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BARRIERS TO DISTANCE EDUCATION: PERCEPTIONS OF K-12 EDUCATORS

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Abstract: Instructional-use computers are continuing to migrate into the classrooms, with public schools reporting over half the installed base now located in classrooms. Still, education struggles with the rapid expansion of technology. This article reports on findings from a survey (n=2504) of respondents working in elementary, middle, and secondary schools (n=159). The survey concerns barriers perceived in distance education and is based on prior research involving content analyses of the case studies along with an extensive review of the literature. Demographic data about the respondents is reported for job functions, delivery systems, individual expertise in distance education, and organizational capabilities regarding distance education. Perceptions of these respondents concerning barriers to distance education reported, along with comparisons to respondents not working in K-12.

Almost 2/3 of all schools report that the majority of teachers use the Internet for instructional purposes. More than ¾ (77%) of schools indicate that the majority of teachers have school-based email addresses. Over 75% say that the majority of their teachers use computers on a daily basis. Instructional-use computers are continuing to migrate into the classrooms, with public schools reporting over half (52%) the installed base now located in classrooms (MDR 2000).

Still, education struggles with the rapid expansion of technology. One of the challenges to the educational system is to increase learning opportunities through the use of technology with the limited resources that are available. One way to increase the educational opportunities available to students is through distance education. This is not a panacea, of course. As Dingle, Napp, Gooch, and Kelly (2000) pointed out:

For each potential benefit, there is also a perceived challenge. For example, one of the most widely accepted advantages of distance learning is that it increases exposure to master teachers and specialized courses. Small school districts with limited resources can offer a small group of students Advanced Placement courses, highly specialized vocational courses, or exotic foreign languages. The corresponding challenge is that courses taught via network are not cognizant of the organic integument of the individual schools. Furthermore, teachers and unions may perceive the use of distance learning as a threat to jobs, if it is not made clear that the intent is not to replace teachers with technology (n.p.)

So, while distance education grows in popularity, there are obstacles to using it that must be overcome.

The Current Study

Using the content analyses of the case studies described in Berge (1998) and Berge and Mrozowski (1999) and an extensive review of the literature, Berge developed a list of 64 barriers to distance education and placed them in survey format (see http://cgi.umbc.edu/cgi-bin/dharley/misc/barrier_survey.pl). Berge then conducted two rounds of beta-testing using paper and pencil versions of the instrument, administered to representative members of the target population (n>50). Minor revisions were made for clarity of meaning and in wording before the final version of the survey was released on the web, where it was accessible using standard web browsers. Respondents were asked to

rate each of the 64 barriers on a 1 to 5 Likert type-scale, with extremes ranging from no barrier to very strong barrier. When each respondent completed the survey and submitted it, the response was captured by a cgi script into an output file that could be easily transferred into SPSS.

An list of email messages was prepared from personal acquaintances, participant lists and membership lists in educational technology, distance education, and training conferences, workshops, seminars, and professional organizations and an individual invitation to complete the survey was sent to each address. The invitation was also sent to a wide variety of electronic mailing lists in which the topic of discussion was believed to be related to education, distance education, and/or technology-enhanced learning. This announcement included background regarding the survey, provided the perspective taken, and asked for volunteers to complete the online survey regarding barriers to distance education. Given the Internet distribution of the call for participation, it is impossible to accurately estimate a rate of return.

Data were collected between June 1999 and the end of January 2000. Summary information of the demographic data collected was reviewed on a monthly basis. Subgroups that were found to be under-represented in the early stages of data collection (June-December, 1999), such as persons working in elementary and secondary schools, and university students, were specifically targeted in the next distribution of the call for participation (mid-December, 1999 to January, 2000). As of February 1, 2000, 2530 surveys were collected. The 2504 valid surveys that remained after data cleaning were analyzed using SPSS.

Of the 2504 survey respondents, 1276 worked in higher education, 448 worked in corporate or business organizations, 375 worked in community colleges, 129 were employed by the government, 126 worked in middle or secondary schools, 117 worked for non-profit organizations, and 33 worked in elementary schools. The job functions of the respondents included: 1150 teachers or trainers; 648 managers, directors, department chairs or principals; 346 support staff; 167 higher administrators such as dean, provost, vice president or superintendent; 102 researchers; and 91 undergraduate or graduate students (see Table 1 for K-12 job functions). Respondents worked in a broad range of content areas including education (33.0%), business (16.8%), health sciences (10.2%), humanities (8.6%), engineering (4.8%), behavioral sciences (4.6%), physical sciences (2.6%), humanities (1.0%) and "other" (18.5%).

	Frequency	Percent
Teaching faculty	101	63.5
manager/director/dept chair/principal	28	17.6
Support staff	20	12.6
Graduate student	5	3.1
higher admin (VP; dean; provost; superintendent)	4	2.5
Researcher	1	6
Total	159	100.0

Table 1. Job Function of Elementary, Middle, and Secondary respondents

The primary distance learning delivery systems used by respondents included: Internet or Web-based computer conferencing (n=1462); print-based (n=286); videoconferencing or desktop videoconferencing (n=269); CD-ROM or multimedia (n=177); audiotape or videotape (n=123); ITV (n=118); audioconferencing or audiographics (n=35); EPSS (n=32); and radio (n=2).

Findings of K-12 Educators' Perceptions of Barriers

For each of the 64 barriers, respondents were asked to "rate each of the barriers/obstacles according to how you perceive the strength of that barrier to your current work in distance learning, or your desire to work in distance learning." Means were calculated for each of the 64 items using the Likert scale responses. The barriers were then rank ordered according to their mean.

#	Barrier	Mean
1	increased time commitment	3.52
2	lack money to implement DL programs	3.47
3	organizational resistance to change	3.42
4	lack shared vision for DL in org	3.40
5	lack of strategic planning for DL	3.18
6	lack DL training provided by our organization	3.17
7	lack tech-enhanced classrooms/labs/infrastructure	3.14
8	slow pace of implementation	3.13
9	lack of grants	3.11
10	lack of technical support	3.08
11	difficult to convince stakeholders of DE benefits	3.08
12	lack support staff to help course development	3.06

Table 2. Top 12 Barriers to Distance Education as Ranked by K-12 Educators

#	Barrier	Mean
53	cultural issues (lack of bias-neutral tech)	2.14
54	technology fee	2.13
55	language barriers across cultures	2.09
56	difficulty competing with new DL business models	2.07
57	local, state or federal regulations	2.07
58	revenue sharing with departments or business units	2.04
59	lack personal technological expertise	2.03
60	problems with vast distances and time zones	2.00
61	tuition rate	1.99
62	lack of Acceptable Use Policy (AUP)	1.98
63	existing union contracts	1.96
64	ethical issues	1.81

Table 3. Bottom 12 Barriers to Distance Education as Ranked by K-12 Educators

The top 12 barriers to distance education as ranked by the respondents to this study are shown in Table 2. The bottom 12 barriers to distance education as ranked by the respondents to this study are also shown in Table 3.

Factor	K12 Educators (n=159)	All (except K-12 ed) (n=2345)	CC and Higher Ed (n=1651)	Non-profit Business (n=565)	Gov't. (n=129)
Faculty Compensation and Time	1	1	1	6	4
Organizational Change	2	2	3	1	1
Lack Tech Expertise and Support	3	3	2	2	2
Access	4	7	8	4	3
Evaluation	5	4	5	3	5
Student Support Services	6	6	4	8	8
Social Interaction and Quality Concerns	7	5	6	5	6
Administrative Structure	8	10	10	10	10
Legal Issues	9	8	7	9	9
Threatened by Technology	10	9	9	7	7

Table 4. Ranking of Mean by Various Work Categories

Factor Analysis

As mentioned above, this study is part of an ongoing, larger analyses of the barriers to distance education data. A factor analysis of the 2504 responses resulted in 10 factors which accounted for 52% of the overall variance (see Muilenburg and Berge (2001) for the technical description of this factor analysis).

Table 4 shows the 10 factors (Muilenburg & Berge 2001), and is a comparison of the mean rankings from K-12 educators with responses from persons working in various other areas (i.e., all work areas except K-12; community colleges and higher education; non-profits, business, and corporations; and the government). It appears K-12 respondents perceptions of barriers to distance education are more like those of other educational institutions and somewhat different than persons answering from business and government.

Implications and Further Study

It would be unreasonable to draw too many general conclusions about barriers to distance education in K-12 from the 159 responses within this larger study. However, there are a couple interesting items to note, and perhaps these will lead to future study.

The survey may be biased toward technologically advanced people by virtue of its Web-based administration. It may be useful to see if a random sample of K-12 teachers identified the same issues and if persons with less technical expertise would have similar barrier rankings. It was disappointing that more persons had not responded who had no experience, or interest perhaps, in distance education.

Why is lack of personal technological expertise ranked near the bottom (#59), when lack of training and the lack of tech support are ranked near the top of the list (at #6 and #10 respectively)? If respondents are technologically savvy, why do they rank the lack of training and support such a strong barrier? Could their perception be that is what is keeping *others* from using distance education?

The K-12 educators' concerns about distance education have much in common with issues that have been reported anecdotally in the literature: faculty compensation and increased time to design, develop, and implement teaching and learning within a technologically-mediated, distance environment; the effort needed for cultural or organizational change within the organization; the lack of technical expertise and support needed for the distance education efforts and the lack of access. One logical next step is to describe how to overcome these barriers now that we have identified which are of higher priority.

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