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Business Faculty Opinions of Teaching Methods and Resources

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ABSTRACT

About two hundred and eighty business professors compared seventeen teaching methods and resources based on four objectives. Interactive, hands-on teaching methods such as internships were rated first and less interactive teaching resources such as radio were rated last. Web courses that included more interaction such as chats were rated higher than Web courses with audio, typed lectures, and videos. However, all four types of Web courses investigated were rated in the bottom half of the teaching methods and resources. Results correspond to major principles of andragogy theory.

I. INTRODUCTION

Instruction via the Web has grown rapidly. Web courses have been used in over 70 percent of four-year colleges (Kaeter, 2000) and major companies (Galvin, 2002). Worldwide accessibility improved technological capabilities, and flexibility of time, place, and programs contribute to the popularity of Web-based instruction (Brown, 2000). With its growing popularity, Web-based instruction has received increased scrutiny through comparisons with various teaching methods and resources. Furthermore, researchers are beginning to analyze the effectiveness of different types of Web-based instruction. With the growing popularity of the Web, this paper will compare instructor perceptions of Web and non-Web teaching methods and resources. Prior literature has infrequently compared the methods and resources possibly due to the recent development and popularity of the Web.

II. LITERATURE REVIEW

1. TEACHING METHOD/RESOURCE COMPARISONS

Kozma (1994) believes that different teaching methods/resources have unique clusters of capabilities that can be studied to determine how they interact with the learner. For example, more participative methods such as role-plays, live cases, internships, games, and discussions tended to be rated higher by instructors than less

participative resources such as radio and television. Less participative resources such as television and methods such as lectures (without discussion) scored lowest with most objectives. (Carroll, et al., 1972; Newstrom, 1980; Kaupins, 1997; Kaupins, 1998).

Computer-based instruction has been rated low by instructors in terms of overall effectiveness. For example, computer conferencing scored in the lower half of the list of teaching methods/resources for the average of six teaching objectives (Kaupins, 1997; Kaupins 1998). Traditional classroom experiences were rated higher than computer-based courses for interaction, course coverage, and communication skills required (Ryan, Carlton, and Ali, 1999, Adams, 2000). Instructors who both taught on the Web and the traditional classroom found the Web more frustrating in providing the range of communication that simulates real world experiences (Smith, Ferguson, and Caris, 2001).

However, there is some indication that interactive Web courses are associated with higher levels of communication and student learning. Web courses that have frequent communication between the teacher and student seem to be associated with greater student problem solving capabilities (Jareka, Bonk, and Lehtinen, 1999, Cavalier, 2003). More interaction with the instructor and fellow students has been associated with improved student attitudes toward Web-based courses (Teh, 1999; Ryan, et al., 1999; Cooper, 2000). Wang, Newlin, and Tucker (2001) found that the number of student contacts during a semester was positively correlated with the final grade in a class. Examples of contacts in an online class include the hit rate of the Web course homepage and the total number of electronic bulletin board postings.

The results of these studies tend to support the major principles of andragogy theory. According to Knowles (1998), andragogy theory addressed learner-focused education that has been typically associated with adult education. The andragogic model suggests adults learn best through active participation in learning, the use of a great variety of senses, and application of what is learned in real life. Active participation could involve discussions via group activities, e-mail exchange, chats, and bulletin boards. A great variety of senses can be used in videos, animation and simulations. Application of learning can take place through internships and apprenticeships.

Prior research has not differentiated different types of Web-based instruction. According to Sonwalkar (2002), Web courses can include media styles such as on-line chats videos, audio, and a variety of typed lectures that include photos, drawings, and cartoons. Web courses also can vary by the amount and type of interaction such as e-

mail, discussion, or bulletin boards. Also, Web courses can vary by the learning style ranging from deductive to inductive.

It is not known how the Web (with chats, videos, audio, and typed lectures) compares with various teaching methods or resources such as lectures, role-plays, internships, television, and radio. Knowing the effectiveness of various Web interaction options would help funding agencies, training managers, school officials and others responsible for allocating funds spent on technology and Web course instructors who design the Web environment.

III. PURPOSE

This study will compare various Web courses (with chats, video, audio, and typed lectures) to teaching methods such as role-plays and internships and teaching resources such as CD-ROMs, television, radio, and video. Andragogy theory suggest that teaching methods/resources with more human contact, more use of the senses, and high trainee involvement can lead to higher perceptions of these methods. Accordingly, we hypothesize that Web courses with chats will be the highest rated among the Web courses followed by Web courses with video, audio, and finally typed lectures. The main question and contribution of this research is associated with analyzing where different types of Web courses will rank compared to other major teaching methods/resources.

The present study is unique because a variety of Web course options will be investigated such as Web courses with audio, video, and chats. These Web course options will be compared with most popular types of teaching methods/resources based on a survey of major companies and schools through Training magazine (Galvin, 2002).

Though the ideal method of collecting behavior and results information is to directly measure behavioral and organizational changes on the organization site, an alternative is to assess opinions of how behavior and organizational results have changed over time. Trainers, managers, professors and others can be asked about their opinions about the success of instructional programs or methods. Comparisons of the effectiveness of these methods can help teachers assess whether the methods can help them achieve teaching objectives (Newstrom, 1980).

Though prior research has covered rater familiarity with teaching methods and resources and has found little influence of familiarity on the ratings (Kaupins, 1997, 1998), we will add popularity of instructional methods as a moderator variable. Popularity might influence perceptions of instructional methods. The more popular an

instructional method is in a classroom setting, the higher that method might be rated. Furthermore, an assessment of a method's effectiveness may affect its popularity.

IV. METHODOLOGY

1. SAMPLE

Respondents were 279 business instructors and professors obtained from the membership of the Association of Collegiate Business Schools and Programs (ACBSP). ACBSP is a leading specialized accreditation association for collegiate business schools to support, celebrate, and reward educational excellence. About 500 surveys were mailed to faculty and deans in 2001 who attended the national ACBSP conference. Though most prior grid research included corporate trainers (e.g., Carroll, et al., 1972; Newstrom, 1980; Kaupins, 1997), one included business professors (Kaupins, 1998). About 62 percent of the respondents were male. The academic ranks of the respondents were professor (31 percent), associate professor (19 percent), assistant professor (13 percent), and instructor (37 percent). About 73 percent taught in public colleges and universities (the rest were private). Respondents came from two-year schools (59 percent), 4-year schools (22 percent), and schools including graduate programs (20 percent). The average size of these schools was 5287 students and the average size of the business schools was 21 faculty.

2. QUESTIONNAIRE

Comparative grid surveys offer one way to compare Web courses to many different teaching methods/resources based on several objectives. Respondents complete a grid with instructional methods and resources in one dimension and objectives in the other dimension. Carroll, et al., 1972; Newstrom, 1980; Kaupins, 1997; Kaupins 1998 surveyed teachers and compared at least ten teaching methods/resources based on six objectives. The six objectives are knowledge acquisition, problem solving, participant acceptance, changing attitudes, interpersonal skills, and knowledge retention.

Comparative grid surveys such as Carroll, et al (1972) have been included in management textbooks, training guides, and training programs as a basis for comparing teaching methods/resources (e.g., Wexley and Latham, 1981; Goldstein, 1974; Hodgetts and Kroeck, 1992; Good, 2000). They have also been incorporated in the literature reviews of experiments on the effectiveness of various instructional methods (e.g., Bowman, 1978; Erffmeyer, 1992). The present study incorporated some

of the teaching methods/resources of prior grid research (e.g., Carroll, et al., 1972, Kaupins, 1987) such as lectures, role-plays, and sensitivity training to help with grid

study comparisons. Added were CD-ROMs and Web-based instruction that included on-line chats, videos, audio, typed lectures and interactive videos due to their increasing popularity.

Respondents rated the effectiveness (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) of seventeen teaching methods/resources based on four training objectives. A copy of the survey is shown in Appendix A. Respondents also were asked if their organization frequently uses the instructional method. With the additional frequency estimate, respondents made eighty-five ratings (seventeen instructional methods time five (four objectives plus one frequency measure)).

Respondents assessed whether they agreed that a particular teaching method or resource created an enjoyable teaching environment (example of reaction), was effective in increasing learning about a topic (example of learning), helped change interpersonal behavior in the workplace (example of behavior), and was cost effective in achieving workplace objectives (example of results). Kirkpatrick's (1976) taxonomy of teaching objectives (reaction, learning, behavior, results) was the inspiration for the list of objectives in this study. The present study only captures elements of Kirkpatrick's taxonomy due to complications associated with measuring reaction, learning, behavior, and results. For example, numerous organizational results can be measured such as sales, profits, return on investment, and public goodwill.

V. RESULTS

1. MAIN SURVEY

In Table 1, internships scored the highest among seventeen teaching methods/resources with every teaching objective except cost effectiveness where it scored second to lectures with discussion. Internships had the highest overall average of 3.45 on the 1-4 scale. This is the average across the four objectives of the survey. A simple average is presented given no compelling reasons to provide a weighted average. Lectures with discussion had the second highest overall rating and case studies scored third highest overall.

Table 1
Instructional Method Ratings: Means and Ranks (in Parentheses)

Instructional Method	This method creates an enjoyable teaching environment	This method is effective in increasing learning about a topic	This method helps change interpersonal behavior in the workplace	This method is cost effective in achieving workplace objectives	My organization uses this method in teaching situations	Average of the four objectives[a]
Books, Brochures	2.93 (8)	3.17 (5)	2.61 (8)	2.98 (4)	3.45[b] (1)	2.92 (7)
Case Studies	3.38 (2)	3.36 (4)	3.10 (4)	3.11 (3)	3.07 (2)	3.24 (3)
CD-ROM	2.82 (12)	3.05 (7)	2.10 (15)	2.94 (6)	2.38 (8)	2.73 (10)
Games	3.05 (6)	2.84 (13)	2.71 (7)	2.63 (12)	2.14 (14)	2.81 (8)
Interactive television	2.71 (13)	2.85 (12)	2.54 (9)	2.61 (13)	2.37 (10)	2.68 (13)
Internship	3.44[c] (1)	3.59[c] (1)	3.57[b] (1)	3.20 (2)	2.95 (3)	3.45[b] (1)
Lecture with discussion	3.30 (4)	3.49 (3)	3.04 (5)	3.24[c] (1)	2.89 (4)	3.27 (2)
One-on-one discussion	3.30 (3)	3.55 (2)	3.20 (2)	2.35 (15)	2.64 (6)	3.10 (4)
Radio	2.07 (17)	2.01 (17)	1.78 (17)	2.15 (17)	1.42 (17)	2.00 (17)
Role play	3.00 (7)	3.01 (8)	3.11 (3)	2.84 (7)	2.50 (7)	2.99 (5)
Sensitivity training (t-groups)	2.37 (16)	2.42 (15)	2.81 (6)	2.21 (16)	1.77 (16)	2.46 (15)
Television	2.39 (15)	2.42 (16)	2.04 (16)	2.55 (14)	2.09 (15)	2.35 (16)
Web course with audio	2.84 (10)	2.89 (10)	2.33 (13)	2.72 (9)	2.19 (13)	2.69 (12)
Web course with chats	2.85 (9)	2.86 (11)	2.53 (10)	2.74 (8)	2.36 (11)	2.74 (9)
Web course with typed lectures	2.58 (14)	2.77 (14)	2.29 (14)	2.66 (11)	2.38 (9)	2.58 (14)
Web course with videos	2.83 (11)	2.90 (9)	2.44 (12)	2.67 (10)	2.21 (12)	2.71 (11)
Videos	3.12 (5)	3.15 (6)	2.50 (11)	2.98 (5)	2.89 (5)	2.94 (6)

[a]Average teaching method/resource rating across the four objectives based on 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree; [b]Top ranked method rated higher than methods ranked 2 or lower for this objective at .05 level of significance, [c]Top ranked method rated more effective than methods ranked 3 or lower for this objective at .05 level of significance.

Computer-based instruction generally ranked in the lowest half among the seventeen teaching methods. Web courses with typed lectures ranked fourteenth overall (averaging the four teaching objectives), with audio twelfth, and with video eleventh. The only exception to low rankings was Web courses with on-line chats that ranked eighth and CD-ROMs
that ranked seventh.

Many technology-based instructional methods/resources scored especially low under the interpersonal skills objectives. Ratings of 2.54 or less on this dimension occurred with almost every type of Web course option, television (interactive and non-interactive), videos, and radio. Radio's interpersonal behavior rating was 1.78.

2. SURVEY INTEGRITY

The present study results appear comparable to the Kaupins (1997, 1998), Carroll et al. (1972), and Newstrom (1980) studies. Table 2 summarizes the Spearman Rho correlations between the rankings of the five grid studies for the six teaching methods/resources that overlap between the studies. All but two unique Spearman Rho correlations were significant (at the .05 two-tail level) between the present study and the four other studies. Correlations between the present study and the Carroll et al. (1972) and Kaupins (1998) studies were significantly positive at the .10 level. The strongest correlations were .94 between the Newstrom (1980) and the Kaupins (1997; 1998) studies. The lowest correlations were between the present study and the four studies. The main factor affecting low correlations is the high ranking for lectures with discussion in the present study. Of the six teaching methods/resources common to all of the studies, the present study ranked lectures with discussion first whereas all of the other studies ranked it fifth. Television was ranked sixth in all of the studies. Sensitivity training ranked fourth or fifth in all studies except Carroll et al. (1972) that ranked it second.

Table 2
Correlation Between Ranks of Five Grid Studies[a]

	Carroll et al. (1972)	Newstrom (1980)	Kaupins (1997)	Kaupins (1998)	Present Study
Carroll et al. (1972)	1.00	.60*	.83*	.54*	.26
Newstrom (1980)		1.00	.94*	.94*	.37*
Kaupins (1997)			1.00	.83*	.43*
Kaupins (1998)				1.00	.26
Present Study					1.00

[a]Each correlation represents the Spearman Rho correlation between the ranks of six teaching methods/resources in common between five grid studies (Present study; Kaupins, 1998; Kaupins, 1997; Newstrom, 1980; Carroll, et al., 1972). The instructional methods are case studies, lectures, games, role-plays, sensitivity training, and television lectures.

*Spearman Rho correlations significant at least at the .05 level (two-tail test)

A potential problem with grid research is multicollinearity among teaching objectives and respondent fatigue or laziness. Some respondents might rate a teaching method/resource the same across all teaching objectives to save time because many ratings are made. Major halo effects also are possible if a respondent feels that a method is superior and there is some ambiguity in either the teaching methods/resources or teaching objectives. Of the two hundred and seventy-nine respondents, fifteen respondents marked the same answer for an instructional method across all objectives and the frequency of use measure. Forty-two respondents marked the same answer for each instructional method at least half the time (eight or more teaching methods). The results were reanalyzed by removing the fifteen respondents first and then removing the remaining forty-two respondents. Two significant differences ($p < .05$) were found in the ratings of the teaching methods for any instructional method. The interpersonal behavior rating jumped .10 for books and brochures and the frequency of use rating jumped .10 for Web courses with audio.

Correlations between the popular use of the instructional methods in organizations and the instructional method ratings were high. Of the fifty-eight unique

correlations possible (four objectives for seventeen instructional methods) forty-eight were significantly positive at least at the .05 level.

The demographic variables such as gender, academic rank, and the type of school (public, private, two-year, four-year, graduate-level) and the teaching method/resource ratings failed to show many significant correlations ($p < .05$). School size was significantly negatively correlated with twelve of the sixty-eight ratings (seventeen teaching methods/resources times four objectives). The twelve significant negative correlations averaged -.15.

VI. DISCUSSION AND FUTURE RESEARCH

Andragogy theory might suggest why teaching resources such as the Web, radio, and interactive television did not rank higher than eighth overall. Technology-based teaching resources might not be as participative as "real-life" as internships. The lower ratings for the teaching resources coincide with observations by Maul and Spotts (1993) and Keyes (1990) that instructor-led instruction tended to be preferred over technology-led instruction in terms of amount learned and popularity. Interpersonal behavior in the workplace was one teaching objective in particular where instructor led instruction appears to be rated more effective than technology-led instruction.

In contrast to the interpersonal behavior ratings, CD-ROMs and books/brochures had higher ratings for “learning about a topic” than some of the instructor-led methods such as role-plays. These results appear somewhat similar to previous research by Carroll et al. (1972) and Newstrom (1980) that gives teaching resources associated with computers and books higher marks for knowledge acquisition and retention than for interpersonal skills.

The Web course options that appear to have the most interaction between students and instructors received higher rankings (on-line chats and interactive television). The Web course with possibly the lowest sensory contact for students, typed lectures, had the lowest ranking among the Web options. Chats, typed lectures, audio, and video could affect the amount of quality interaction between the instructor and the students. In the present study, it was assumed that Web courses with chats had more interaction than Web courses with typed lectures, audio, and video. Future research should ask respondents how much interaction they perceive to be associated with each Web course methodology. Chats, by design, have an interactive feature. However, typed lectures also could have interaction between students and the teacher if they are supported by e-mails, discussions, and bulletin boards. Future research also could investigate the impact of emails, discussions, and bulletin boards on teaching effectiveness.

Other computer-based teaching resources include diskettes, Intranet, asynchronous and synchronous Web, virtual reality, and statistical packages. Computer-based resources can be combined with more traditional teaching methods such as lectures and games. Teaching method interaction possibly can enhance teaching effectiveness better than each method or resource in isolation.

Numerous other teaching objectives related to Kirkpatrick's (1976) objectives can be investigated such as speed, preparation time, travel costs, consistency, self-pacing, and acceptability. Future research also can investigate other populations such as training experts, students, and managers with commensurate control variables such as gender, level, age, teaching method familiarity, course interest, and learning style.

The high correlation between the organization's use of the teaching methods/resources and the ratings can have several interpretations. Future research should investigate whether popularity impacts method effectiveness assessment or the assessment of a method's effectiveness affects its popularity. Furthermore, would lack of experience with or knowledge of a teaching method or resource affect ratings. If a respondent did not use role-playing, for example, he or she might not know how effective it is or might downplay its effectiveness.

VII. CONCLUSIONS

The present study provides further support to Andragogy Theory that suggests adults learn best through active participation in learning, the use of a great variety of senses, and application of what is learned in real life. Live cases and internships received the highest ratings among business professors. Web courses were among the lowest rated among the most popular teaching methods and resources in the United States. However, Web courses can have a variety of features such as chats, typed lectures, video, and audio. Web courses with chats that have significant human interaction were rated higher than Web courses with typed lectures, video, and audio. This lends further support to the need for greater human interaction associated with computers.

APPENDIX A--SURVEY ON TEACHING METHODS/RESOURCES

The purpose of this survey is to collect data about the effectiveness of various teaching methods and resources in the classroom environment. You are asked to consider five different statements about the instructional experience in regard to a number of different methods and resources.

For each of the 17 teaching methods/resources listed in the table below, indicate the extent to which you agree with each of the five statements given in the column headings. Use the following scale to indicate the extent of your agreement.

Strongly Disagree	Disagree	Agree	Strongly Agree
1	2	3	4

For every teaching method/resource, you should enter a level of agreement for each of the five statements.

Teaching Method	This method/resource creates an enjoyable environment	This method/resource is effective in increasing learning about a topic	This method/resource helps change interpersonal behavior in the workplace	This method/resource is cost effective in achieving workplace objectives	My organization frequently uses this method/resource in teaching situations
1. CD-ROM					
2. Lecture with Discussion					
3. Videos					
4. Internship					
5. Games					
6. Radio					
7. Web Course with Audio					
8. Sensitivity Training (t-groups)					
9. Web Course with Chats					
10. Case Study					
11. Role Play					
12. Books, Brochures					
13. Interactive Television					
14. One-on-one discussion					
15. Web Course With Typed Lectures					
16. Web Course With Videos					
17. Television (non-interactive)					

Please Answer the following additional demographic questions.

1. Your gender
   Male_____
   Female_____

2. Size of your university or institution (approximate total enrollment)
   _____

3. Size of your business school (approximate total enrollment)
   _____

4. Total number of full-time faculty in your business school
   _____

5. Your academic rank (check one)
   Professor _____
   Associate Professor _____
   Assistant Professor _____
   Instructor _____

6. Is your school:
   Public_____ 2 Year_____
   Private_____ 4 Year_____
   Graduate_____

Thank you for completing this survey. Please return the completed form to the address shown below:

Xxxxxxxx
Xxxxxxxx

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