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ABSTRACT

Research shows that educators at accredited journalism and mass communication programs in the United States agree that programs without a significant Web presence are ignoring the impact of technology on the field. A study utilized a cross-sectional survey design to assess the perceptions of college/university program top administrators concerning the use of the World Wide Web in teaching at 189 schools affiliated with the Association of Schools of Journalism and Mass Communication (ASJMC). Organizational and individual pressures to implement, and resistance to implementation of Web courses, constitute predictor variables. Based on a literature review, the present study defines pressures to implement as attitudes, policies, processes, structural factors, and/or behavior designed to cause the adoption of, or to further the implementation of an innovation. Descriptive statistics were used since the concern is with the overall characteristics of the ASJMC data. Responses were obtained from 137 (72%) of the administrators. Analysis of the descriptive statistics suggests that administrators perceived an extensive set of needs and imperatives that may be contributing to the implementation of this innovation. For two-thirds of the 21 items on the imperatives on the list, more than half the administrators agreed that the item constituted an imperative to implement courses with Web features. Based on the survey responses, nearly 6 of 10 programs began implementing courses with Web features within 5 years of the Web's introduction in 1990, with another third implementing Web courses features a few years after the majority. (Contains a 48-item bibliography. Appended are the survey instrument and extensive tables of data.) (NKA)

Jung-Sook Lee Competition

Diffusion of Courses with World Wide Web Features: Perceptions of Journalism and Mass Communication Program Administrators

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Diffusion of Courses with World Wide Web Features: Perceptions of Journalism and Mass Communication Program Administrators

Journalism professionals, university administrators, educators, and students, are participating in or are at least witnessing a transition between traditional print and broadcast emphases in journalism training and a profession that is increasingly influenced by the Internet, the World Wide Web (Web) and media convergence (Outing, 1999). ZD Net InternetTrak research reported that 68 million Americans visited Web sites between August and October of 1998, a gain of 17% from the previous quarter (Hamilton, 1999). Crossman (1997) estimated that by the end of the year 2000, some 200,000,000 computers would be connected to the Internet worldwide. Emerging technologies are becoming a dominant mode of social communication and may change the process of learning and the delivery of instruction (Kayany, 1999). "The genie is out of the bottle" (Donow & Miles 1999, p. 94).

In his book New Media Technology, Pavlik (1998) wrote that the Internet is transforming how communication professionals and journalists go about their work. Pavlik stated that the new generation of students will need to combine basic skills in writing and thinking with new media course work that emphasizes all aspects of human communication. The world of a new generation of learners in college and universities consists of multitasking, video games, and attention spans geared towards what is relevant to them (Brodsky, 1998).

This study examined perceptions of top administrators concerning courses with Web features at Association of Schools of Journalism and Mass Communication (ASJMC) programs. ASJMC promotes itself as an organization of leaders whose purpose is to take a "catalytic" role in education in the journalism field. This project studied the imperatives/pressures to implement courses with Web features and resistances to

implementation. The study also examined administrators' perceptions of Ely's (1990) conditions that facilitate implementation of educational technology innovations.

Background

Higher education is facing an historic paradigm shift due primarily to the extensive development of the world's infrastructure including the Web (Barnard, 1997). "The Web will undoubtedly continue to be used to present material conceived under the implicit constraints of the blackboard or of the overhead projector....The Web merely changes access, not pedagogy" (Fraser, 1999, p. B8). Some academicians and professionals have criticized schools for being slow to respond to the need for new technology training for both faculty and students (Davidson-Scott , 1995, Yovovich, 1997).

Research shows that educators at accredited journalism and mass communication programs in the U.S. agree that programs without a significant Web presence are ignoring the impact of technology on the field (Sutherland & Stewart, 1999). Three journalism administrators at major U.S. universities, two at Harvard and one at Stanford, resigned in the late 1990's citing concerns about the future of journalism and the changes that technology is making on the profession. One administrator who recently resigned was the curator at the Nieman Foundation for Journalism at Harvard, Bill Kovach. He stated that the program should be led by a person closer to the technological revolution that is sweeping the profession due to the Internet ("Journalism Program," 1999). "The Web is the central reality---economic, social, cultural, political---for younger generations, whether we like it or not, whether we think it is a good thing or not. I don't think the Web is supplanting culture; it is creating new culture" (Katz, 1999, p. 14).

The 1999-2000 president of the Association for Schools of Journalism and Mass Communication (ASJMC), Shirley Staples Carter, questioned whether in the midst of the "Internet revolution," programs are prepared to educate journalists of the future (Staples

Carter, 2000). An organization that does not address change or one that thinks it need not innovate will decay, stagnate, or die (Herbig, 1994).

Universities today face many external and internal pressures to become more actively involved in the educational applications of new technologies (Rossner & Stockley, 1997). A number of universities are now examining the potential benefits of using Web based technologies as a way of offering pedagogically viable solutions to challenging instructional problems. For example, the University of Colorado at Denver founded the Internet Task Force in 1994 for purposes of exploring networked learning environments open to different hardware and software platforms and learning modes (Sherry, 1996).

Schramm (1977) posed an important question for educators to consider: can we bring learning opportunities to more students through delivery systems that will increase learning, without proportionately increasing costs? Schramm wrote that then-Open University of the United Kingdom President David Hawkridge admitted a university's selection of media was influenced by logistical, financial, and internal political factors. Hanna (1998) stated that political and economic factors, not educational priorities, can drive technological innovations in higher education.

Ryder and Wilson (1996) stated that the Internet and the Web in education overcome many of the constraints imposed by traditional educational infrastructures. Some examples of such constraints include time of instruction, geographical space, and lecture-based teaching. The primary missions of universities, however, are not changing (Duderstadt, 1997). These missions include the creation, preservation, integration, transmission, and application of knowledge.

Recent communication research has focused on the potential benefits or pressures to adopt and implement Web courses, from administrative and pedagogical perspectives (La Rose, Greg, & Eastin, 1998). Administrators, for example, are enthusiastic about

marketing opportunities of the Web courses to attract untapped pools of students and/or to bolster flagging enrollments. Pedagogically, La Rose et al. cite Web course benefits of active learning, empowerment of the student, real world simulations, and faster feedback.

As of 1998, more than 2,500 courses from approximately 100 universities were available over the Internet (LaRose, Gregg, & Eastin, 1998). While research to date indicates that the medium of instruction does not have a significant impact on educational effectiveness, La Rose et al. conducted an experiment designed to determine if audiographic telecourses on the Web could optimize educational effectiveness and cost effectiveness. They found that on-line class test scores and student attitude and teacher immediacy ratings were equal to those of a control group representing traditional instruction. LaRose et al. concluded that their results supported the audiographic telecourse model delivered over the Web as a potentially cost effective approach.

Ely (1990) found that there are eight main conditions that facilitate the implementation of educational technology innovations. Ely developed this information based upon 50 structured interviews he conducted with educators in Southeast Asia and Latin America. Dissatisfaction with the status quo is the first factor that facilitates change. Second, knowledge and skills concerning the technology must be present for the change to occur. Third, adequate resources must be available. Fourth, there must be adequate time to implement. Fifth, there should be rewards or incentives for participation. Sixth, active participation in the adoption decision is expected and encouraged. Ely noted that often in education, decisions are made by others and then handed down for implementation. Seventh, there needs to be commitment by those involved. Finally, leadership must be evident in terms of the executive in charge and a project leader who is more involved on a daily basis. Ely stated that these guidelines were validated by his experience and observation but that they should be tempered by local conditions. He wrote that the absence of any condition will probably reduce the effectiveness of the implementation process.

Theoretical Base

Nearly a dozen research traditions comprise the diffusion of innovations literature. Research areas include, among others, communication, education, marketing, political science and public health (Rogers & Singhal, 1996). A diffusion of innovations (DOI) theorist, Everett M. Rogers, stated that while some innovations, such as the Internet, do not face much resistance, certain areas such as education and religion tend to offer strong resistances to innovations (Singhal & Law, 1997). Rogers said that diffusion of innovations scholars need to look at resistances, or barriers, to innovations more closely than they have in the past.

Diffusion research does not center only on awareness and knowledge of an innovation. It also examines attitude change, decision making, and implementation of the innovation (Rogers & Singhal, 1996). A model of the diffusion of innovations (Rogers, 1995) includes the innovation itself, communication channel(s), time, and members of a social system. Key elements in the communication process involved with the innovation process include, the unit of adoption, individuals or units that have yet to experience the innovation, and a communication channel that connects the two units. Rogers stated that diffusion is a social process. While many of the adoption processes and categories involved in the DOI among individuals and diffusion involving organizations are different, there are also some similarities in the two approaches.

An innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers 1995, p. 11). The five main steps in the innovation decision process for individuals over time (in which the goal is to reduce uncertainty) are knowledge, persuasion, decision, implementation, and confirmation. Attributes of innovations include relative advantage, compatability, complexity, trialability, and observability. Rogers stated that the rate of adoption is "the relative speed with which an innovation is adopted by members of a social system" (p. 206). Rogers classified the

five adopter categories among individuals as innovators, early adopters, early majority, late majority and laggards.

In many instances, individuals cannot adopt or reject an innovation until an organization has adopted (Rogers, 1995). Up until the 1970's, most DOI studies focused on the individual. A turning point in organizational innovation studies was the 1973 book titled Innovations and Organizations by Zaltman, Duncan and Holbek. This seminal work explained DOI adoption and implementation stages in organizations and analyzed many of the attributes affecting diffusion. Van de Ven and Rogers (1988) wrote that in such studies, the main dependent variable often shifts from adoption to implementation or putting the innovation to use. They noted that organizations are continually adopting new ideas. Rogers (1995) wrote that data about the innovation implementation process "....are obtained by synthesizing the recallable perceptions of key actors in the innovation process, written records of the organization adopting, and other data sources" (p. 390). Most studies of innovation in organizations investigate a single innovation (Van de Ven & Rogers).

How formal and informal organizations perceive things and the measurement of those perceptions, is a neglected area of research (Zaltman et al., 1973). They stated that as with individuals, many factors can effect how an organization views an innovation.

Rogers (1995) stated that this area of DOI research concentrates on two main areas. First, it examines characteristics of innovative organizations and secondly, investigations of the innovative process in organizations. Rogers wrote that a decision to adopt by an organization does not mean that implementation of the innovation follows immediately. Implementation, however, does involve mutual adaptation, both the innovation and the organization change.

Rogers (1995) noted that by the 1970's, hundreds of studies of organizational innovativeness were completed and they were useful in identifying characteristics of

innovative organizations. However, a different kind of organizational DOI study developed which examined the innovation process within an organization. Rogers wrote that researchers consistently have found that size of an organization, easily measured, is one of the best predictors of organizational innovativeness. He stated that size is most likely a surrogate measure of dimensions such as total resources, technical expertise of employees and organizational structure. Rogers noted that these measures in the past were not clearly understood or measured adequately by many researchers.

The field of research involving innovation in organizations was revitalized in the 1980s by the study of new communication technologies (Van de Ven & Rogers, 1988). New media constitute a different kind of human communication relatively distinct from face-to-face interpersonal communication and the more one-way mass media communication. New media are generally interactive in nature. Some types of equipment and software, such as the Internet and the Web, enable information exchange among many individuals.

Van de Ven and Rogers (1988) wrote that distinct contributions of this area of innovations research are that it provides a new type of data and allows the study of new variables. They noted that technology essentially consists of information or knowledge contained within a tool for accomplishing some function. The rate of adoption is determined partially by organizational variables that act over and above the aggregate of single members in organizations. For example, Van de Ven and Rogers pointed out that an organization's norms have an impact on innovation and change. These norms could act as constraints towards change. Another factor might be the degree of wide participation by members in an organization. Another area of consideration is the extent that information about the innovation is transmitted by an organization to its members.

For purposes of this study it is important to note that organization considerations can be seen as constraints on innovations. And understanding the process of innovation

implies an appreciation of macro and micro level dynamics (Van de Ven & Rogers, 1988). "The challenge for diffusion scholars of the future is to move beyond the proven methods and models of the past, to recognize their shortcomings and limitations, and to broaden their conceptions of the diffusion of innovations" (Rogers 1995, p. xvii).

Survey research is the dominant type of research done on diffusion of educational technology and is effective at tracing trends. The individual is usually the unit of analysis although organizations can also be (Rogers & Singhal, 1996).

Research Questions:

Rossner and Stockley (1997) wrote that an assessment of an institution's technological status quo may arise from pressures within. They cited realizations of competitive pressures by schools realizing they may be competing with others for the same government funding. Also, individual schools need to remain competitive in order to attract the best on and off campus students. Hanna (1998) cited a school's necessity of being responsive to its students' lifelong and immediate needs as a powerful factor for structural change. He also wrote that universities are becoming more aware of partnerships developing between schools and corporations, such as the one between VOL Publishing, Inc. and Georgetown University and their Virtual Campus. There is also a growing awareness by administrators of competition from a growing list of on-line universities. This led to the first research question.

Research Question 1:

What imperatives, or pressures, are provided by ASJMC administrators in support of implementation of the Web in teaching journalism/communication courses?

Zaltman et. al. (1973) stated that many resistance factors operate throughout the process of innovation in an organization. Resistances range from lack of a perceived need for the innovation, various structural factors, the potential impact of the innovation on

social relationships, to inadequate resources. Other resistances include a lack of strategic planning for Web learning (Hiltz, 1994) and entrenched bureaucracies and an intrinsic resistance to change by teachers in higher education (Surry & Farquhar, 1997). This resulted in a second research question.

Research Question 2:

What resistances/constraints are identified by ASJMC administrators in the implementation of the Web in the teaching of journalism/communication courses?

Leonard-Barton (1988) stated that innovation characteristics are partly perceptual. Ely's study (1990) of eight conditions facilitating implementation of an innovation have led to a final research question concerning characteristics and diffusion of courses with Web features at ASJMC schools.

Research Question 3:

Do the characteristics of ASJMC programs that achieve all of Ely's (1990) eight conditions facilitating the Web educational technology innovation differ from characteristics in programs in which all of the implementation conditions have not been achieved?

Method

This study utilized a cross-sectional survey design to assess the perceptions of college and university program top administrators concerning the use of the Web in teaching, at 189 schools affiliated with the Association of Schools of Journalism and Mass Communication (ASJMC).

Organizational and individual pressures to implement, and resistances to implementation of Web courses, constitute predictor variables. Pressures to implement an

innovation were discussed by researchers including Beller and Or (1998), Bourne et al. (1997), Eisenberg and Ely (1993), Hanna (1998), Harasim, et al. 1995, La Rose, Greg, and Eastin (1998), Kayany (1999), Novak and Patterson (1997), Ridley and Sammour (1996), and Sloan (1997). Based on this literature review, the present study defines pressures to implement as attitudes, policies, processes, structural factors, and/or behavior designed to cause the adoption of, or to further the implementation of an innovation.

Zaltman et al. (1973) wrote extensively about resistances to innovations which operate throughout the DOI process in organizations. Based upon the literature review cited above, resistances are defined as attitudes, policies, processes, structural factors, and/or behavior that slow down or prevent implementation of an innovation.

This research study population consisted of 189 administrators of the Association of Schools of Journalism and Mass Communication (ASJMC). ASJMC is an association which was a co-founding affiliate of the Association for Education in Journalism and Mass Communication (AEJMC). ASJMC members work at both accredited and nonaccredited programs. One of the main goals of ASJMC is to promote leadership and excellence and to "....promote inquiry into the changing nature of higher education curricula and the proper role therein of journalism and mass communication...." (ASJMC Mission and Goals, 1991, p. 3).

Unit of Analysis

In Innovations and Organizations Zaltman et. al. wrote "organizational decision making is in large measure a function of individual decision making...." (p. 94). Rogers (1995), however, noted that data provided by an organization's chief executive meant to represent the innovation behavior of an entire organization is questionable. Shoemaker and Reese, however, in their book Mediating the Message: Theories of Influences on Mass Media Content , discussed the microlevel orientation of mass communication research.

This research project was not an organizational innovativeness project as described by Rogers (1995) or Zaltman et al. (1973). This study's focus was on various perceptions by top administrators at ASJMC schools using the Web in teaching. The primary unit of analysis in this study was at the individual level, specifically ASJMC school administrators.

Due to the relatively small number of ASJMC member programs, it was feasible to contact all of the 189 active ASJMC Administrators. A 1999-2000 ASJMC membership mailing list of 201 members was obtained from the ASJMC Headquarters. It was determined that six members on the mailing list were no longer active in academia and they were not surveyed. Six others on the ASJMC mailing list held administrative positions lower in the administrative hierarchy at the ASJMC programs. They were not surveyed in order to avoid programs from replying more than once. Of the 189 ASJMC Programs surveyed, 182 were located in the United States. ASJMC membership is open to international programs and presently two universities in both the United Kingdom and Canada are members, as is one university in the Netherlands and one in Germany.

This population was selected on the basis of the membership's mission and goals of excellent performance and programs beyond the minimal. ASJMC schools are committed to maintaining high standards in journalism and mass communication education. The organization's first goal is to provide national leadership for the advancement of education in mass communication and journalism. ASJMC Objective # 1.3 (ASJMC Mission and Goals, 1991) is "To continue to define the field in an evolving information society"(p.2). ASJMC members discuss and present program sessions on new courses and "innovative" curricula and nontraditional communication areas.

Participant schools were categorized using the 1994 Carnegie Foundation for Teaching classification system for national universities and selective liberal arts colleges as a guide (ASJMC schools that are categorized as regional programs under the 1994 Carnegie

system are not classified in the national Carnegie system, therefore, the regional ASJMC programs were included with non-Carnegie category schools). At about three-quarters of the way through the survey, the Carnegie Foundation introduced their year 2000 higher education classification system.

Instrumentation

Rogers (1995) wrote that surveys are the primary research method in DOI studies. Two instruments were used in this study to collect data necessary to address the research questions: indices and a numerical rating scale (Guilford 1954, Miller 1977, Stamm 1989, Sproull 1995, Watt and van den Berg (1995), and a demographic survey. The survey was constructed utilizing multiple measures and with a few open ended items (Babbie, 1986 and Williams, 1992). Survey instructions specified that respondents could provide additional information, if they chose, to any question on the survey. Williams cautioned that a common mistake of researchers is adopting a particular measure or scale without considering underlying assumptions. See Appendix A for the survey instrument.

Indices and the Numerical Rating Scale

Miller (1977) wrote that for validity, reliability, and utility purposes, researchers should carefully review the literature for appropriate quantitative scales. If, however, the variables in a study have not been considered as open to measurement, some kind of scale might be developed to enable ".... greater precision, statistical manipulation, and explicit interpretation" (p. 86). A review of the literature, on perceptions of the Web by administrators did not identify use of a widely accepted scale for measurement of the sophistication of Web course features as an innovation. Therefore, a series of simple indices and composite indexes were developed to measure variables such as perceived needs, imperatives, resistances and pressures to implementation of Web courses. Miller wrote that "The basis for construction is logical inference and the use of a numerical scale

requires the assumption of a psychological continuity which the respondent can realistically act upon in self-rating" (p. 87). Response choices along a continuum of strongly disagree, disagree, neutral, agree, and strongly agree with numerical weights of 1 through 5 were used. Watt and ven den Berg (1995) stated that such semantic differential scales (Likert type) are sufficient to meet measurement demands for a majority of communication studies.

Sproull (1995) stated that numerical rating scales are used often in research to measure factors such as perceptions and/or performance of people or products. An advantage of this instrument is that responses are independent for each item rated. It is generally easy for subjects to respond to the instrument. Guilford (1954) wrote that rating methods have a wider range of application, can be used with raters who have had a minimum of training, and can be used with large numbers of stimuli.

Forced choice items were presented in areas such as; gender, age, educational level, number of years as administrator and the estimated year that the ASJMC program started using Web course features. Also, respondents were asked to complete an open ended question on the survey.

ASJMC administrator contact information was obtained through the ASJMC Headquarters in Columbia, South Carolina. After an initial e-mail questionnaire was sent, the research subjects received up to two additional e- mail reminders which also contained the questionnaire. A final reminder and a paper copy of the questionnaire were mailed to the research subjects after three e-mail contacts were attempted.

Cooperation was obtained, in part, through an offer of sending participants a copy of the e mail survey results.

Data Analysis Overview

Descriptive statistics were used in this study since the researcher is concerned with the overall characteristics of the ASJMC data (Williams, 1992). This included measures of

central tendency such as means, modes, and medians and measures of dispersion or variability, such as range, variance and standard deviation (Watt & van den Berg, 1995). Results were presented in terms of percentages and averages. Miller (1991) wrote that cross-sectional survey studies provide a sizable volume of information that can be classified by type and frequency. He stated that the data can be analyzed for numerous relationships. For example, the data could be analyzed for relationships between two variables. Types of statistical tests that were utilized included, chi-squares, analysis of variance, and t tests.

Results

Responses were obtained from 137 of the 189 administrators (72%). The summary of these findings begins with descriptive statistics and then presents chi-square tests for independence, ANOVA's, and t test results as explained in the text.

As detailed in Table B1 in Appendix B, the obtained sample responses closely reflected the ASJMC population in terms of state. Table B2 provides similar comparisons of sample and population percentages for the seven Carnegie-based categories of institutions included in this study. To determine if the obtained sample differed from the population, a chi-square test for independence was used. The seven institution categories, adopted from the 1994 Carnegie Foundation for Teaching scheme for national universities and selective liberal arts colleges, were collapsed into three categories because of small cells. "Research II" was combined with "Research I" for the first category. "Doctoral II" was combined with "Doctoral I" for the second. And "Liberal Arts" and "Outside the U.S." were combined with the "Non-Carnegie" category. The computed value of chi-square (3.36) showed that the sample did not differ markedly from the population [X^2 (2, N = 189) = 3.36, $p > .186$].

Top administrators at ASJMC schools who responded were predominantly male: 100 (73%) of the 137 respondents were men. The average age of the administrators was 53 years old. The youngest administrator was 31 years old and the oldest was 67 years old.

ASJMC top administrators who responded averaged 9.2 years in their position. But roughly a fourth (28%) averaged 3 years or less and 43% were in their position 5 years or less. Only 36% had more than 10 years of experience in their position. Just over 77% of the administrators responding held Ph.D's. Others holding different types of doctorates included 5% in education and 1% in law. Just under 15% of the administrators held master's degrees. The remaining 2% held the bachelor of arts or science degree.

Table B3 in Appendix B summarizes when ASJMC schools actually began using Web features in their classes. The data summarized later in this chapter indicates that on the questionnaire item listing possible imperatives, administrators are in wide agreement that most of those items constituted imperatives to implement. The self-reported indications of when programs began implementing Web course features resembles a normal distribution curve. Therefore, Rogers' (1995) five category adoption classification is relevant to this study. The reader should recall that Rogers' five categories are innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%), and laggards (16%).

Table B3 indicates that one respondent reported that his/her program began implementing Web features in 1985, with one other implementing in 1990, suggesting an innovator category (2%). It is commonly accepted, however, that the Web was introduced in late 1990. Responses indicate that between 1993 and 1994, 23 programs (18%) began implementing the Web into classes. These programs are considered early adopters. In 1995 and 1996, another 48 programs (just over 38%) incorporated the Web into classes. Those programs constitute the early majority category. In 1997 and 1998 another 44 programs (approximately 35%) started implementing Web features in classes. They make-up the late majority. Nine programs (7%) did not begin implementation until 1999, and another 9 programs have not yet implemented Web features into their courses. These 18 comprise the laggard category.

The Table shown in Appendix C provide summaries of percentages, means, and standard deviations for the imperatives/pressures to implement statements. A score of 1 meant strongly disagree, 2 indicated disagreement, 3 was a neutral response, 4 meant agree and 5 represented strongly agree. Patterns of agreement showed that two-thirds of the 21 items on the list were indeed viewed as pressures to adopt Web course features in the curriculum. Thus, the answer to Research Question 1 is that the data shows administrators do see an extensive set of imperatives to implement.

These imperatives revolved around the practicality of the Web, including the kind of on-the-job Web training that higher education could cultivate. Web course features were also seen as having a broadening potential for international understanding. Web course features were seen as being convenient, adaptive, and interactive (see Appendix C). Some 80% of the administrators agreed that employer expectations that graduates have Web experience was evidence of the need for such courses. Nearly 80% believed Web competence was an imperative because of its contribution to a global outlook and perspective. Over three-quarters of the administrators identified the Web's convenient access to educational information as a plus. Other fairly strong arguments for Web instruction were the adaptive aspects of the Web for future innovation (72%) and availability of interactive materials on the Web (70%). The Web's potential as an "active learning" tool was acknowledged by 68%. And over two-thirds of the administrators believed that the *perception* of the Web as an essential program made Web instruction an imperative. Only a fourth of the administrators (29%) saw accreditation agency expectations as reasons for implementing Web course features.

Administrators, however, were divided on the role of revenue in Web course implementation. Some 37% indicated that they do not see profit pressures to implement Web course features, but 34% did perceive such pressure. Administrators were similarly divided on the question of whether implementing Web course features helps to combat

professional isolationism, with 33% of the administrators agreeing that it did and 31% disagreeing. While 49% agreed that Web course features can increase learner satisfaction, 40% of the administrators were neutral on this question. Finally, one administrator responded to the "Other" option and stated that faculty interest in the Web constituted an imperative.

In order to answer Research Question 2 about resistances/constraints, the questionnaire asked what administrators perceive as resistances/constraints to the implementation of the Web in teaching. Remember that mean scores greater than 3 indicate higher levels of agreement and scores below 3 indicate disagreement. Table D1 in Appendix D provides summaries of percentages of agreement and disagreement and means and standard deviations on resistance to Web implementation. Of the 13 statements in this block, respondents by and large agreed with seven of them and tended to disagree with the remaining six. The major perceived resistances involve a time drain on faculty, money concerns, and Web system complexities. Other main constraints included personnel shortages, unfamiliarity of how to teach using Web course features, and decreased student-teacher personal interaction.

Three of these resistances drew the highest levels of acknowledgment by administrators. The first was time required for faculty to design and maintain Web courses, with about 66% of administrators viewing this as a major concern. One administrator said that it is hard to do everything else and cover the Web. Another major resistance for six of 10 administrators was the financial one of commitment for Web course hardware and software. One administrator stated that financial ownership issues can serve as a resistance.

The third major resistance identified by administrators (56%) involves the complexities of system-wide adjustment to Web courses. One administrator wrote that technological determinism and commercialization of educational uses of the Web are resistances. Another noted a lack of technical assistance in his program.

To investigate whether perceived imperatives/pressures and resistances/constraints to implement differed by the year that programs began implementing Web course features and by the type of Carnegie institutions involved, ANOVA tests for between-group differences in means were conducted. The Scheffe post-hoc test was used when an overall significant F was computed for the ANOVA. An alpha level of .05 was used for all statistical tests.

For the imperatives/pressures to implement measures, the ANOVAs did not find any significant between-group differences. However, as summarized in Table D2 in Appendix D, the ANOVA examining adopter categories and the resistances to Web implementation resulted in overall statistical significance on three measures. One significant ANOVA was for "Complexities of system wide adjustment to Web courses" [F (4,117) = 2.68, p = .035]. Another was for "Lack of knowledge on alternative teaching such as on Web" [F (4, 116) = 4.58, p = .002]. The third significant F was for "staff resistance to Web technology" [F (4, 116) = 3.12, p = .018]. Post-hoc Scheffe tests were significant for the lack of knowledge measure (p = .002) between innovators and laggards, in that laggards were more likely than innovators to agree they lacked Web knowledge. Also, laggards were significantly more likely than the early majority (p = .035) to see staff resistance.

The findings suggest that perceived institutional adjustment problems may be related to delayed implementation of the Web in courses. And it seems that having a supportive staff working with others on implementing Web feature courses may quicken the innovation's implementation. The absence of significant differences on the other items in the block indicates that for those resistances, schools did not differ in terms of when they adopted.

"Institution Type" Grouping Variable ANOVA Results

An ANOVA was conducted to try to identify between-group differences by institution type. Recall that the categorization system used for institution types in this study was the 1994 Carnegie Foundation for Teaching system of national Research I, Research II, Doctoral I, Doctoral II, and Selective Liberal Arts Colleges, and Non-Carnegie schools both domestic and abroad. As noted earlier, low cell counts required collapsing the seven categories into three: research universities, doctoral universities, and non-Carnegie universities and colleges.

The ANOVA for the Web implementation block statement "Rewards and/or incentives are in place for Web course faculty participants," was statistically significant [$F(2, 129) = 5.194$, $p = .007$]. See Table D3 in Appendix D for the ANOVA results for other measures in this block. The post-hoc Scheffe test revealed two significant differences. First, administrators at doctoral universities showed greater disagreement than did administrators at research universities ($p = .035$), and non-Carnegie schools ($p = .023$), that adequate rewards were in place. These findings suggest that top administrators at doctoral universities, which receive less funding than research universities, view rewards/incentives as inadequate for faculty using Web features in teaching, while research university administrators appear split on the issue.

Non-Carnegie school administrators seem slightly more likely to perceive that the rewards/incentives for faculty using the Web are not adequate. The absence of significant differences on the other variables in the Web implementation block suggests that most ASJMC journalism and mass communication programs, regardless of size or budgets, might have experienced similar processes when implementing Web course features.

"Modified Implementation" Scale Grouping Variable and Organizational Culture Measures

The Web implementation block of statements in the administrator survey was central to answering Research Question 3 which asked whether characteristics of

programs achieving *all* of Ely's (1990) Web implementation conditions would differ from characteristics of programs that had not achieved all of the conditions. However, few programs met all of Ely's eight steps. Therefore, administrators' scores on the eight items were summed and the summed score (the modified Ely Implementation score) was used to divide the sample into thirds. That is, three cohorts were identified based on this summed score. The upper third of respondents were those seen as closest to achieving Ely's conditions, while the lowest third were farthest from achieving them. The three cohorts' mean scores on the eight organization statements were compared using ANOVA, as shown in the Table in Appendix E.

One significant relationship was found on the statement "Program strategies and policies concerning the use of the Web are clear" [F (2, 121) = 9.41, p = .000]. Administrators whose programs had achieved all of Ely's steps agreed (M = 3.33) with the statement, while administrators in the middle (M = 2.75) and lowest cohorts (M = 2.42) disagreed. The answer to Research Question 3 is that yes, at least one characteristic separates ASJMC programs that scored high on Ely's implementation steps from the other programs. This finding indicates that administrators should perhaps view clear strategies and policies of Web use in their program as an important characteristic in the ongoing successes and/or failures during the implementation process.

Discussion

The purpose of this project was to study the perceptions of administrators concerning the diffusion of journalism and communication courses with Web features, within a context that is both "theoretical," drawing on the Diffusion of Innovation perspective, and "practical." The study is topical and relevant because the Internet and the Web are here to stay.

Marklein (2000) stated that colleges and universities are increasingly relying upon the Web and are now turning to "hip twentysomethings" to help redesign their Web sites. A

1999 survey by the U.S. Commerce Department found that 41.5% of U.S. homes now have computers that can access the Internet and Web, up from 26.2% in the previous year ("Computers in Households" 2000).

The research questions, focusing on administrator views, were:

Research Question 1:

What imperatives, or pressures, are provided by ASJMC administrators in support of implementation of the Web in teaching journalism/communication courses?

Research Question 2:

What resistances/constraints are identified by ASJMC administrators in the implementation of the Web in the teaching of journalism/communication courses?

Research Question 3:

Do the characteristics of ASJMC programs that achieve all of Ely's (1990) eight conditions facilitating the Web educational technology innovation differ from characteristics in programs in which all of the implementation conditions have not been achieved?

Analysis of the descriptive statistics suggests that administrators perceived an extensive set of needs and imperatives that may be contributing to the implementation of this innovation. For two-thirds of the 21 items on the imperatives list, more than half of the administrators agreed that the item constituted an imperative to implement courses with Web features. Four out of five administrators identified employer demands that graduates have Web experience and the Web's ability to broaden global outlooks as primary imperatives to implement. Strong majorities of administrators also acknowledged that active

learning, adaptability, interactivity, and the perception of the Web as essential in a program, constituted imperatives to implement.

Conversely, half of the administrators indicated that accreditation agency expectations did not comprise an imperative to implement. Administrators were undecided on remaining potential imperatives. They were largely uncertain as to whether profit pressures and the cost-effectiveness of courses with Web features were imperatives. Administrators' responses did not show a consensus on potential imperatives consisting of the prestige aspects of the Web, or as to whether use of the Web helps faculty to combat professional isolationism. Administrators were undecided about whether courses with Web features increased learner satisfaction.

Zaltman et al. (1973) wrote that changes in an environment create pressures to change. Organizations must respond to these stresses, and the organization is more likely to respond when the environment is rapidly changing.

Based on the survey responses, nearly 6 of 10 programs began implementing courses with Web features within five years of the introduction of the Web in 1990, with another third of the programs implementing Web course features a few years after the majority. Fox (1996) stated that the Web really started to expand, or as Rogers (1995) and others would say, reached a "critical mass" of 25% or more adopters, in the year 1992.

Thus, the fact that 9 out of 10 ASJMC programs reportedly implemented Web course features within a time span of approximately seven years seems to support Newhagen and Rafaeli's (1996) view that educators have been more active in the development of Web technology, if only for their survival. Rossner and Stockley (1997) wrote schools would consider innovations such as the Web in order to remain competitive and to attract the best students. Rogers (2000) stated that he thought that the Internet, of which the Web is a principle component, is the fastest diffusing innovation ever.

Research Question 2 asked "What resistances/constraints are identified by ASJMC administrators in the implementation of the Web in the teaching of journalism/communication courses?" Overall, three major resistances were agreed upon by administrators. These resistances were funding concerns, complexities of system wide adjustments to courses with Web features, and time drains on faculty using the Web in instruction. On the other hand, administrators also rejected a few items from the list of 13 possible resistances as not being major concerns. Administrators did not see their staffs as constraining Web implementation. Half of the administrators did not see promotion and tenure considerations for faculty already using the Web as a hindrance to implementation, but another third of administrators were unsure on this issue.

This research question was answered definitively. Findings showed that administrators saw complexities of system wide adjustment to Web courses, and lack of knowledge on alternative teaching such as the Web, as primary resistances (constraints) upon implementation. Results also showed that administrators, except for laggards in the adopter category classification, did not see staff resistance as a major constraint.

A majority of administrators also showed high agreement on other perceptions of resistance including the perceived need to hire more personnel to assist with Web courses, funding concerns, and perceived time drains on faculty using the Web in courses. Innovators and laggards' perceptions on the lack of knowledge on Web course features differed significantly. This finding supported the earlier work of Bourne et al. (1997) on the lack of knowledge of alternative teaching to Web courses. Administrators in this study also agreed with Hanna's (1998) research on staff resistance to Web course features. Recall that the Scheffe post-hoc test found a relationship between the early majority administrators and laggards in this study, in that laggards perceived more staff resistance. Recall also that over half the administrators responding to the survey disagreed that rewards/incentives are in place for faculty who teach using the Web.

Resistances examined by "Institution Type," also resulted in a significant finding for the item on "Funding concerns for Web course hardware or software." Recall that the LSD post-hoc test found a significant difference ($p = .016$) between Research University administrators and Non-Carnegie Institution administrators on this measure, with the latter group viewing concerns over Web features funding as more of a resistance than the former.

Research Question 3 read "Do the characteristics of ASJMC programs that achieve all of Ely's (1990) eight conditions facilitating the Web educational technology innovation differ from characteristics in programs in which all of the implementation conditions have not been achieved?" Significant results found that administrators who are able to articulate their school's plans and approaches to Web course features have also achieved all of Ely's (1990) educational technology implementation conditions. In other words, administrators who can clearly articulate their program's Web strategies and policies, will probably be able to implement courses with Web course features more quickly.

One reason for the lengthy and continuing history of DOI research is its practical importance and its applied nature (Rogers & Singhal, 1996). An analysis of administrators and as to where their program fits, related to Ely's eight implementation conditions, is practical and something that can be applied. Leonard-Barton (1988) stressed that the failure or the success of the implementation of an innovation depends not on the conditions themselves, but upon managerial reaction to the conditions. This study used organizational and individual diffusion of innovation theory components and a review of the literature, to develop a survey inquiring into administrators' perceptions about the complex implementation process which follows the adoption of innovations. The results supported past DOI studies and hopefully, add at least a little more useful information to the field. Rogers (2000) stated that DOI scholars should be investigating the human interactions with new media technologies and the social consequences of interactive technologies. This

research offered some practical and scientifically supported suggestions on the Web course feature implementation process.

Limitations of the Study

Van de Ven and Rogers (1988) stated that for the innovation process in organizations, an optimal approach would be to determine the time-ordered sequence of events over time, which is termed the process approach, and also to conduct data gathering that allows determinations of covariances among a set of variables. Van de Ven and Rogers also acknowledged the interpretive approach wherein the researcher looks at micro-and macro-level dynamics and constraints.

While most innovation studies do use the survey as the primary method for gathering data, observing change in the innovation over a period of time would be more systematic (Van de Ven and Rogers, 1988). Relying on administrators' recollections of dates that their programs began implementing Web course features is limiting. It is limiting because no other collaborating records are presented, such as college catalog listings of such courses.

Implications for Future Research

Future research in this area might broaden the population of schools surveyed, to include for example community colleges, a broader representation of institutions represented in the new Carnegie 2000 classification scheme, and more overseas programs that offer journalism and mass communication courses. Following Rogers' (2000) suggestion, future studies on Web course features might focus more on the hardware and software used in these courses, in part to try to determine if a so called "digital divide" does exist between the larger and better-funded institutions and smaller programs and, if so, what the consequences may be for faculty and for students.

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Appendix A

Administrator Survey

INSTRUCTIONS-

Please complete the demographic information and then the nine item questionnaire below. Information about you and your specific program will be kept confidential.

__ Check here if you would like to be sent the results of this survey.

DEMOGRAPHIC INFORMATION-(Mark with an "X" in appropriate space).

(01)-Region of the U.S. that your school is located:

__ New England __ Mid-Atlantic __ Midwest __ West
__ South __ Hawaii __ Alaska __ Other: (Specify):

(02)-Type of Institution:

___Research I ___Research II ___Doctoral I ___Doctoral II
___Liberal Arts

(03)-Gender:

___ Male ___ Female

(04)-Age:

___ Years

(05)-Time at present position:

___ Year(s)

(06)-Highest degree obtained:

___ Ph.D. ___ Ed.D. ___ Masters ___ Other-Please specify:_____

QUESTIONS:

(07)-Year your program started offering courses with any Web features?

_____ Specify the year please
_____ No courses with any Web features are offered

INSTRUCTIONS FOR REMAINING QUESTIONS-

Place the appropriate numeral from the key in the space provided before each item under the questions below. You may provide additional information by writing under "Comments."

KEY FOR ITEM #08 BELOW:

1= Strongly disagree
2= Disagree
3= Neutral
4= Agree
5= Strongly agree

(08)-From the list of organizational culture characteristics below, to what extent does the item describe your program's culture?

__ The program is always changing, shifting, transforming.
__ The program is vulnerable to outside pressures.
__ The goals of the program often seem ambiguous.
__ Students exert considerable influence in program decision making.
__ Program strategies and policies concerning use of the Web are clear.
__ Faculty that I see as experts in Web course teaching demand autonomy.
__ With faculty using the Web in courses, a tension exists between professional values and administrative expectations.
__ Faculty using the Web in their courses expect peer evaluation of their Web course work.
__ Other(s): Please specify.

KEY FOR ITEM # 09 BELOW:

1= Strongly disagree
2= Disagree
3= Neutral
4= Agree
5= Strongly agree

(09)-To what extent does each item below describe the implementation process in your program regarding courses with Web features?

__ There has been dissatisfaction with the Web course status quo.
__ The program's faculty/staff have the required knowledge and skills related to Web course development.
__ Adequate resources are available for Web course development.
__ There is adequate time to implement Web courses.
__ Rewards and/or incentives are in place for Web course faculty participants.
__ The program expects active participation in the adoption of Web courses.
__ There is a commitment by faculty involved in Web courses.
__ Leadership in Web course development is shown by the top administrator and by the Web project leader on a daily basis.

Comment(s):

CONFIDENTIALITY REMINDER: Names of individuals and institutions will be kept confidential by the researcher.

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(10)-Do you see your program as a leader in Web course offerings?

__ Yes
__ No

(11)-Can you identify a faculty member in your program as being a change agent, also called an innovation champion (advocate/catalyst), for Web courses?

__ Yes
__ No

If you answered yes, please provide the person's name and e mail address:_____

KEY FOR ITEM # 12 ON PAGE FOUR:

1 = Strongly disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly agree

(12)-Indicate to what extent you agree with each of the statements below (Hurt, Joseph, & Cook 1977).

__ 1. I am generally cautious about accepting new ideas.
__ 2. I rarely trust new ideas until I can see whether the vast majority of people around me accept them.
__ 3. I am aware that I am usually one of the last people in my group to accept something new.
__ 4. I am reluctant about adopting new ways of doing things until I see them working for people around me.
__ 5. I find it stimulating to be original in my thinking and behavior.
__ 6. I tend to find the old way of living and doing things is the best way.
__ 7. I am challenged by ambiguities and unsolved problems.
__ 8. I must see other people using new innovations before I'll consider them.
__ 9. I am challenged by unanswered questions.
__10. I often find myself skeptical of new ideas.

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KEY FOR ITEM # 13 BELOW:

1 = Strongly disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly agree

(13)-From the items listed below, to what extent do you think that the item is a constraint/resistance in your program towards implementing the Web in courses?

__ Assessment difficulties with Web course education
__ Complexities of system wide adjustment to Web courses
__ Decreased teacher immediacy of Web courses
__ Funding concerns for Web course hardware or software
__ Lack of published research on Web course effectiveness
__ Lack of promotion/tenure for teachers already using the Web
__ Lack of strategic planning for Web course learning
__ Lack of knowledge on alternative teaching such as on Web
__ Perceived need to hire more personnel to service courses
__ Plagiarism concerns
__ Staff resistance to Web technology
__ Teacher resistance to Web technology
__ Time drain on faculty using Web courses in terms of designing/maintaining the Web course
__ Other(s): Please specify

Comment(s):

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KEY FOR ITEM # 14 BELOW:

1= Very unimportant
2= Unimportant
3= Neutral
4= Important
5= Very important

(14)-From the list of items below, to what extent do you think that the item constitutes a need to implement the Web into your courses?

__ Accreditation agency expectations
__ Active learning component of Web courses
__ Adaptive aspects of the Web for future innovations
__ Adult learner demands for Web courses as lifetime learning
__ Combat professional isolationism with Web colleagues
__ Competitive forces that offer extensive Web courses
__ Convenience of access on-line
__ Cost effectiveness of Web courses
__ Empowerment of students for directing own learning
__ Employers' demands for graduates to have Web experience
__ Global scope of the Web broadens outlooks and resources
__ Increased class participation through Web activities
__ Increased learner satisfaction
__ Interactive materials available on the Web
__ Interdisciplinary approach to knowledge via the Web
__ Perception of the Web as an essential program
__ Prestige that Web courses can bring programs
__ Profit pressures on universities to use the Web for $ gain
__ Recruitment of students outside geographical area on the Web
__ Research and development opportunities over the Web
__ Self-paced learning options for students using the Web
__ Other(s): Please specify

Comment(s):

(15)-From my past and present experiences in adopting and implementing Web courses, I'd like to share this comment(s) about the Web innovation with administrators and/or faculty.

Comment(s):

Return this survey by using the enclosed self-addressed, stamped envelope. Thank you again for participating in this survey concerning Web courses at ASJMC Programs.

Appendix B

Table B1

ASJMC Program State Demographic Totals

State	n of ASJMC Schools Surveyed		n of Responses	
		P Pop. Total		P Total Responses
Alabama	4	(2.1)	4	(2.9)
Alaska	0	(0)	0	(0)
Arkansas	3	(1.6)	3	(2.2)
Arizona	2	(1.1)	2	(1.5)
California	11	(5.8)	7	(5.1)
Colorado	4	(2.1)	2	(1.5)
Connecticut	4	(2.1)	2	(1.5)
Delaware	0	(0.0)	0	(0.0)
Florida	8	(4.2)	7	(5.1)
Georgia	2	(1.1)	2	(1.5)
Hawaii	1	(0.5)	1	(0.7)
Idaho	0	(0)	0	(0)
Illinois	7	(3.7)	6	(4.4)
Indiana	5	(2.6)	3	(2.2)
Iowa	3	(1.6)	3	(2.2)
Kansas	3	(1.6)	3	(2.2)
Kentucky	4	(2.1)	4	(2.9)
Louisiana	10	(5.3)	4	(2.9)

table continues

Table B1 con't

ASJMC Program State Demographic Totals

State	n of ASJMC Schools Surveyed	P Pop. Total	n of Responses	P Total
Maine	1	(0.5)	1	(0.7)
Maryland	1	(0.5)	0	(0)
Massachusetts	2	(1.1)	2	(1.5)
Michigan	2	(1.1)	2	(1.5)
Minnesota	5	(2.6)	3	(2.2)
Mississippi	6	(3.2)	4	(2.9)
Missouri	6	(3.2)	5	(3.6)
Montana	1	(0.5)	1	(0.7)
Nebraska	3	(1.6)	3	(2.2)
Nevada	2	(1.1)	2	(1.5)
New Hampshire	1	(0.5)	1	(0.7)
New Jersey	2	(1.1)	2	(1.5)
New Mexico	1	(0.5)	1	(0.7)
New York	13	(6.9)	7	(5.1)
N. Carolina	1	(0.5)	1	(0.7)
N. Dakota	1	(0.5)	1	(0.7)
Ohio	6	(3.2)	5	(3.6)
Oklahoma	2	(1.1)	2	(1.5)
Oregon	1	(0.5)	1	(0.7)
Pennsylvania	7	(3.7)	4	(2.9)

table continues

Table B1 con't

ASJMC Program State Demographic Totals

State	n of ASJMC Schools Surveyed	P Pop. Total	n of Responses	P Total
Rhode Island	0	(0)	0	(0)
S. Carolina	2	(1.1)	1	(0.7)
S. Dakota	1	(0.5)	0	(0)
Tennessee	7	(3.7)	3	(2.2)
Texas	16	(8.5)	11	(8.0)
Utah	2	(1.1)	2	(1.5)
Vermont	1	(0.5)	1	(0.7)
Virginia	5	(2.6)	3	(2.2)
Washington	2	(1.1)	2	(1.5)
W. Virginia	3	(1.6)	3	(2.2)
Wisconsin	4	(2.1)	4	(2.9)
Wyoming	1	(0.5)	0	(0)
District of Columbia	3	(1.6)	3	(2.2)
Outside USA	7	(3.7)	3	(2.2)
Totals	189	100.0	137	100.0

Table B2

Institution Type in Numbers and Percentages

Institution Type	N and P in ASJMC Population		n and Total P of Sample	
Research I	40	(21.2)	30	(21.9)
Research II	22	(11.6)	18	(13.1)
Doctoral I	15	(7.9)	12	(8.8)
Doctoral II	12	(6.3)	10	(7.3)
Liberal Arts	4	(2.1)	4	(2.9)
Non-national Carnegie	89	(47.1)	60	(43.8)
Outside U.S. Non-national Carnegie	7	(3.7)	3	(2.2)
Totals	189	100.0	137	(100.0)

Table B3

Year Programs Began Implementing Web Features Into Courses

Year	f	P	Cumulative P
1985	1	.8	.8
1990	1	.8	1.6
1993	10	8.0	9.6
1994	12	9.6	19.2
1995	20	16.0	35.2
1996	28	22.4	57.6
1997	29	23.2	80.8
1998	15	12.0	92.8
1999	9	7.2	100.0
Totals	125	100.0	

Note. There were three missing values on this item.

Appendix C

Imperatives/Needs to Implement Web Course Features Table

Table

Imperatives/Needs to Implement Web Percentages, Means and Standard Deviations

Statement	P					
	SD (1)	D (2)	N (3)	A (4)	SA (5)	M (SD)
Accreditation agency expectations	27.1	22.6	21.1	20.3	9.0	2.61 (1.31)
Active learning component of Web courses	3.1	6.9	22.1	48.1	19.8	3.74 (.96)
Adaptive aspects of the Web for future innovations	.8	3.9	23.4	48.4	23.4	3.89 (.83)
Adult learner demands for Web courses as lifetime learning	6.8	7.6	23.5	44.7	17.4	3.58 (1.08)
Combat professional isolationism with Web colleagues	10.9	20.2	35.7	26.4	7.0	2.98 (1.09)

table continues

Table (Appendix C) con't

Imperatives/Needs to Implement Web Percentages, Means and Standard Deviations

Statement	P					
	SD (1)	D (2)	N (3)	A (4)	SA (5)	M (SD)
Competitive forces that offer extensive Web courses	3.9	12.1	23.5	42.4	18.2	3.59 (1.04)
Convenience of access on-line	3.0	5.3	15.0	56.4	20.3	3.85 (.91)
Cost effectiveness of Web courses	11.7	20.3	28.1	25.0	14.8	3.10 (1.23)
Empowerment of students for directing own learning	4.6	10.0	26.2	45.4	13.8	3.53 (1.00)
Employers' demands for graduates to have Web experience	2.3	6.1	11.5	45.8	34.4	4.03 (.96)
Global scope of the Web broadens outlooks and resources	1.5	3.8	15.3	50.4	29.0	4.01 (.86)

table continues

Table (Appendix C) con't

Imperatives/Needs to Implement Web Percentages, Means and Standard Deviations

Statement	P					
	SD (1)	D (2)	N (3)	A (4)	SA (5)	M (SD)
Increased class participation through Web activities	4.6	11.5	32.1	37.4	14.5	3.45 (1.02)
Increased learner satisfaction	4.6	6.2	40.0	36.2	13.1	3.47 (.96)
Interactive materials available on the Web	2.3	5.3	22.9	51.9	17.6	3.77 (.88)
Interdisciplinary approach to knowledge via the Web	3.1	11.6	28.7	45.0	11.6	3.50 (.95)
Perception of the-Web as an essential program	3.8	6.9	21.5	46.9	20.8	3.74 (.99)
Prestige that Web courses can bring programs	4.6	14.6	34.6	34.6	11.5	3.39 (1.01)

table continues

Table (Appendix C) con't

Imperatives/Needs to Implement Web Percentages, Means and Standard Deviations

Statement	P					
	SD (1)	D (2)	N (3)	A (4)	SA (5)	M (SD)
Profit pressures on universities to use the Web for $ gain	12.2	25.2	28.2	24.4	9.9	2.95 (1.18)
Recruitment of students outside geographical area on the Web	6.1	12.9	22.0	47.0	12.1	3.46 (1.06)
Research and development opportunities over the Web	3.1	7.6	31.3	41.2	16.8	3.61 (.96)
Self-paced learning options for students using the Web	3.8	8.5	31.5	42.3	13.8	3.53 (.97)

Note. n = 128-133. SD = Strongly disagree (1), D = Disagree (2), N = Neutral (3), A = Agree (4), SA = Strongly agree (5).

Appendix D

Resistances/Constraints to Implement Web Course Features Tables

Table D1

Resistances to Web Implementation Percentages, Means and Standard Deviations

Statement	P					
	SD (1)	D (2)	N (3)	A (4)	SA (5)	M (SD)
Assessment difficulties with Web course education	15.8	32.3	23.3	23.3	5.3	2.70 (1.15)
Complexities of system wide adjustment to Web courses	8.4	19.8	16.0	49.6	6.1	3.25 (1.10)
Decreased teacher immediacy of Web courses	8.8	22.4	26.4	33.6	8.8	3.11 (1.12)
Funding concerns for Web course hardware or software	10.6	15.2	14.4	36.4	23.5	3.47 (1.29)

table continues

Table D1 con't

Resistances to Web Implementation Percentages, Means and Standard Deviations

Statement	P					
	SD (1)	D (2)	N (3)	A (4)	SA (5)	M (SD)
Lack of published research on Web course effectiveness	16.7	29.5	25.0	27.3	1.5	2.67 (1.09)
Lack of promotion/tenure for teachers already using the Web	18.9	31.8	30.3	14.4	4.5	2.54 (1.09)
Lack of strategic planning for Web course learning	7.6	25.8	25.0	32.6	9.1	3.09 (1.12)
Lack of knowledge on alternative teaching such as on the Web	7.7	21.5	23.8	43.8	3.1	3.13 (1.04)
Perceived need to hire more personnel to service courses	6.1	24.2	21.2	32.6	15.9	3.28 (1.17)
Plagiarism concerns	16.0	23.7	27.5	22.1	10.7	2.88 (1.23)

table continues

Table D1 con't

Resistances to Web Implementation Percentages, Means and Standard Deviations

Statement	P					
	SD (1)	D (2)	N (3)	A (4)	SA (5)	M (SD)
Staff resistance to Web technology	17.7	46.2	24.6	9.2	2.3	2.32 (.95)
Teacher resistance to Web technology	9.8	37.9	25.0	23.5	3.8	2.73 (1.04)
Time drain on faculty using Web courses in terms of designing/maintaining the Web course	4.6	12.2	16.8	38.9	27.5	3.72 (1.13)

Note. n = 125-133. SD = Strongly disagree (1), D = Disagree (2), N = Neutral (3), A = Agree (4), SA = Strongly agree (5).

Table D2

ANOVA Results for Adopter Categories and Resistance Measures

Statement	(M) (SD)	Adopter Categories I	EA	EM	LM	L	F (p)
Assessment difficulties with Web course education		2.33	2.95	2.59	2.82	2.75	1.00
		(1.20)	(1.19)	(1.30)	(.88)	(1.15)	(.410)
Complexities of system wide adjustment to Web courses		2.79	3.36	3.07	3.20	3.75	2.68
		(1.21)	(1.11)	(1.12)	(.94)	(.89)	(.035)
Decreased teacher immediacy of Web courses		2.95	3.10	2.86	3.32	3.25	.709
		(1.07)	(1.25)	(1.14)	(1.12)	(1.03)	(.588)
Funding concerns for Web course hardware or software		2.83	3.95	3.53	3.55	3.54	2.24
		(1.52)	(.94)	(1.24)	(1.29)	(1.28)	(.068)
Lack of published research on Web course effectiveness		2.37	2.80	2.57	2.65	3.00	1.09
		(1.13)	(1.05)	(1.13)	(1.04)	(1.10)	(.361)

table continues

Table D2 con't

ANOVA Results for Adopter Categories and Resistance Measures

Statement	Adopter Categories					
(M)	I	EA	EM	LM	L	F
(SD)						(p)
Lack of promotion/tenure for teachers already using the Web	2.12	2.95	2.42	2.44	2.87	2.34
	(1.03)	(1.23)	(1.23)	(.86)	(.99)	(.059)
Lack of strategic planning for Web course learning	3.00	3.10	3.19	3.13	3.12	.094
	(1.47)	(1.02)	(.22)	(.19)	(.20)	(.984)
Lack of knowledge on alternative teaching such as on the Web	2.52	3.15	3.03	3.17	3.75	4.58
	(1.23)	(.83)	(1.11)	(1.00)	(.60)	(.002)
Perceived need to hire more personnel to service courses	2.91	3.63	3.50	3.06	3.62	2.10
	(1.01)	(1.16)	(1.17)	(1.06)	(1.20)	(.085)
Plagiarism concerns	2.62	3.10	2.73	2.68	3.37	1.74
	(1.20)	(1.19)	(1.51)	(1.13)	(.82)	(.145)
Staff resistance to Web technology	2.12	2.50	1.88	2.34	2.75	3.12
	(1.07)	(.98)	(.58)	(.93)	(1.03)	(.018)

table continues

Table D2 con't

ANOVA Results for Adopter Categories and Resistance Measures

Statement		Adopter Categories					
	(M)	I	EA	EM	LM	L	F
	(SD)						(p)
Teacher resistance to Web technology		2.79	2.55	2.57	2.82	2.95	.614
		(1.17)	(1.14)	(1.06)	(1.00)	(.99)	(.654)
Time drain on faculty using Web courses in terms of designing/maintaining the Web course		3.37	3.75	3.80	3.82	3.95	.909
		(1.24)	(1.44)	(1.02)	(1.03)	(.87)	(.461)

Note. DF = 4, 111 to 4, 118. n = 18 to 29. I = "Innovators," EA = "Early Adopters," EM = "Early Majority," LM = "Late Majority," L = "Laggards."

Lines between mean scores indicate Scheffe post-hoc significant numbers.

Table D3

ANOVA Results for "Institution Type" and Web Implementation Measures

Statement	Institution Type			
(M)	Research	Doctoral	Non-Carnegie	F
(SD)				(p)
There has been dissatisfaction with the Web course status quo.	3.06	2.55	2.96	1.57
	(1.12)	(.94)	(1.12)	(.211)
The program's faculty/staff have the required knowledge and skills related to Web course development.	3.08	2.76	2.95	.572
	(1.10)	(1.09)	(1.22)	(.566)
Adequate resources are available for Web course development.	3.37	2.95	2.77	3.06
	(1.19)	(1.24)	(1.32)	(.050)
There is adequate time to implement courses.	2.85	2.42	2.34	2.64
	(1.22)	(1.16)	(1.13)	(.075)
Rewards and/or incentives are in place for Web course faculty participants.	2.93	2.14	2.31	5.19
	(1.17)	(.96)	(1.20)	(.007)

table continues

Table D3 con't

ANOVA Results for "Institution Type" and Web Implementation Measures

Statement	Institution Type			
	(M)	Research	Doctoral	Non-Carnegie	F
	(SD)				(p)
The program expects active participation in the adoption of Web courses.		3.28	3.04	3.20	.340
		(1.00)	(1.20)	(1.09)	(.712)
There is a commitment by faculty involved in Web courses.		3.89	3.80	3.76	.257
		(1.03)	(.92)	(.94)	(.774)
Leadership in Web course development is shown by the top administrator and by the Web project leader on a daily basis.		3.45	3.09	3.00	1.98
		(1.18)	(1.26)	(1.22)	(.142)

Note. DF = 2, 127 to 2, 129. n = 20 to 64. Lines between mean scores indicate Scheffe post-hoc significant numbers.

Appendix E

Table

ANOVA Results for Organizational Culture Measures by Modified Ely Score

Organizational Statement	Modified Ely Implementation Score Cohort			
	Lowest	Middle	Highest	
	M (SD)			F (p)
The program is always changing, shifting, transforming.	3.87 (1.05)	3.95 (.99)	4.26 (.93)	1.75 (.178)
The program is vulnerable to outside pressures.	3.13 (1.04)	2.90 (1.19)	3.09 (1.20)	.450 (.639)
The goals of the program often seem ambiguous.	2.10 (1.08)	1.97 (1.06)	1.80 (.99)	.803 (.450)
Students exert considerable influence in decision making.	2.57 (.94)	2.59 (.89)	2.76 (.93)	.508 (.603)

table continues

Table (Appendix E) con't

ANOVA Results for Organizational Culture Measures by Modified Ely Score

Organizational Statement	Modified Ely Implementation Score Cohort			
	Lowest	Middle	Highest	
	M (SD)			F (p)
Program strategies and policies concerning use of the Web are clear.	2.42 (.85)	2.75 (1.08)	3.33 (.90)	9.41 (.000)
Faculty that I see as experts in Web course teaching demand autonomy.	2.62 (.92)	2.77 (.98)	2.69 (1.11)	.225 (.798)
With faculty using the Web in courses, a tension exists between professional values and administrative expectations.	2.02 (.90)	2.31 (.98)	1.97 (1.07)	1.46 (.234)

table continues

Table (Appendix E) con't

ANOVA Results for Organizational Culture Measures by Modified Ely Score

Organizational Statement	Modified Ely Implementation Score Cohort			
	Lowest	Middle	Highest	
	M (SD)			F (p)
Faculty using the Web in their courses expect peer evaluation of their Web course work.	2.70 (1.05)	2.84 (1.14)	3.12 (1.12)	1.39 (.251)

Note. DF = 2, 116 to 2, 121. n = 34 to 44.

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