

Interpersonal Communication Strengthens Web-Based Instruction



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Abstract

This study describes the interpersonal communication preferences (instructor-to-student and student-to-student) among undergraduates surveyed in a freshmen seminar in the College of Agricultural Sciences at the Pennsylvania State University. The purpose was to investigate communication preferences among students at the University Park (main) campus and three Commonwealth (branch) campuses and describe implications for World Wide Web (Web) instruction. Findings indicated significant differences between student attitudes toward student-to-student and instructor-to-student communication. With regard to success in a course, students at the Commonwealth campuses placed more importance on both student-to-student and instructor-to-student communication. The findings indicate the need for educators incorporating the Web into their curriculum to adopt a learner-centered approach to instruction, using such technology with forethought.

“I want educators—rather than technological idealists—to be in the driving seat, and above all I want to make sure that learners are not run over by the technology” (Bates, 1991).

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Today, the opportunity to receive a college education separate from time and place has been realized (Kaplan, 1997; Leshin, 1996; Thomson, 1997; Wulf, 1996). The growth of the World Wide Web (Web) instruction alone is staggering. Consider the following:

- In a national survey, 24% of higher education institutions had formal plans for Web instruction (Green, 1996).
- That same survey found that one-half of all college students and about three-fourths of all faculty had Web access (Green, 1996).
- The New Promise (formerly The Internet University) Web site now offers 27 undergraduate degree programs and has approximately 4,700 courses from more than 80 accredited institutions (New Promise, Inc., 1999).

Virtually no discipline is untouched by Web-based instruction; the Web has been used successfully for instruction in library orientation (Scholz, 1996), medicine (Lehmann, 1997), agricultural education (Terry & Briers, 1996), agricultural communications (Newman, Raven, & Day, 1996), and business communication (Cohen, 1994). Another area of growth has been on-line instruction for college students in residence as opposed to distance learners. At the University of Colorado-Denver, more than 80% of students taking on-line courses are also enrolled in on-campus courses (Guernsey, 1998).

Yet in a time of such rapid adoption, many educators are sounding the call for caution (Bates, 1991; Cordes, 1998; Fritz, 1997; Wolcott, 1996;). Fritz (1997) has even termed Web-based instruction "shovelware" to describe its information delivery (as opposed to educational) features. The number of agricultural communicators and faculty investigating student preferences and delivery styles regarding communication technology (Bielema, 1997; Gamon & Park, 1996; Makuch & Robillard, 1994; Mesecher, 1995; Miller, 1997) is a testament to the recognized need to understand how such technology influences the learner. Educators focusing on learner-centered educational instruction can design and use Web-based resources in ways that will enhance student learning. A learner-centered focus is one in which the learner's experiences, needs, and interests take precedence in designing and implementing the learning experience. The educator's role shifts from a "sage on the stage" to that of a facilitator.

Instruction that is truly learner-centered considers the learner's attitudes, experiences, and learning preferences (Payne & Stoddard, 1996). Unless students have the capability as well as the interest to access such a resource, Web-based instructional opportunities are likely to be useless. A point of inquiry virtually ignored in the literature is the communication preferences of students, regardless of their university locations. However, the number of institutions offering courses simultaneously to students at multiple locations demands such inquiry. From 1995 to 1998, 76% of higher education institutions indicated their intent to offer instruction to a branch campus or another college (Lewis, Alexander, Farris, & George, 1997).

Purpose and Objectives

The purpose of this study was to investigate the attitudes held by undergraduates about communication and success in a college course (student-defined) and to examine differences that might exist between main and branch campus students. The study's specific objectives were to describe undergraduate perceptions regarding the importance of:

1. The Web as an educational resource, including current university Web-based course assignments and interest in Web-based course supplements,
2. student-to-student communication for success in a course, and
3. instructor-to-student communication for success in a course.

Method

The population included all students enrolled in Ag 150: "Be A Master Student!" during fall semester 1996. "Be A Master Student!" is Penn State's first-year student seminar in the College of Agricultural Sciences. This two-credit, elective course is designed to introduce first-year students to the university environment and expose students to opportunities and issues in the agricultural sciences. Sections typically include 15-20 students. In fall 1996, the course was taught at the University Park (main) campus and at three of Penn State's Commonwealth (branch) campuses: Altoona, Berks, and Hazelton.

The accessibility of a quality, resource-rich learning experience is an important issue for course instructors and students since Commonwealth Campus students have little access to the agricultural sciences faculty and research facilities at University Park. Thus, deliver-

ing some portion of instruction via the Web to reach students based at multiple locations is appropriate.

The instrument used for this study was adapted from a communications technology assessment created by a Penn State Innovations in Distance Education human nutrition team for a study of first-year nutrition undergraduates. To determine face and content validity of the questionnaire, a panel of eight experts was used. Panel members were agricultural and extension education faculty and graduate students. The

questionnaire was administered during the last two weeks of the fall semester. Among the 176 students registered, 142 participated for an 81% response rate.

The Statistical Package for the Social Sciences (SPSS) was used for data analysis. Reliability was calculated and found acceptable (Cronbach's Alpha = .72). Chi-square with the Cramer's V correlation were used to determine relationships between variables. In social science research, a number of statistical tests may be employed to determine relationships. The Cramer's V correlation is the most statistically-sound method for determining relationships when the questions asked are nominal and more than two answers are allowed.

To describe the magnitude of relationships, Davis (1971) proposed six adjectives: $r = .01$ to $.09$ being a negligible relationship; $r = .10$ to $.29$ being a low relationship; $r = .30$ to $.49$ being a moderate relationship; $r = .50$ to $.69$ being a substantial relationship; $r = .70$ to $.99$ being a very high relationship; and $r = 1.0$ being a perfect relationship. Relationships were described using these conventions by Davis (1971) and considered significant at the .05 level.

Results

The average age of the students was 18. There were 68 males (47.9%) and 74 females (52.1%) in the 10 Ag 150 sections during fall semester 1996. Almost three-fourths were students at the University Park Campus (73.9%); the others (26.1%) attended one of three other Penn State locations. Most of the students (72.5%) lived on-campus, 16.2% lived off-campus, and 11.3% lived at home. The majority were from suburban (36.6%) or rural, nonfarm (30.3%) backgrounds, while 18.3% were from farms and 12.7% from urban areas, with no differences in type of residence among the four campus locations.

Objective 1 – Web Perception, Appeal, and Usage

When asked what they thought of the Web, students were given five choices: “great resource,” “helpful,” “interesting diversion,” “waste of time,” and “unsure/no opinion.” The majority of students indicated the Web was a “great resource” (54.2%). Only three students described the Web as a “waste of time.” Students at different campus locations did not differ significantly in their perceptions of the Web (Table 1).

When asked about their interest in Web-based course assignments and interest in taking a course with a required Web-based supplement, no significant differences among students were found

Table 1
Students’ Perceptions of the World Wide Web

Responses	University Park		Commonwealth Campuses		All Cases	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
	(94)	(100%)	(37)	(100%)	(131)	(100%)
Great resource	53	56.4	18	48.6	71	54.2
Helpful	15	16.0	10	27.0	25	19.0
Interesting diversion	18	19.1	7	18.9	25	19.0
Waste of time	3	3.2	–	–	3	2.4
Unsure/no opinion	5	5.3	2	5.4	7	5.4

based on campus locations. One half of the students had required Web-based course assignments. Slightly more Commonwealth Campus students reported current courses requiring Web-based assignments (56.8%) than did University Park students (48.6%). Commonwealth Campus students reported more interest in enrolling in a course with a required Web-based supplement (51.4%) than University Park students (36.5%). Less than one fifth of all students (16.3%) indicated they would be less interested in a course that required them to use a Web-based supplement. Four out of 10 students (43.3%) indicated that required Web-based course supplements would not affect their interest in courses (Table 2).

Table 2

Students' Use of the Web for Required Course Assignments and Students' Interest in Web-based Course Supplements by Students' Campus Location

Course Assignments and Interest	University Park		Commonwealth Campuses		All Cases	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
	(94)	(100%)	(37)	(100%)	(131)	(100%)
Current Required Course Assignments						
Web-based Assignments	51	48.6	21	56.8	72	50.7
No Web-based Assignments	54	51.4	16	43.2	70	49.3
Interest in Taking a Course With Required Web-based Course Supplement						
More Interested	38	36.5	19	51.4	57	40.4
Less Interested	18	17.3	5	13.5	23	16.3
No Difference	48	46.2	13	35.1	61	43.3

Objective 2 – Student-to-Student Communication

A moderate association (Cramer's $V = 0.35$; $p \leq 0.001$) was found between campus location and feelings about the importance of student-to-student communication with regard to overall student success (student-defined) in a course. University Park students (63.8%) tended to view student-to-student communication as "important." A majority of Commonwealth Campus students (51.4%) viewed student-to-student communication as "extremely important," while less than 20% of University Park students did so. Although differences occurred between Commonwealth Campus and University Park students, all students (83.1%) overwhelmingly considered student-to-student communication as important (Table 3).

Table 3

Importance of Student-to-Student Communication with Regard to Overall Student Success in a Course by Students' Campus Location

Importance of Student-to-Student Communication	University Park		Commonwealth Campuses		All Cases	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
	(105)	(100%)	(37)	(100%)	(142)	(100%)
Extremely Important	20	19.0	19	51.4	39	27.5
Important	67	63.8	12	32.4	79	55.6
Neutral	13	12.4	6	16.2	19	13.4
Not Important	5	4.8	—	—	5	3.5

Cramer's V = 0.35; $p \leq .001$

Objective 3 – Instructor-to-Student Communication

There was a low correlation (Cramer's $V=0.28$) between students' campus location and the importance they place on instructor-to-student communication regarding overall student success in a course. The association was that (University Park students (53.9%) tended to view communication between instructor and student as "important." Seven out of 10

Commonwealth Campus students ($n=26$) viewed instructor-to-student communication as "very important," as shown in Table 4.

Table 4

Importance of Instructor-to-Student Communication to Overall Student Success in a Course by Students' Campus Location

Importance of Instructor-to Student Communication	University Park		Commonwealth Campuses		All Cases	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
	(104)	(100%)	(37)	(100%)	(141)	(100%)
Extremely Important	41	39.4	26	70.3	67	47.5
Important	56	53.9	11	29.7	67	47.5
Neutral	7	6.7	—	—	7	5.0

Cramer's V = 0.28; $p < .01$

Conclusions and Recommendations

The results of this study cannot be inferred to any other student group except those taking the course during fall semester, 1996. Yet, these findings provide evidence that educators would do well to investigate student communication preferences and appeal for Web-based supplements.

The finding that students at Commonwealth campuses place more importance on dialogue with their peers to meet course objectives than University Park students should influence instructional Web site development and design. A Web-based course supplement that essentially acts as a bulletin board for class notes and topic links may not be perceived as useful to Commonwealth Campus students. Instead, an interactive site that allows students to work independently and in small groups on a defined project and post work to a course Web site might be viewed as more useful and engaging.

A course Web site meant to engage Commonwealth Campus students would need to include the option to send and receive E-mail to the course instructor. Furthermore, any information technology used in a course for Commonwealth Campus students must be evaluated based on its ability to increase instructor-to-student interaction, in addition to student-to-student communication.

A superficial assessment might have led those involved to recommend Web use for all students based on the finding that the majority of students have positive perceptions toward the Web as a helpful resource. Yet, communication preferences indicated a need to increase opportunities for student-to-student and instructor-to-student communications especially among branch campus students. While all instruction may benefit to some degree by creating a "small class atmosphere," branch campus faculty must ensure that office hours and class discussion opportunities are part of their teaching strategies. It is important for faculty using the Web for instruction to provide opportunities for students to interact via technology both with other students as well as the instructors (e.g., opportunities for students to E-mail questions and receive prompt replies). Faculty need to recognize student preferences that might exist for E-mail, listserves, and/or chat groups.

The Web has become an integral part of the agricultural sciences curriculum in undergraduate education (O'Kane & Armstrong,

1997). This study found one half of all undergraduates completing required Web-based assignments. As the Web becomes a key instructional tool in college agricultural science courses, it must be used in ways that are consistent with student interests, needs, and expectations. The finding that eight of 10 (83.2%) students regarded student-to-student communication as “important” or “extremely important” provides evidence that such interaction must be maintained or strengthened.

Additional research is needed to assess student attitudes about these issues at a later stage in their undergraduate career. Students could have very different views about communication and Web-based instruction based on their undergraduate experiences. As the Web’s use in education continues to increase, students need to be assessed to determine their desire and need for technology-rich instruction. Further research should assess Web instruction’s effect on student achievement.

The call for caution in using the Web for undergraduate instruction (Bates, 1991; Cordes, 1998; Fritz, 1997; Wolcott, 1996) is justified. Just because we see undergraduates packing laptops does not necessarily mean that students perceive their computers as instructional tools. Student communication preferences must be considered in designing any Web-based instructional resources. Technologists and educators both should adopt an approach to instruction that focuses on the learner. Such a philosophy will build the knowledge-base needed to design and use the Web as an educational tool, not merely as an information delivery tool.

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