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THE MANAGEMENT EDUCATION BY INTERNET READINESS (MEBIR) SCALE: DEVELOPING A SCALE TO ASSESS PERSONAL READINESS FOR INTERNET-MEDIATED MANAGEMENT EDUCATION

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Although online delivery of management education is one of the most critical issues facing business schools and corporate universities, instruments to measure a prospective learner's readiness to participate in the online academic environment have been slow to develop. This article reports on the development of the Management Education by Internet Readiness (MEBIR) scale. The MEBIR scale can assist both online management education providers and prospective learners in determining the extent to which online delivery of management-related content is likely to be effective.

Keywords: *Internet; management education; scale; MEBIR; online delivery*

Approximately 70% of accredited U.S. colleges and universities offer courses via the Internet, and more than 20 institutions accredited by the Association to Advance Collegiate Schools of Business offer MBA degrees

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almost entirely via the Internet (Arbaugh, 2000; Kwartler, 1998). In the corporate sector, many experts believe that within several years, the majority of all corporate training will be delivered online as well (Herther, 1997). Nonetheless, the delivery of undergraduate and graduate business courses online is a relatively recent phenomenon; as such, much of what is known is anecdotal and evolving (Briones, 1999; Clauson, 1999; Ellram & Easton, 1999; Taylor, 1996). Indeed, there exists no coherent theory of Internet management education (Simonson, Schlosser, & Hanson, 1999), as most conceptual work has been either macrotheoretical (White, Rea, McHaney, & Sanchez, 1998) or atheoretical (Hiltz & Wellman, 1997).

Although the efforts of traditional universities have been primarily focused on training faculty to develop courses, relatively little interest has been shown in ascertaining student readiness for these courses (Robertson & Stanforth, 1999). This article serves to fill this gap by proposing a new construct, Management Education By Internet Readiness (MEBIR), a learner's personal readiness for successfully completing a management education experience delivered via the Web. This article reports on factors associated with MEBIR as well as the development of a scale to measure the construct.

Online Delivery of Management Education: An Overview

A number of factors have led to the recent trend toward Internet-based management education (Klor de Alva, 2000; MacFarland, 1998). First, advances in course software and computing capacity have created opportunities for the efficient delivery of sophisticated content via the Web (Alavi, Yoo, & Vogel, 1997; Holland, 1996). The belief that quality presentation can occur in only a "live" format is no longer universally accepted.

Second, there has been a marked increase in competition from nonacademic sources (Kedia & Harveston, 1998; Moore, 1997; Rahm & Reed, 1997). Frustrated with a perceived lack of responsiveness among traditional academic institutions, many firms are developing their own corporate universities (Shrivastava, 1999). Content providers have also begun to move into the content delivery market as brokers of academic coursework, and some experts argue that the survival of traditional universities is at stake as they are bypassed by alternative delivery systems (Dunn, 2000).

Third, there has been a substantial increase in the number of households—particularly in the United States—with access to the Internet. According to Nua Internet Surveys, over 161 million people in the United States and Canada have access to the Internet, almost one-half of the world's total popula-

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tion with Internet access (*Nua Knowledge News*, 2000). As this number continues to rise, opportunities for educational institutions should also expand.

Fourth, there are numerous reports of positive experiences with online delivery of management education (Brandon & Hollingshead, 1999; Ellram & Easton, 1999; Greco, 1999). Team-based projects implemented as part of an online course have been shown to improve student skills in technology, course content, and cultural understanding (Bailey & Cotlar, 1994; Kerker, 2001; Sweeney & Oram, 1992). Learners have also reported satisfaction with their online experiences (Parnell, 2000).

Finally, enrollments in traditional MBA programs have not experienced consistent growth throughout the past decade (MacLellan & Dobson, 1997). The Internet affords educators the opportunity of delivering content in a more convenient manner, resulting in an increase in online MBA offerings (Greco, 1999). Indeed, student satisfaction data suggest that implementation of distance programs is easier to effectuate at the graduate level than at the undergraduate level (Clow, 1999).

EFFECTIVENESS OF ONLINE DELIVERY

Debates concerning the effectiveness of Internet-delivered courses are generally associated with the online learning process. There are two basic tools for learning via the Web, the first of which is the presentation of material. In many respects, this approach differs from the traditional approach only in terms of its medium; that is, articles are posted or linked online instead of distributed in print journals or as handouts. However, Internet delivery offers the direct and immediate opportunity for learners to access a plethora of perspectives on a given leadership style (Bigelow, 1999).

The second tool for learning is the discussion. Bulletin boards and chat rooms are frequently used as a means of inciting exchange of various predetermined topics or issues for discussion. For example, learners can discuss what they believe to be the pros and cons of servant leadership based on their analyses of the various online sources of related material. Whereas chat rooms provide for the immediate real-time exchange among learners, bulletin boards allow learners to enter the discussion at convenient times and tend to result in more refined contributions to the group discussion (Simich-Dudgeon, 1998).

There is considerable anecdotal evidence to support the notion that online delivery—when well conceived and implemented—can be *at least as effective* as traditional face-to-face delivery (Meisel & Marx, 1999). Specifically, a number of advantages of online course delivery have been articulated. First, online delivery can be more convenient for the learner (Nelson, 1997;

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Oblinger & Kidwell, 2000). Learners may be required or encouraged to be available for real-time (i.e., synchronous) online class discussions or presentations. In many cases, however, much or all of the work can be completed at the convenience of the learner (i.e., asynchronous); in such cases, time and geography are important only to the extent that they prevent learners from accessing the Web or completing assignments.

Second, online instruction increases access to students who would otherwise not be able to pursue educational goals. For some students (especially those who are geographically isolated), online study does not merely improve convenience but enables them to access courses of study that would not otherwise be available (Nelson, 1997; Ross & Klug, 1999). Today's learners demand greater flexibility and convenience, as a result of erratic work schedules, excessive travel, and family responsibilities. This is especially true in graduate business programs, where traditional institutions such as Colorado State University and the University of Wisconsin compete with nontraditional players such as Thomas Edison State College and the University of Phoenix for a growing MBA market.

Third, online instruction can enhance the quality of education (Bigelow, 1999). The plethora of academic and educational Web sites on virtually any topic enable the learner to explore a wealth of information and sources that may not be as easily accessible in the classroom.[1] The implementation of online components to traditional classes is already extensive, primarily because the Internet allows for the efficient procurement of data especially relevant to the business world (Kerker, 2001; Quick & Lieb, 2000). Research also suggests that the quality and quantity of participation in class discussions often improves in online courses (Bailey & Coltar, 1994; Boston, 1992; Parnell, 2000; Strauss, 1996). This is especially true when instructors adopt a facilitator style (Berge, 1995) and more conversational approaches to content delivery (Ahern, Peck, & Laylock, 1992; Freitas, Myers, & Avtgis, 1998).

Finally, online delivery has the potential to improve efficiency, as material can be simultaneously accessed by an infinite number of learners. Indeed, online delivery also offers the greatest efficiency when the number of learners is high. Hence, online delivery is fast becoming the preferred delivery method of choice for many professional training programs (Roberts, 1998).

Criticism of online instruction generally falls into one of several categories. First, some educators argue that much is lost when instructors and learners are not face to face and able to freely ask questions and discuss issues. The Internet, they charge, allows students to proceed through coursework without high-quality idea exchange, mentoring, or coaching (Smith & Dillon, 1999).

Second, many traditional educators note that testing via the Internet is cumbersome and creates numerous opportunities for academic dishonesty.

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Because faculty cannot "see" students completing their exams, there is no evidence that online examinations are actually completed by the students. As such, many online courses have emphasized projects in the evaluation process. Not surprisingly, this has become a critical issue for academic institutions.

Third, many educators argue that the actual long-run costs associated with distance education are extraordinary and do not necessarily justify the wide-scale implementation of Internet programs (Morgan, 2000). Expenses associated with both training and the development of a technology infrastructure have been shown to be high in many cases.

Finally, some educators argue that the validity of the Internet as an educational tool is not yet fully understood, and educators should proceed with caution (Grossman, 1999). This view holds that academic change should be slow so as to ensure that quality is never sacrificed for expediency of delivery.

Although it may seem clear that individual learner characteristics should represent a key factor in the success of management education delivered via the Internet, it is often a factor that is overlooked (Hara, 1998). MEBIR represents an attempt to examine individual differences that may lead to a positive educational experience. Specifically, the MEBIR scale has been developed to test for individual differences and serve as a precursor to the development of valid means of predicting the likelihood of success or failure with Internet-delivered management education before the experience begins.

Development of the Mebir Scale

CRAFTING THE MEBIR INSTRUMENT

The procedure used to develop a measure of personal readiness for successfully completing Internet-based management education experiences largely follows guidelines recommended by Hinkin (1995), Nunnally (1978), and Churchill (1979) for the development of a scale in a new field of research. The first stage encompassed a literature review and the development of a definition of the construct and three attitudinal dimensions of MEBIR. The first dimension, Technological Mastery (TECH), reflects the learner's familiarity with and mastery of the medium by which online management content is delivered, the Internet (El-Tigi, 2000; Hara, 1998; Mioduser, Nachmias, Lahav, & Oren, 2000; Parasuraman, 2000; Poindexter & Basu, 2000; Thompson, 2000; Van Rennes & Collis, 1998). Hara (1998) found that minimal experience with computers and the Internet tended to result in increased student frustrations and inhibited educational opportunities for graduate business students at Indiana University. It is believed that

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this dimension would be closely related to that of attitudes toward computers (Loyd & Gressard, 1984) but with a more narrow focus concerning Internet usage as opposed to general computer usage.

The second dimension, Course Flexibility (FLEX), reflects the degree to which the learner perceives that Internet-delivered coursework is more flexible, convenient, and oriented toward learner self-direction (Brockett et al., 2000; Ellis, 2000; Galer, 1999; Mioduser et al., 2000; Palmer, 2001; Tysome, 2001). Rich, Pitman, and Gosper (2000) found that students perceived that online education provided both time and place flexibility, which resulted in strong positive reactions to Internet-based coursework. Specifically, the dimension of FLEX is designed to measure perceptions that Internet-delivered courses improve one's ability to management his or her work schedule, allow for more expedient academic degree completion, and create an opportunity for pursuing a course that might otherwise not be available.

The final dimension, Quality (QUAL), reflects the degree to which the learner perceives that Internet courses would be of high quality (Blake, 2000; Kolb, 2000; Palmer, 2001; Parasuraman & Grewal, 2000). The dimension of QUAL considers whether the Internet-mediated learning experience is likely to be superior to that in a face-to-face environment. Dellana, Collins, and West (2000) compared the effectiveness of a virtual classroom with that of a traditional classroom lecture course and found no statistically significant differences in the quality of instruction or outcomes between the two modes of instruction.

The second step in the development process involved the generation of 55 items believed to reflect the three attitudinal dimensions of MEBIR. This instrument utilized a 5-point Likert-type scale. A response of 5 denotes strong agreement (i.e., *strongly agree*) with a given statement, whereas a response of 1 denotes strong disagreement (i.e., *strongly disagree*); responses of 2, 3, and 4 were included to allow the participant to express moderate levels of agreement or disagreement with each item.

Following an initial survey of 133 graduate business students and further scrutiny by two additional management researchers to assess validity in both content and construct-related strategies, 27 of the items were deemed to be vague or conceptually inadequate in wording, arbitrary, or not directly related to the construct. A second survey considering the remaining 23 items was followed by an exploratory factor analysis. The Scree test (Cattell, 1966), Parallel Analysis criterion (Horn, 1965), and eigenvalue greater than 1 criterion (Guttman, 1954) were applied, and all three supported a three-factor solution to the data eigenvalues (7.32, 3.66, and 2.46, respectively), accounting for 54.6% of the variance (Bollen, 1989). Six items did not sufficiently load on one of the factors and were eliminated. A final theoretical scrutiny of

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the remaining items eliminated 4 others based on concerns about wording and/or clarity. The analysis also suggested that 1 item may be measuring two distinct attributes. As a result, this item was split into 2 separate items, resulting in the addition of a new item.

In the next portion of the study, the remaining 15 items, along with 3 additional items proposed as a surrogate of perceived self-management ability, were distributed to 126 undergraduate students. Following an initial examination of the statistical results and evaluation by another management educator, 4 items were deleted from the scale. The principal components factor analysis produced three factors (eigenvalues of 4.01, 1.87, and 1.46), accounting for 66.8% of the variance (see Table 1). Loadings along the three factors were strong, ranging from .715 to .849 for the three subscales and from .667 to .841 in the three-factor solution.

The final instrument consisted of the MEBIR items as well as questions concerning age, gender, race, and managerial level included to ensure a representative sample. The scale was then administered to 185 undergraduate students at a comprehensive, state-supported university in the southwestern United States. The sample was 48% male, and the ages of the respondents ranged from 18 to 36, with an average age of 22.4 years.

Measurement Properties of the Mebir Scale

RELIABILITY, CONVERGENT, AND DISCRIMINANT VALIDITY

The principal components (Harman & Jones, 1966) factor extraction technique resulted in each item loading significantly on only one of the three factors. The loadings supported the existence of three dimensions of the MEBIR construct. Table 2 provides factor loadings and composite coefficient alpha reliability estimates for each of the dimensions.

The first dimension, TECH, encompasses three items that reflect the learner's familiarity with and mastery of the medium by which online management content is delivered, the Internet. The original set of items believed to measure this factor were based on those in the Computer Attitudes Scale (CAS) (Loyd & Gressard, 1984). The 40-item CAS has been shown to be a valid assessment instrument for general attitudes toward computers and their usage (Gardner, Discenza, & Dukes, 1993; Nash & Moroz, 1997; Woodrow, 1991). These items were reworded to expand the focus from attitudes concerning computers to those concerning Internet usage. The second dimension, FLEX, encompasses three items that reflect the degree to which the learner perceived that Internet-delivered coursework is more flexible and convenient for the learner. The final dimension, QUAL, encompasses three

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TABLE 1
The MEBIR Subscales

Item	*Wording*	*Subscale Loading*
Technological mastery (TECH; α = .697)		
TECH1	I generally have no problems downloading files and software via the Internet.	.786
TECH2	I consider my computer ability to be better than average.	.764
TECH3	I get frustrated easily with technology (*R*).	.818
Flexibility of course delivery (FLEX; α = .855)		
FLEX1	Taking an Internet course would allow me to arrange my work schedule more effectively.	.848
FLEX2	Taking an Internet course could allow me to finish my degree more quickly.	.849
FLEX3	Taking an Internet course could allow me to take a class I would otherwise not be able to take.	.832
Anticipated quality of course (QUAL; α = .841)		
QUAL1	I would probably learn more from my fellow students in an Internet course than I would in a face-to-face course.	.829
QUAL2	I would probably not learn as much in an Internet course as I would in a face-to-face course (*R*).	.715
QUAL3	I learn more effectively when I interact with people in a face-to-face setting (*R*).	.752
Self-management orientation (SELF; α = .776)		
SELF1	I consider myself to be well-organized.	.814
SELF2	I am more self-disciplined than most of my colleagues.	.730
SELF3	I tend to manage my time well.	.790

NOTE: (R) = reverse coding.

items that reflect the degree to which the learner perceives that the Internet courses would be of high quality—or even higher quality than in a face-to-face environment.

Reliability and validity were assessed to ensure the integrity of the MEBIR scale. The coefficient alpha reliability estimates (Cronbach, 1951) for the scale was .830, indicating that the scale has a moderate level of internal consistency, an important indication of reliability (Kuratko, Montagno & Hornsby, 1990; Peter, 1979). As seen in Table 3, coefficient alpha reliability estimates for each of the subscales were .788 for the TECH subscale, .839 for the FLEX subscale, and .815 for the QUAL subscale, and each was found to be unidimensional based on the results of limited information factor analysis

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TABLE 2
The MEBIR Scale

Item	*TECH Factor Loading*	*FLEX Factor Loading*	*QUAL Factor Loading*
TECH1	.765	.192	–.182
TECH2	.841	–.187	.090
TECH3	.690	.147	.162
FLEX1	.019	.840	.042
FLEX2	–.107	.852	.081
FLEX3	.133	.777	.066
QUAL1	.001	.147	.754
QUAL2	–.180	–.028	.799
QUAL3	.187	–.141	.793

(Sethi & Carraher, 1993), a confirmatory factor-analytic method for the estimation of unidimensionality.

As suggested by Carraher, Buckley, and Cote (2000; also see Buckley, Carraher, & Cote, 1992; Carraher & Whitely, 1998), convergent and discriminant validity were assessed in three ways, first, by correlation matrix (Bagozzi, 1981). The matrix developed represents mean correlations among items from each scale separately and mean correlations between items from different scales. Intracorrelations within the MEBIR scale (items within the same subscales) were moderately high and consistent (.558 among TECH items, .641 among FLEX items, and .597 among QUAL items), suggesting convergent validity (Campbell & Fiske, 1959). The intercorrelations within the MEBIR scale (items within different subscales) were substantially lower and consistent (.265), suggesting discriminant validity (Campbell & Fiske, 1959; Churchill, 1979).

Second, the convergence of the items on the two factors demonstrated convergent validity of the scale. The "clean" loading of each item on only one factor suggests discriminant validity. QUAL2 produced the highest cross-loading, .314 on the Course Flexibility subscale.

Finally, convergent and discriminant validity were assessed via the use of variance extracted and shared variance statistics (Fornell & Larcker, 1981). Variance extracted is the amount of the joint variance captured by the construct and not by measurement error. Fornell and Larcker (1981) recommended .50 as a benchmark for the establishment of convergent validity. Variance extracted was .52 for the TECH subscale, .57 for the FLEX

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TABLE 3
The MEBIR Scale (Final Data Collection)

Item	*Subscale Factor Loading*	*Single Factor Loading*	*TECH Loading*	*FLEX Loading*	*QUAL Loading*
TECH1	.872	.591	.835	–.064	.248
TECH2	.847	.412	.864	.014	–.091
TECH3	.802	.406	.809	.046	–.094
FLEX1	.864	.736	–.028	.869	.017
FLEX2	.857	.786	–.029	.769	.150
FLEX3	.895	.733	–.020	.922	–.080
QUAL1	.863	.685	.097	.042	.840
QUAL2	.855	.802	.065	.317	.645
QUAL3	.847	.637	–.065	–.020	.911
SELF1	.832				
SELF2	.738				
SELF3	.843				

*Coefficient alphas were .788 for the TECH subscale, .839 for the FLEX subscale, .815 for the QUAL subscale, and .830 for the composite MEBIR scale. Coefficient alpha was .726 for the SELF scale.

subscale, and .53 for the QUAL subscale, suggesting some degree of convergence on the factors.

Shared variance is the squared correlation between two constructs and should be significantly less that the extracted variance for either of the constructs. Shared variance between the subscales was .07, suggesting discriminant validity (Fornell & Larcker, 1981).

Construct validity was assessed in part by testing for an association between MEBIR and perceived self-management ability, factors perceived to be positively associated (Alavi, Yoo & Vogel, 1997). Perceived self-management ability was found to be positively correlated with the composite MEBIR measure as well as with the TECH and FLEX factors (see Table 4). Factor scores (regression method) were employed as measures of each subscale.

Conclusions and Future Directions

Internet delivery in the international arena appears to be growing exponentially, but it remains in its nascent stage of development. The use of the Internet to address the tremendous international market opportunity is both logical and promising for universities and faculty equipped to do so. The present study develops a scale to measure one's readiness for Internet-

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TABLE 4
Correlations

Item	*TECH*	*FLEX*	*QUAL*	*SELF*	*AGE*	*GPA*
TECH	1.000	.288*	.263*	.232*	–.193*	–.168*
FLEX		1.000	.096	.564*	.188*	–.234
QUAL			1.000	.094	.241*	–.012
SELF				1.000	.122	–.079
AGE					1.000	.216*
GPA						1.000

*$p < .05$.

delivered management education that can serve as a valuable tool to assess Internet readiness and therefore improve the educational experience. However, further challenges remain.

First, to what extent, if any, should the Internet delivery be accompanied by face-to-face interaction? Is it desirable to require that learners travel to the host campus or that the professor travel to the students? Face-to-face interaction provides a personal touch not easily secured in an online environment. Practitioners developing programs should consider that at least some personal contact may be warranted (Hara, 1998). The scale developed in this article measures readiness for Internet coursework but makes no claims concerning its effectiveness—we would suggest that this scale be validated on other samples and also linked to other outcomes of interest to management educators.

Second, should Internet-based discussions be synchronous or asynchronous? In other words, should students be required to "meet" on the Internet at certain times so that class may convene electronically, or should the course be structured so that students can work when they choose? Under the former case, the Internet can be used to simulate the classroom environment, and students can exchange ideas or "chat" in real time. Under the latter case, exchange of ideas is limited to e-mails and bulletin boards. This issue would likely influence student perceptions of both flexibility and quality of Internet courses.

Third, individual characteristics of the learner may be only one factor that can influence the success or failure of Internet-mediated management education (Lo, 2001; Quilter & Chester, 2001). Additional research should examine the relationships between MEBIR and other potentially critical success factors, such as faculty training, faculty and learner technological access and support, and specific course content (Dobrin, 1999; Hitch & Hirsch, 2001).

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For example, does the host institution and faculty member possess the technical expertise—including appropriate support—to use the Internet for delivery of instruction? Faculty members must understand the basics of Web page creation and/or possess the university support necessary to post materials, change them as needed, and address any technical support issues raised by the learners. Delivery of courses via the Web also necessitate that faculty members "buy in" to a nontraditional model of education, whereby the faculty member becomes the facilitator instead of the teacher (Harden & Crosby, 2000).

Fourth, although addressing and assessing individual characteristics may be important for improving Internet educational experiences, how can providers of management education via the Internet target learners with the proper combination of individual characteristics? For example, consider that age was found to be negatively associated with perceived TECH in the present sample. In other words, younger respondents were more likely to express a comfort with technology necessary to succeed in an Internet-delivered course. This presents an interesting dilemma for educational providers who have experienced greater success with delivering higher level skills (e.g., graduate-level education), the market for which tends to be more mature (Cox, 2000; Egerton, 2001). Indeed, older learners were more likely to place higher value on the flexibility associated with Internet delivery and to perceive their own self-management abilities to be higher (Schwarzer, Mueller, & Greenglass, 1999). It also presents an exceptional long-term opportunity for graduate institutions, as future students will likely possess greater comfort with technology than do current ones (Bayram, 1999; March, 2000; Quilter & Chester, 2001).

Finally, how can outcomes in the Internet-based environment be compared with those in the traditional classroom environment? Critics and accrediting agencies will desire evidence that the former approach is essentially equivalent to the latter, whereas proponents may charge that the quality in the Internet-based environment is actually superior. Regardless, educators need to be prepared to assess the outcomes and address quality comparisons.

Note

1. Although we recognize that these academic and educational Web sites are as available to on-campus students as they are to students in an Internet-based course, we believe that it is more likely that the students would examine and use the Web sites in the Internet-based course as the professor is likely going to help to focus the attention of the students on the Web sites. We thank an anonymous reviewer for clarifying this point.

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References

Ahern, T. C., Peck, K., & Laylock, M. (1992). The effects of teacher disclosure in computer-mediated discussion. *Journal of Educational Computing Research, 8*, 291-309.

Alavi, M., Yoo, Y., & Vogel, D. R. (1997). Using information technology to add value to management education. *Academy of Management Journal, 40*, 1310-1333.

Arbaugh, J. B. (2000). Virtual classroom characteristics and student satisfaction with internet-based MBA courses. *Journal of Management Education, 24*(1), 32-54.

Bagozzi, R. P. (1981). Evaluating structural equation models with unobservable variables and measurement error: A comment. *Journal of Marketing Research, 18*, 375-381.

Bailey, E. K., & Coltar, M. (1994). Teaching via the Internet. *Communication Education, 43*(2), 184-193.

Bayram, S. (1999). Internet learning initiatives: How well do Turkish virtual classrooms work? *THE Journal, 26*(10), 65-69.

Berge, Z. L. (1995). Facilitating computer conferencing: Recommendations from the field. *Educational Technology, 35*, 22-20.

Bigelow, J. D. (1999). The Web as an organizational behavior learning medium. *Journal of Management Education, 23*, 635-650.

Blake, N. (2000). Tutors and students without faces or places. *Journal of Philosophy of Education, 34*(1), 183-199.

Bollen, K. A. (1989). *Structural equations with latent variables*. New York: John Wiley.

Brandon, D. P., & Hollingshead, A. B. (1999). Collaborative learning and computer-supported groups. *Communication Education, 48*(2), 109-126.

Briones, M. G. (1999, March 29). E-commerce master's programs set to explode. *Marketing News*, p. 19.

Brockett, R. G., Stockdale, S. L., Fogerson, D. L., Cox, B. F., Canipe, J. B., Chuprina, L. A., et al. (2000). *Two decades of literature on self-directed learning: A content analysis*. Paper presented at the 14th Annual International Self-Directed Learning Symposium, February 3-5, Boynton Beach, FL.

Buckley, M., Carraher, S., & Cote, J. (1992). Measurement issues concerning the use of inventories of job satisfaction. *Educational and Psychological Measurement, 52*, 529-542.

Campbell, D. R., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56*, 81-105.

Carraher, S., Buckley, M., & Cote, J. (2000). Strategic entrepreneurialism in analysis: Global problems in research. *Global Business & Finance Review, 5*(2), 77-86.

Carraher, S., & Whitely, W. (1998). Motivations for work and their influence on pay across six countries. *Global Business & Finance Review, 3*, 49-56.

Cattell, R. B. (1966). The Scree test for the number of factors. *Multivariate Behavioral Research, 1*(2), 245-276.

Churchill, G. A., Jr. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research, 16*, 64-73.

Clauson, J. (1999). Online quality courses offer many side benefits. *Quality Progress, 32*(1), 83-89.

Clow, K. (1999). Interactive distance learning: Impact on student course evaluations. *Journal of Marketing Education, 21*(2), 97-105.

Cox, G. (2000). Why I left a university Internet education company. *Change, 32*(6), 12-19.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrica, 16*, 297-334.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Dellana, S., Collins, W., & West, D. (2000). Online education in a management science course: Effectiveness and performance factors. *Journal of Education for Business*, *76*(1), 43-48.

Dobrin, J. (1999). Who's teaching online. *ITPE News*, *2*(12), 6-7.

Dunn, S. L. (2000, March/April). The virtualizing of education. *The Futurist*, 34-38.

Egerton, M. (2001). Mature graduates II: Occupational attainment and the effects of social class. *Oxford Review of Education*, *27*(2), 271-286.

El-Tigi, M. (2000). *Integrating WWW technology into classroom teaching: College students' perspectives of course Web sites as an instructional resource*. Unpublished doctoral dissertation, Syracuse University.

Ellis, K. (2000). A model class. *Training*, *37*(12), 50-58.

Ellram, L. M., & Easton, L. (1999). Purchasing education on the Internet. *Journal of Supply Chain Management*, *35*(1), 11-19.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*, 39-50.

Freitas, F. A., Myers, S. A., & Avtgis, T. A. (1998). Student perceptions of instructor immediacy in conventional and distributed learning classrooms. *Communication Education*, *42*, 366-372.

Galer, S. (1999). Distance learning the high-tech way. *Computing Japan*, *6*(8), 30-35.

Gardner, D. G., Discenza, R., & Dukes, R. L. (1993). The measurement of computer attitudes: An empirical comparison of available scales. *Journal of Educational Computing Research*, *9*, 487-507.

Greco, J. (1999). Going the distance for MBA candidates. *Journal of Business Strategy*, *20*(3), 30-34.

Grossman, M. (1999). Online U. *Scientific American*, *281*, 41.

Guttman, L. (1954). Some necessary conditions for common factor analysis. *Psychometrika*, *19*(2), 149-161.

Hara, N. (1998). *Students' perspectives in a Web-based distance education course*. Paper presented at the annual meeting of the Mid-Western Educational Research Association, Chicago, IL.

Harden, R., & Crosby, J. (2000). AMEE guide No. 22: The good teacher is more than a lecturer—the twelve roles of the teacher. *Medical Teacher*, *22*(4), 334-348.

Harman, H. H., & Jones, W. H. (1966). Factor analysis by minimizing residuals. *Psychometrica*, *31*, 351-368.

Herther, N. K. (1997). Education over the Web: Distance learning and the information professional. *Online*, *21*(5), 63-71.

Hiltz, L. R., & Wellman, B. (1997). Asynchronous learning networks as a virtual classroom. *Communications of the ACM*, *40*(9), 44-49.

Hinkin, T. R. (1995). A Review of scale development practices in the study of organizations. *Journal of Management*, *21*, 967-988.

Hitch, L., & Hirsch, D. (2001). Model training. *Journal of Academic Librarianship*, *27*(1), 15-20.

Holland, M. P. (1996). Collaborative technologies in inter-university instruction. *Journal of the American Society for Information Science*, *47*, 857-862.

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, *30(2)*, 179-185.

Kedia, B. L., & Harveston, P. D. (1998). Transformation of MBA programs: Meeting the challenge of international competition. *Journal of World Business*, *33*, 203-217.

Kerker, S. (2001). Confessions of a learning program dropout. *Corporate University Review*, *9*(2), 2-6.

Klor de Alva, J. (2000, March/April). Remaking the academy. *Educause*, 32-40.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Kolb, D. (2000). Learning places: Building, dwelling, thinking. *Journal of Philosophy of Education*, *34*(1), 121-134.

Kuratko, D. F., Montagno, R. V., & Hornsby, J. S. (1990). Developing an intrapreneurial assessment instrument for an effective corporate entrepreneurial environment. *Strategic Management Journal*, *11*, 49-58.

Kwartler, D. (1998, December). Is distance learning a financial bonanza? *MBA Newsletter*, *7*, 6-10.

Lo Choi Yuet Ngor, A. (2001). The prospects for using the Internet in collaborative design education with China. *Higher Education*, *42*(1), 47-61.

Loyd, B., & Gressard, C. (1984). Reliability and factorial validity of the Computer Attitude Scale. *Educational and Psychological Measurement*, *44*, 501-505.

MacFarland, T. W. (1998). *A comparison of final grades in courses when faculty concurrently taught the same course to campus-based and distance education students*. (ERIC Document Reproduction Service No. ED 429476)

MacLellan, C., & Dobson, J. (1997). Women, ethics, and MBAs. *Journal of Business Ethics*, *16*(11), 1201-1209.

March, T. (2000). Link like you mean it! Selecting web sites to support intentional learning outcomes. *Multimedia Schools*, *7*(2), 52-55.

Meisel, S., & Marx, B. (1999). Screen to screen versus face to face: Experiencing the differences in management education. *Journal of Management Education*, *23*, 719-731.

Mioduser, D., Nachmias, R., Lahav, O., & Oren, A. (2000). Web-based learning environments: Current pedagogical and technological state. *Journal of Research on Computing in Education*, *33*(1), 55-76.

Moore, T. E. (1997). The corporate university: Transforming management education. *Accounting Horizons*, *11*(1), 77-85.

Morgan, B. M. (2000). *Is distance learning worth it? Helping to determine the costs of online courses*. Unpublished manuscript, Marshall University.

Nash, J. B., & Moroz, P. A. (1997). *An examination of the factor structures of the Computer Attitude Scale*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Nelson, G. E. (1997). Expectations of Internet education. (ERIC Document Reproduction Service No. ED 411904)

Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.

Nua knowledge news. (2000). Online surveys of Internet usage. Retrieved from http://www.nuaknowledgenews.com

Oblinger, D., & Kidwell, J. (2000, May/June). Distance learning: Are we being realistic? *Educause*, 31-39.

Palmer, S. (2001). Engineering flexible teaching and learning in engineering education. *European Journal of Engineering Education*, *26*(1), 1-13.

Parasuraman, A. (2000). Technology Readiness Index (TRI): A multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, *2*(4), 307-320.

Parasuraman, A., & Grewal, D. (2000). The impact of technology on the quality-value-loyalty chain: A research agenda. *Journal of the Academy of Marketing Science*, *28*(1), 168-174.

Parnell, J. A. (2000). *International graduate course delivery via the Internet: The case of business strategy in Mexico*. Paper presented at the annmual meeting of the Academy of Business Education, Bermuda.

Peter, J. P. (1979). Reliability: A review of psychometric basics and recent marketing practices. *Journal of Marketing Research*, *16*, 6-17.

Poindexter, S., & Basu, S. C. (2000). *Technology, teamwork, and teaching meet in the classroom*. Proceedings of Educause 2000: Thinking IT Through, October 10-13, Nashville, TN.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Quick, R., & Lieb, T. (2000). The heart field project, *THE Journal*, *28*(5), 41-46.

Quilter, S., & Chester, C. (2001). The relationship between Web-based conferencing and instructional outcomes. *International Journal of Instructional Media*, *28*(1), 13-22.

Rahm, D., & Reed, B. J. (1997). Going remote: The use of distance learning, the World Wide Web, and the Internet in graduate programs of public affairs and administration. *Public Productivity and Management Review*, *20*(4), 459-471.

Rich, D., Pitman, A., & Gosper, M. (2000). Integrated IT-based geography teaching and learning: A Macquarie University case study. *Journal of Geography in Higher Education*, *24*(1), 109-116.

Roberts, B. (1998). Training via the desktop. *HRMagazine*, *43*(9), 98-104.

Robertson, L. J., & Stanforth, N. (1999). College students' computer attitudes and interest in Web-based distance education. *Journal of Family and Consumer Sciences*, *91*(3), 60-64.

Ross, G. L., & Klug, M. G. (1999). Attitudes of business college faculty and administrators toward distance education: A national survey. *Distance Education*, *20*, 109-128.

Schwarzer, R., Mueller, J., & Greenglass, E. (1999). Assessment of perceived general self-efficacy on the Internet: Data collection in cyberspace. *Anxiety, Stress & Coping*, *12*(2), 145-161.

Sethi, V., & Carraher, S. (1993). Developing measures for assessing the organizational impact of information technology: A comment on Mahmood and Soon's paper. *Decision Sciences*, *24*, 867-877.

Shrivastava, P. (1999). Management classes as online learning communities. *Journal of Management Education*, *23*, 691-702.

Simich-Dudgeon, C. (1998). Developing a college Web-based course: Lessons learned. *Distance Education*, *19*, 337-357.

Simonson, M., Schlosser, C., & Hanson, D. (1999). Theory and distance education: A new discussion. *American Journal of Distance Education*, *13*(1), 60-75.

Smith, P. L. & Dillon, C. L. (1999). Comparing distance learning and classroom learning: Conceptual considerations. *American Journal of Distance Education*, *13*(2), 6-23.

Strauss, S. G. (1996). Getting a clue: Communication media and information distribution effects on group process and performance. *Small Group Research*, *27*(1), 115-142.

Sweeney, M. T., & Oram, I. (1992). Information technology for management education: The benefits and barriers. *International Journal of Information Management*, *12*, 294-309.

Taylor, J. (1996). The continental classroom: Teaching labor studies online. *Labor Studies Journal*, *21*, 19-38.

Thompson, R. (2000). *A passport to flexible learning: An orientation program to introduce first year university students to interactive teaching technologies*. Proceedings of the Technology Education and National Development Conference, April 8-10, Adu Dhabi, United Arab Emirates.

Tysome, T. (2001). New learndirect leader looks at foundation-degree courses. *Times Higher Education Supplement*, *1482*, 5.

Van Rennes, L., & Collis, B. (1998). *User interface design for WWW-based courses: Building upon student evaluations*. Paper presented at World Conference on Educational Multimedia & Hypermedia & World Conference on Educational Telecommunications, Freidburg, Germany.

White, D., Rea, A., McHaney, R., & Sanchez, C. (1998). *Pedagogical methodology in virtual courses*. Paper presented at the annual meeting of the Decision Science Institute, Orlando, FL.

Woodrow, E. E. J. (1991). A comparison of four computer attitude scales. *Journal of Educational Computing Research*, *7*, 165-187.

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