correspondents (e.g., mother, father, brother, high school friend, faculty member, staff member). Participants were either to select one of these categories or to create a new category that more accurately reflected their relationship with the sender/recipient of a particular message. The second item that each participant noted on the log sheet for each message was its general nature. We did not require actual copies of all e-mail messages, since such a request would probably be overly intrusive and limit participation in the study. But we trained participants in how to summarize the message content on the log sheet.

Finally, participants responded to six survey questions sent to them electronically one at a time every three days during the data collection period. These questions asked respondents about their e-mail activity and how they used e-mail for academic and social purposes. We selected an electronic rather than paper format for these questions so we could monitor whether respondents were checking and responding to their e-mail regularly.

Procedure

We collected this data during a three-week period—from October 29 through November 18, 1997—that we had chosen carefully. We wanted to allow participants sufficient time to establish e-mail accounts and patterns of use but also to capture data while academic and social integration might be presumed to be important issues for the students. At our request, the office that managed network services on the campus provided the previous year's totals of e-mail activity. Although this volume was not disaggregated by faculty, staff, or student, it showed that campus users sent and received 925,000 to 950,000 messages per week in October, while, in early November, activity for the year peaked with over 1.1 million messages a week.

Every three days during the data collection period, we e-mailed participants a message asking them to respond to one of the survey questions. At the end of the data collection period, participants submitted copies of their mailbox print-outs and log sheets. We verified that every message reported in the mailboxes was recorded on a corresponding log sheet and that all materials were legible, confirmed that participants had responded to all six survey questions, and then paid the participants their incentives.

To analyze the data, we generated lists of behaviors traditionally associated with academic and social integration, respectively, from survey instruments used to measure academic and social integration. The experts we consulted, familiar through their professional activities with the literature on academic and social integration, identified as valid, reliable, and extensively used measures the SOS (American College, 1990); the CSEQ (Pace, 1990); and the SDTLI (Winston, Miller, & Prince, 1987).

The SOS (American College, 1990) measures student outcomes in the areas of emotional, intellectual, and social development. Additionally, it measures involvement in college life and satisfaction with the collegiate experience. The reliability coefficients on tests-retests ranged from .90 to .98. Validity is based on the literature, consultation with content experts, and a pilot test of the instrument, all of which revealed a high degree of face validity. Social and intellectual development, involvement in college life, and satisfaction with the college experience form the focus of the CSEQ (Pace, 1990). Normative data on over 20,000 administrations of the instrument reveal alpha reliabilities which range from .79 to .90 for all scales, rendering the CSEQ a highly reliable instrument. The SDTLI (Winston, Miller, & Prince, 1987) measures emotional, intellectual, physical, and social development among traditional-age college students and is designed to examine the specific behaviors of students in college. Short-term test-retest reliability coefficients range from .70 to .87 and long-term (one-year) test-retest coefficients range from .53 to .80.

Given these data, it was reasonable to assume that the items on these three instruments would identify behaviors through which students might achieve academic and social integration. We reviewed every item on each instrument, dropping items unrelated to either academic or social integration (e.g., demographic characteristics). We then classified the remaining items under academic integration or social integration. After further analysis, we assigned items in each category to subcategories. For example, in the academic integration category, items that asked respondents whether they had talked with a faculty member outside of class, made an appointment with a faculty member in his or her office, or sought comments and criticisms from faculty about class work were all assigned to the subcategory "faculty contact." We identified five subcategories of academic integration items: (a) faculty contact, (b) furthering academic experience, (c) advising, (d) library and research, and (e) tutoring/success strategies.

As an example of a social integration subcategory, we created "extracurricular involvement" for items that asked respondents if they had read or asked about a club, or met with a club or organization advisor. The other nine social integration subcategories were: making and interacting with friends, interaction in residence/dining halls, recreational activities, self-help activities, leadership activities, career exploration, multicultural/fine arts, miscellaneous social activities, and organization of time.

We conducted data analysis of participant log sheets in two stages. First, we analyzed the relationships between participants and their correspondents, creating six categories of relationships: relatives (all messages to/from mothers, fathers, siblings, aunts, uncles, cousins, and grandparents), friends (roommates, best friends, campus friends, high school friends, acquaintances, friends from the Internet, friends of parents, boy/girlfriends, ex-boy/girlfriends, friends from church, and residence hall friends; we also included here messages that participants sent to themselves), professors and classmates (also teaching assistants, advisors, and administrators), extracurricular (club presidents, club members, and former club members), and finally, miscellaneous (messages to/from listservs, returned mail, unsolicited mail, high school teachers, job supervisors, pastors/priests, former coworkers, virtual flowers/gifts, and campus administrative offices). We calculated the frequency with which participants corresponded with each group and subgroup.

In the second stage of log-sheet analysis, we analyzed the content of participants' messages. The unit of analysis was the message. We looked for key words, phrases, or ideas expressed in participants' descriptions of their messages, then compared them to the lists of behaviors we had identified as academic or social integration. If the key words in the message description matched the description of a traditional behavior associated with academic integration (e.g., "message to professor asking for feedback on paper turned

in last week"), we assigned that message to an umbrella category we called "academic match." If the key words did not match any of the traditional behaviors but described behaviors that could reasonably be assumed to promote academic integration (e.g., "question sent to chemistry class listserv"), we put it under "academic addition." In all cases, we also assigned messages to an appropriate subcategory, such as "contact with faculty."

We followed the same process and used a similar umbrella term for assigning messages to social integration categories. For example, we assigned "social committee meeting" to the "social match" umbrella category. Descriptions of messages that did not match a traditional behavior but which could reasonably be assumed to promote social integration (e.g., "information about upcoming Leadership Conference"), we assigned to the "social addition" category, further designating all messages in both categories to their appropriate subcategory (e.g., "leadership activities"). A "No Match" category held all messages that could not be assigned to any of these four categories; thus, we could calculate the total number of messages received and sent by participants by category and subcategory.

Responses to the e-mail survey questions further illuminated the analysis. For example, we analyzed participants' responses to a question about their use of e-mail to see if they were consistent with the total number of messages sent and received. We also examined participants' comments about how they used e-mail for academic and social purposes in the context of the number of messages they sent or received in each category.

Authenticity and trustworthiness are always important factors in qualitative research like this study. Miles and Huberman (1994) describe authenticity as "truth value" (p. 278), pointing out the researchers' responsibility to gain an accurate understanding of what is really happening and their efforts to ensure that the study is credible and understandable. We worked to achieve authenticity in two ways. First, the log sheets were primary sources of data prepared by the participants themselves. Primary sources of data are typically considered more authentic than other forms of data. However, because we asked participants to describe the content of each message, rather than providing copies of all messages, they may have been less than candid in recording the contents of their messages or they may have recorded only one of several topics covered in their messages, thus compromising the authenticity of their log sheets. To address this concern, we reviewed a limited number of print-outs of actual messages sent and received by participants. These were randomly identified messages submitted voluntarily by participants. In all cases, the content of the messages was accurately recorded on the log sheets. We therefore assumed that participants were accurately recording the content of their messages on the log sheets. The second method we used to assure authenticity was a form of peer review. At our request, a panel of experts reviewed our

survey questions; they agreed that the questions would elicit responses relevant to the research questions posed in the study. This form of peer review is a standard way of enhancing authenticity in qualitative research.

Trustworthiness refers to the truthfulness or accuracy of the data collected (Miles & Huberman, 1994). We worked to assure the study's trustworthiness in two ways. First, the participants' print-outs and log sheets were information that any number of potential participants may have provided. Therefore, the data were reasonably truthful because they were representative—not unique to the specific sample selected for the study. Second, the conclusions we drew from the results were based on triangulated data. Triangulation suggests that data extracted from two or more sources are more likely to be trustworthy than information from a single source (Russell & Stage, 1992). In this case, we confirmed the log-sheet data through mailbox print-outs, responses to survey questions, and lists of traditional behaviors associated with academic and social integration before we drew our conclusions. Overall, we deemed the analysis of instruments, and comparisons between those results and results revealed in participant log sheets, and survey responses to be reasonable and sufficient to solicit data related to the research questions posed in the study.

RESULTS

Our analysis of the instruments found that 132 of the 412 items on the SOS, CESQ, and SDTLI were related to academic or social integration. We assigned the 42 items related to academic integration to one of five categories: faculty contact, furthering my academic experience, advising, library and research, and tutoring and other success strategies. We categorized the 90 items related to social integration to 10 categories: student organization involvement, making and interacting with friends, interaction in residence halls and dining commons, recreational activities and exercise, self-help activities, leadership activities, career exploration, multicultural/fine arts activities and speakers, miscellaneous social activities, and organization of time.

Overall, the 23 participants sent or received a total of 4,903 e-mail messages during the three-week data collection period. We eliminated from this total the 300 survey questions that we had sent, yielding a total sample for purposes of analysis of 4,603 messages. Of those, 70% (3,213) were messages received and the remaining 30% (1,390) were messages sent by participants. The least active e-mail user sent/received 74 while the most active sent/received 336. Table 1 reports the number of messages exchanged between participants and correspondents in each of the five relationship categories: relatives, friends, professors and classmates, extra-curricular

Table 1
Number and Percentage of Messages by Type of Relationship
(N = 4,603)

Relationship	*No. of Messages*	*Percentage in Category*	*Percentage of Total*
Relatives			
Parents	500	86	10.8
Others	83	14	1.8
Subtotal	583	100	12.6
Friends			
HS friends	1,227	46	26.6
Boy/girlfriend	324	12	7.0
Best friend	204	8	4.4
Ex-boy/girlfriend	201	7	4.3
Others	724	27	15.7
Subtotal	2,680	100	58.2
Professors/classmates			
Professors	200	43	4.3
Classmates	197	42	4.3
Others	73	15	1.6
Subtotal	470	100	10.2
Extra curricular			
Club president	111	71	2.4
Others	46	29	1.0
Subtotal	157	100	3.4
Miscellaneous			
Listservs	504	71	10.9
Others	209	29	4.5
Subtotal	713	100	15.5
Total	4,603		99.9*

* Does not equal 100% due to rounding

activities, and miscellaneous. Although we identified numerous subcategories in each of the two main categories, for the purposes of this discussion, we report only the subcategories with the greatest e-mail activity; the remaining subcategories are grouped as "Others" in the table.

TABLE 2

SUMMARY OF E-MAIL ACTIVITY BY CATEGORY

Category	*No. of Messages*	*Percentage of Messages*
Academic match	94	2.1
Academic addition	274	6.0
Social match	188	4.1
Social addition	476	10.3
No match	3,571	77.5
Total	4,603	100.0

The results suggest some clear patterns of communication among participants. The largest single group with whom respondents communicated were friends (58.2% of all messages) and the largest subgroup within that category consisted of communication with friends from high school (26.6% of all messages). Respondents also corresponded extensively with parents (10.8% of all messages), while messages from listservs accounted for another 10.9%. Collectively, messages to and from friends and family represented over 70% of all e-mail activity.

Table 2 shows our analysis of the content of all messages. Only a limited number of messages (8.1%) could be assigned to the "academic match" or "academic addition" categories, while 14.4% of messages reflected either "social match" or "social addition" behaviors. The content of the remaining 77.5% of the messages were "no match" items.

Of the 368 messages in the academic category, most (47%) were either contact with faculty or messages about tutoring and success strategies (42%). The remaining three subcategories accounted for only 11% of messages. (See Table 3).

Of the 664 messages in the social category, 64.2% were categorized as making or interacting with friends, while 15.9% related to extracurricular activities. The other seven subcategories accounted for the remaining 19.9%. (See Table 4.)

Although we did not design this study to analyze messages assigned to the "no match" category, because of their large number, we conducted a cursory review of them. This review revealed four trends. First, participants sent and received a large number of jokes to and from friends (e.g., "Why Barney is the devil", "How to tell the difference between a freshman and a senior"). Second, messages were used to disagree with or apologize to others (e.g.,"fighting about phone bill,""apologizing for yelling on the phone"). Third,

Table 3

Summary of E-Mail Academic Behaviors by Subcategory and Group

Subcategory	*No. of Academic Match Messages*	*No. of Academic Addition Messages*	*Total n (%)*
Faculty contact	82	92	174 (47)
Further academic experience	0	32	32 (9)
Advising	2	2	4 (1)
Library and research	0	4	4 (1)
Tutoring/success strategies	10	144	154 (42)
Total	94	274	368 (100)

special interest listservs (e.g., "Dave Matthews Fan Club," "Snowboarding News") accounted for numerous messages. A final category was "ritual messages"—exchanges that occurred daily or almost daily. For example, some participants sent boyfriends or girlfriends "a goodnight kiss" every evening by e-mail, and some parents sent messages every morning to ensure that participants were out of bed. We conducted no further analysis and did not calculate frequencies in this category.

Discussion

These findings suggest some interesting implications for the issue of traditional-age, residential, first-year students' transition to and persistence in college. First, they are using e-mail extensively, as evidenced by the sheer number (4,603) of messages sent and received during the data collection period. Their responses to the e-mail survey support this contention:

> I eagerly check my e-mail many times a day, just to see if I received any new stories from [friends]. I probably spend an hour on e-mail each day. (male participant)

> I use e-mail for a lot of things. I use it at least seven times a day on average, spending approximately two hours with it a day. I check my e-mail in the morning when I get up, in-between classes, and at night I check it a few times. (female participant)

TABLE 4

SUMMARY OF E-MAIL SOCIAL BEHAVIORS BY SUBCATEGORY AND GROUP

Subcategory	*No. of Social Match Messages*	*No. of Social Addition Messages*	*Total n (%)*
Extracurricular involvement	63	43	106 (15.9)
Meeting/interacting with friends	66	360	426 (64.2)
Interactions in res./dining halls	2	12	14 (2.0)
Rec. activities	15	14	29 (4.4)
Self-help activities	11	81	9 (2.9)
Leadership activities	1	1	2 (0.3)
Career exploration	15	28	43 (6.5)
Multicultural/ fine arts	11	9	20 (3.0)
Miscellaneous social activities	3	0	3 (0.5)
Organization of time	1	1	2 (0.3)
Total	188	476	664 (100.0)

> Okay, this may sound pathetic, but getting e-mail is like Christmas. I check it whenever I get back from class and before I go out again. (female participant)

These responses suggest that traditional-age, first-year students spend a significant amount of time checking, sending, writing, and responding to e-mail messages. But e-mail is only one form of technology that these students may be using. If we measured the time they spend time on other forms of technology (e.g., playing games, surfing the Internet), word-processing, downloading data, etc., the amount of time they used computers would likely increase. Clearly, traditional-age, residential, first-year students are spending their time in college differently than students at an earlier period; and measures of academic and social integration may need to be revised to reflect these changes.

The second implication is these students' correspondents. The largest percentages of messages among participants were to/from high school friends (26.6% of 4,603 messages) and parents (10.8% of 4,603 messages). The Tinto model suggests that disassociating with the values and norms of

family and high school is the first stage of the transition to college. Our results thus raise some interesting questions about the Tinto model. Many assume that separation begins as soon as students arrive on campus (if not before). Our results suggest, however, that students communicate extensively with family and high school friends at least into the 11th week of classes (when data collection commenced). Either the separation stage had not begun for the participants, or they were still struggling with that stage. In either case, faculty and administrators may wish to acknowledge that the ease with which traditional-age, first-year students can communicate with friends and family from home may influence how soon they initiate separation, or how long they take to achieve that separation.

The second question raised by the present study relates to Tinto's (1993) assumption that separation is a necessary and desirable step in the integration process. It is possible that students from cultures with more collective identities (e.g., minorities, women) might be well served by continued contact with family and friends from home. In our sample, men and women showed about the same frequency for e-mail, although women correspondence more with parents. For those students, incorporation into the campus community might well be fostered when maintaining links with family and home is easier. While data from this study cannot be used to address this question, further consideration of the college persistence model is warranted.

The issue of how the students in this study used e-mail to achieve academic integration is also an interesting finding of the study. Clearly, students are using e-mail in lieu of some traditional academic integration behaviors, as their comments suggest:

> I use e-mail on a regular basis to communicate with my professors. This is especially true for my engineering professor. I get e-mail from him constantly updating us on our homework and other topics of importance to us. (male participant)

> I have used e-mail occasionally to communicate with professors about a class that I will be missing or about an assignment which I do not understand. Also, I have used e-mail to communicate with other students whom I do not know very well but who are working with me on a group project. (female participant)

Their responses also suggest that traditional-age, first-year students are using e-mail in some new ways that might be associated with academic integration:

> My other professors don't really use e-mail, but they do have web pages that are useful. (male participant)

> One neat thing is that I can post my questions for my government class on the class listserv and my fellow classmaters [sic] or teacher will reply. (female participant)

However, only 8.1% of the total messages sent or received by participants were related to academic integration. Additional analysis revealed that of the 200 messages exchanged between faculty and students, 83% were messages sent by faculty to students and only 17% were contacts with teachers initiated by students. Indeed, student comments suggest that e-mail may have some deleterious outcomes with respect to their academic endeavors:

> I don't use it [e-mail] to meet my academic needs. If anything, it takes away from my work, because I would rather read/write e-mail than do my work. (male participant)

> I sit in front of the computer for hours, wasting away important homework time, to read and send e-mails. (female participant)

Faculty and administrators who assume that e-mail facilitates students' contact with campus personnel may wish to reconsider that position. In this study, faculty used e-mail to contact students, but students used e-mail to communicate with faculty much less frequently. These findings suggest that e-mail is not a significant factor in the academic integration of traditional-age, first-year students.

The issue of social integration yielded similar results. The students in this study seemed to use e-mail in some ways associated with traditional social integration:

> It also keeps me [up] to date with volleyball practices and meetings for bible study. (female participant)

> For example, if a leader of a club wants to let everyone know about a function, the leader can easily send out an e-mail to all the students in the club. (male participant)

Students also use e-mail in some new ways to achieve social integration:

> I've been able to make new friends through e-mail. (male participant).

> I can use e-mail to talk with my friends here as well as figure out times to meet or things to do. (female participant)

The fact that only 14.4% of all messages related to social integration, however, suggests that e-mail activity promoting social integration is limited among new students at the mid-point of their first semester on campus. In fact, respondents themselves suggest some detrimental effects:

> Essentially the only use I have for e-mail is to socialize. It is an excuse to goof off when doing work on the computer. (male participant)

> A lot of my e-mail consists of forwards. They are all from these [high school] friends. (female participant)

Tinto affirms that social integration is one of the four major factors that influence retention (Tinto, 1993). Our findings suggest that students are spending a fair amount of time using e-mail, possibly curtailing the amount of time they can devote to behaviors that are more conducive to social integration; administrators may wish to examine how first-year students might use e-mail more effectively to promote social integration.

Finally, our results suggest that the nature of student involvement seems to be shifting as traditional-age, first-year students spend more time on computers. While the study was not designed to collect data about more active forms of involvement, if involvement is measured by the physical and psychological energy exerted in any given educational endeavor (Astin, 1984), then e-mail activity seems to represent a more passive form of involvement. That is, it takes less energy to contact a faculty member by e-mail than to go to that faculty member's office to discuss a concern or question. It takes less energy to keep current with a club or organization by reading minutes of meetings distributed electronically than it does to attend and participate in meetings. Moreover, students in this study appeared to be using e-mail rather than face-to-face conversations to confront others with problems or concerns, as the cursory review of the "no match" messages suggests. These more passive interactions with faculty, organizations, and friends suggest that faculty and administrators may need to reconceptualize "involvement" to include the new forms students are constructing through their use of technology.

This study's limitations should be noted. First, we collected our data from participants at only one institution—furthermore, one that considers itself on the leading edge of technology use. It is possible that students who enroll at this institution differ from students at other institutions in some important way that influenced the results of the study. Second, there were only 23 participants in the study. While the extensive amount of e-mail activity they generated mitigated this limitation to some extent, the small sample size could have influenced the results in some unexpected way. Additionally, because all participants were volunteers, they may have differed from nonvolunteers in some way that influenced the findings of the study. Fourth, the study was limited to traditional-age, first-year students. Other cohorts might have provided different results. The time frame of the study also might have posed a limitation. Because the collection period occurred before the Thanksgiving break, it is possible that participants had not been

on campus long enough to begin manifesting signs of academic and social integration, a fact that would have influenced the findings. Finally, some might argue with how we assigned data to categories. If so, the results might have differed.

Furthermore, because this study was exploratory, more research is clearly necessary. Future scholars may wish to conduct a longitudinal study of students' use of e-mail to see if their correspondence and its content shifts as they spend more time in college. Other studies might explore how students use e-mail at different types of institutions (e.g., a small liberal arts or community college) to see if different patterns of use emerge in different settings. It might also be interesting to examine e-mail use among students by race, gender, or other demographic characteristics.

Despite these limitations and the need for further research, our study suggests some implications for higher education policy at the institutional level. For example, many campuses are striving to increase the use of technology. Efforts to wire residence hall rooms to accommodate one or more computer connections and to increase the capacity of computer labs are designed to provide students with greater access to technology. These well-intentioned efforts are often aligned with institutional goals to produce graduates who are technologically fluent and capable of succeeding in the information age. Some colleges and universities even use technology access as a marketing tool when recruiting prospective students. They assume that computer-savvy applicants will consider computer capacity when deciding where to matriculate. Clearly, there are some advantages to policies designed to increase technology use among students. Such policies enable students to access information that might otherwise be unavailable to them and let campuses streamline administrative procedures like advising and registration. But policy makers may also wish to examine the unintended consequences that accompany policies to promote the use of technology.

Most colleges and universities also strive to produce graduates who are well developed in other areas, have strong communication and interpersonal skills, and are ready to become active citizens in their communities. However, the findings of this study suggest that students may be using e-mail to avoid direct communication with others (e.g., fighting and apologizing by e-mail). Such behaviors may limit the extent to which students are developing communication and interpersonal skills. The results also suggest that the time students spend on e-mail diminishes the time they might spend in other campus activities and may limit their development as citizens. In other words, campus policies on technology may be producing certain desirable outcomes but may be hindering other desirable outcomes. Policy makers need to weigh these costs and benefits when considering technology-related issues.

There are also implications stemming from these findings for those who study higher education. Clearly, students are spending an increasing amount of time on computers. Many traditional measures of student satisfaction and development are based on how students use their time. But few of these measures examine technology-use hours. To truly capture the nature of the college experience, new measures that include the role of technology for students should be developed.

Finally, the results of this study suggest that models related to retention and persistence in higher education need to be reconsidered in light of the influences that technology seems to have on college students. These models assume that separation from family and hometown friends promotes the integration of students. They argue that persistence is tied to relationships with faculty and staff and active engagement in campus life. Technology, however, provides students with easy and inexpensive mechanisms to maintain contact with family and hometown friends. Technology also offers students new and more passive ways to establish and maintain relationships with faculty and staff. The use of technology in higher education has changed the nature of campus life for students. The theories and models we use to understand students should reflect those changes.

References

American College Testing Program (1990). *Student Opinion Survey.* Iowa City, IA: American College Testing Program.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25,* 297-308.

Caswell, S. A. (1988). *E-Mail.* Boston, Artech House.

DeLoughry, T. J. (1993, April 7.). Chemistry students ask more questions with e-mail. *Chronicle of Higher Education, 39*(31), p. A21.

Deloughry, T. J. (1996, November 22). Campus computer use is increasing, but not as fast as in previous year: Colleges are still trying to cope with influx of new technology users from 1995. *Chronicle of Higher Education, 43*(13), pp. A21-A22.

Farquhar, J. D., McGinty, B., & Kotcho, C. (1996). The internet as a tool for the social construction of knowledge. In Simonson, Hays, & Hall, pp. 211-217.

Hawley, C., Moore, J., Chuang, W., & Angeli, C. (1996). Electronic mail: An examination of high-end users. In Simonson, Hays, & Hall, pp. 264-269.

Holden, M., & Mitchell, W. (1993). The future of computer-mediated communication in higher education. *EDUCOM Review, 28,* 31-37.

Kurshan, B. (1990). Educational telecommunications: Connections for the classroom, part 1. *Computing Teacher, 17,* 30-31.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis* (2d ed.). London: Sage.

Pace, C. R. (1990). *College Student Experiences Questionnaire.* Los Angeles: Center for the Study of Evaluation.

Russell, A. L. (1996). Six stages for learning to use technology. In Simonson, Hays, & Hall, pp. 633-641.

Russell, R. V., & Stage, F. K. (1992). Triangulation: Intersection assessment and research methods. In F. K. Stage (Ed.), *Diverse methods for research and assessment of college students.* Alexandria, VA: American College Personnel Association.

Simonson, M. R., M. Hays, & S. Hall (Eds.). *18th Annual Proceedings of Selected Research and Development Presentations.* Washington, DC: Association for Educational Communications and Technology. (ERIC Document Reproduction Service No. ED 397 849)

Swartz, V. R., & Walters, T. L. (November, 1995). *The U.S. mail versus e-mail: Understanding interpersonal communication through traditional pedagogical pathways.* Paper presented at the annual meeting of the Speech Communication Association, San Antonio, TX. (ERIC Document Reproduction Service No. 393 127)

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition research* (2d ed.). Chicago: University of Chicago.

Trudell, L., Bruman, J., & Oliver, J. (1984). *Options for electronic mail.* White Plains, NY: Knowledge Industry Publications.

Wilson, P. A. (1983). *Introducing the electronic mailbox.* Manchester, ENG: National Computing Centre Publications.

Wilson, B., Ryder, M. McCahan, J., & Sherry, L. (1996). Cultural assimilation of the internet: A case study. In Simonson, Hays, & Hall, pp. 810-820.

Winston, R. B., Miller, T. K., & Prince, J. S. (1987). *Student Development Task and Lifestyle Inventory.* Athens, GA: Student Development Associates.

Wishnietsky, D. H. (1991). *Using electronic mail in an educational setting.* (PDK Fastback Series No. 316). Bloomington, IN: Phi Delta Kappa Educational Foundation.

Zhu, E. (1996). Meaning negotiation, knowledge construction, and mentoring in a distance learning course. In Simonson, Hays, & Hall, pp. 821-844.