

**STUDENTS' VIEWS OF COLLABORATIVE LEARNING IN THE DISTANCE  
LEARNING ENVIRONMENT**

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# **STUDENTS' VIEWS OF COLLABORATIVE LEARNING IN THE DISTANCE LEARNING ENVIRONMENT**

## **Introduction to the Study**

Interactions between the instructor and the students and between the students themselves are the heart and soul of the traditional classroom, giving life to the class content. And, in their own way, interactions contribute to student learning and content retention. Students are more likely to be empowered if they see their participation as valued and encouraged. The instructor's willingness and ability to create an atmosphere where interactions can be engaging, exciting, and meaningful contribute to students' empowerment.

When learners at different locations participate at the same time, discover common interests, and enhance the course content by sharing ideas and experiences, fun happens for everyone in the course. What this suggests is that the instructor must set the climate for student learning using the computer as the medium.

The new paradigm of education brought about by computer-mediated education is that the "key to the learning process is the interactions among students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interactions" (Palloff & Pratt, 1999, p. 5). Collaborative learning communities are created through shared knowledge.

The purpose of this paper is to answer the research questions: *How do students feel about working in groups in the online learning environment? What collaborative learning tools have students used? How will knowing this information influence how teachers construct learning and choose instructional practices in the online teaching environment?*

## **Review of Related Literature Pertinent to the Study**

Advances in technology are making an impact on content, learning strategies, and instructional traditions. Multimedia allows various presentations of knowledge, interface, and interactivity. Wide area networking and the Internet can be combined to enable communication through email, discussion threads, chat rooms, whiteboards, and audio and video conferencing.

At the same time that technology is advancing, outside forces also are working to widen access to higher education and to create more flexible educational routes for lifelong learning. These forces come in the shape of the public who is demanding increased accountability and in the form of legislatures who are restricting resources. The public and the legislatures, however, still demand and expect the same quality of learning, as well as the development of employability skills, communication, collaborative working, and problem solving (Hartley, 1999). For these reasons, administrators in institutions of higher education have looked to the faculty to embrace distance learning technologies and methodologies.

The differences between traditional classroom-based education and distance learning have significant implications for the design and delivery of instruction. Creating a learning community is important in the traditional classroom and in the online classroom. The

differences between the two learning environments are obvious: face-to-face contact with the instructor is not possible unless students make the effort, face-to-face contacts with other students are not likely unless they make the effort, and nonverbal communication cues that enhance student understanding and interaction are lost.

Communities in the online classroom take on a different dimension from the traditional classroom. Steven Jones (1995), in his book *Cybersociety*, states that "the extent to which people use computer-mediated communication as a means to invent new personas, to recreate their own identities, or to engage in a combination of the two and the way in which they do so are issues central to the construction of a computer-mediated social world" (p. 156). According to a study by Pratt (1996), in the online environment, the following elements need to be present:

- The ability to carry on an internal dialogue in order to formulate responses
- The creation of a semblance of privacy both in terms of the space from which the person communicates and the ability to create an internal sense of privacy
- The ability to deal with emotional issues in textual format
- The ability to create a mental picture of the partner in the communication process
- The ability to create a sense of presence online through the personalization of communications (pp. 119-120).

Just like in the traditional classroom, the central ingredient must be the creation of an open, caring atmosphere for sharing knowledge, concerns, goals, and communications. Such elements as honesty, trust, responsiveness, relevance, and respect contribute to the learning community. These elements help students feel comfortable in an environment that is new, different, and evolving.

Collaborative learning, by definition, usually aims at sharing work, using differing knowledge and expertise to improve the quality of varied viewpoints, and building or consolidating a community (Hartley, 1999). In collaborative learning, emphasis is placed on the interactions as common understandings are negotiated and developed across differences in knowledge, skills, and attitudes. Collaborative learning should thrive on these differences. And by extension, students' motivation and confidence should be enhanced as they assume a variety of functional roles in the specific learning community.

Three educational theories are relevant to computer-mediated communication: *constructivism*, Brooks & Brooks, 1993; Cranton, 1994; *active learning*, Myers & Jones, 1993; and *transformative learning*, Mezirow, 1991; Sherry & Wilson, 1997. These theories attempt to bridge the gap between the traditional paradigms of education and the new computer-mediated paradigms. *Constructivist* and *active learning* theorists suggest that learners *actively construct* knowledge and meaning through experimentation, exploration, manipulation, and testing based on past experience and accumulated knowledge--especially in environments where they may not have any experience or frame of reference.

According to Mezirow (1991), *transformative learning* is an unanticipated result of online learning. Students' perspectives are *transformed* when problems are encountered that cause

learners to reassess prior knowledge, beliefs, relationships, or experience. Just getting involved in an online learning environment challenges students' traditional perspectives of learning. Students and instructors relate differently to each other, thus forcing students to rethink the role of learner and instructor. For the most part, transformative learning is an unconscious process but has far-reaching implications for instructors who must make room for more independence, competence, and reflection in their learners. Palloff and Pratt (1999) summarize this transformative process, as follows:

...personal growth becomes a companion to intellectual growth as the student assumes greater responsibility for the learning process, [and attains] competence, authority, self-confidence, and an overall sense of mastery and power (p. 131).

Palloff and Pratt suggest a new paradigm of learning that is learner-centered. Their paradigm contains the following parts: teamwork, focused outcomes, shared goals, active creation of knowledge and meaning, and collaborative learning--all arranged around the learner. These parts are enhanced through faculty guidance, facilitation, buy-in from everyone, and interaction and feedback among and between the students and the instructor.

Since the instructor cannot be in control of how or what is being learned--or even when--a learner-centered environment emerges from this model. This sets the stage for electronic learning where the students and the instructor collaborate to establish a new social construction of meaning (Jonassen, et al., 1995).

To create the electronic learning community, a facilitator approach that encourages a free-flowing, interactive environment, which empowers learners to share content and participate in peer feedback, is imperative. To enhance meaning and learning and to promote a sense of autonomy, initiative, and creativity in the online classroom, group activities, collaboration, simulations, open-ended questions, shared goals, and teamwork can be used. The instructor becomes the facilitator of learning and not just the source of knowledge. The instructor's role of facilitator enhances the meaning of self-directed learning.

Morten Flate Paulsen (1995) presented an array of many-to-many interactive techniques for student participation and interaction in the computer-mediated classroom. His list included debates, simulations, role plays, case studies, discussion groups, transcript based assignments, brainstorming, Delphi technique, forums, nominal groups, and project groups. A characteristic of each of these techniques is that all participants have the opportunity to take part in the interaction and to collaborate to create new learning and meanings. For students and instructors, alike, responsibilities and rewards emerge from the use of collaborative learning techniques.

**Student responsibilities and rewards.** Students are not passive bystanders in the online classroom. The role of the student is much like the role of the instructor in that students must *actively* pursue and *transform* knowledge, interaction, and meaning from the materials presented in cyberspace--a conceptual location where students and instructors meet. Student roles include questioning, challenging, explaining, tutoring, and constructing. Students learn to negotiate and understand differences, to discern processes and tactics that are influential and effective, and to internalize new ways of learning and interacting that can be used in the

external world. The cognitive emphasis shifts to evaluation and reflection, not only on the results of the discussion and problem-solving activities, but on the processes and tactics that seemed influential and effective (Hartley, 1999).

If this medium is truly the great equalizer, boundaries between cultures, genders, ages, and power are transparent. When learners realize that they are also teachers, a powerful transformation occurs that results in shared power, shared responsibility, and shared rewards (Border, 2000, p. 9).

Because active learning is a desired outcome of web-based learning, one way to ensure active participation is to share typical instructor functions: facilitator of discussion, observer of group dynamics, content communicator, team leader, and presenter. Additionally, all students are responsible for providing feedback to each other. In order for this to work, the instructor must be willing to give up control of the direction--and sometimes the content--of the discussion. The instructor is an equal member of the learning community, resisting the urge to lead (Palloff & Pratt, 1999, p. 121-122).

Students have a lot to gain in the online classroom. Content retention seems to be one of the main advantages. Students are involved and committed to the outcome, share in the successes and failures of teamwork, and may even integrate the results into their personal lives. This is one of the most exciting aspects of online learning!

**Instructor responsibilities and rewards.** By design, online teaching is different from the traditional model of instruction. Without using the maximum effects of the electronic medium, the results (and rewards) will not materialize. Development of community is at the heart of online instruction and holds the greatest promise for learning and teaching. If an instructor is willing to share instruction and to empower students to take their learning as far as it can go, the results will be phenomenal. Sherry & Wilson (1997) define the following outcomes of *transformative* learning from the instructor's point of view:

- The student teaches the instructor something he or she didn't know before about the technology or the course content.
- The student goes beyond the textbook or the lecture to reveal differences of opinion among the experts.
- More emphasis is placed upon finding support or backing for a position than on conforming to authority.
- Students participate in setting the agenda for the class by helping to choose content or learning methods, or both.
- Students call the instructor's attention to valuable learning resources.
- Students have conversations with knowledgeable people the instructor doesn't know.
- While the instructor helps to establish expectations and sets a clear assessment standard, the students collaboratively guide much of their own learning.
- The instructor finds himself or herself saving student work--not merely as examples of student work--but as a resource for future reference (p. 69).

When students and the instructor gather together to provide mutual support for learning and performance, an effective support system for a learning community is created. The classroom walls are extended beyond the bricks and mortar. The active learning that occurs then begins to push the frontiers of knowledge, as noted by Pea:

[When students begin to push the frontier of knowledge)...[i]t takes significant effort for an instructor to understand what students are thinking about learning new topics. They may well develop new understandings of the subject domain by seeing how students have spontaneously come to think about it and what surprising inferences they can make (Pea, 1994, p. 290).

**In summary.** Distance education requires more than software and hardware. Careful attention to the *people* in the computer-mediated environment makes the course a success. The human element in online courses impels instructors to adopt new pedagogical strategies--active learning, collaborative techniques, facilitator, etc.--which enhance communication opportunities for their students to overcome feelings of "distance;" assist students to modify their behavior to accommodate the online environment; and reap the rewards of successful online interaction. This results in instructors' knowing their students better in the online environment than in the offline environment.

### **Methodology of the Study**

In August 2000, a two-page survey was e-mailed to all students enrolled in online MBA courses at a regional university during the Spring 2000 semester. The survey instrument consisted of 25 questions - both demographic and research. The Director of the MBA program provided the list of students; one of the researchers reviewed the list to eliminate duplication. The final population consisted of 151 MBA students enrolled in online courses during Spring 2000.

Forty-nine responses were received. However, four of the 49 responses were duplications; apparently, some student clicked the Send button twice or three times. Therefore, the response rate is 29.8 percent (45/151) which is considered a high response rate in survey research. Four surveys were excluded because the MBA students indicated they had not completed a distance-learning course. Either these four MBA students did not understand the question or the list of names used to identify the population of MBA students included MBA students taking online MBA courses subsequent to the Spring 2000 semester. All 16 Likert-scale questions were unanswered on four surveys. Perhaps, these four MBA students did not know how to indicate their choices of Likert-scale questions in an e-mail environment. Since these four MBA students completed the remainder of the questionnaire, their surveys were included in the analysis. In summary, 41 surveys were used in the analysis; these 41 surveys represent a 27.1 percent effective response rate which is considered good for survey research.

## Research Findings from the Study

### Descriptive Analysis

Question 1 on the survey asked MBA students to indicate the number of distance learning courses they have completed; they were also asked to decompose the total number of distance learning courses into the number of compressed video courses and the number of Internet courses. Table 1 summarizes the results of this question. Almost 50 percent of the MBA students completed one or two distance learning courses. Almost 25 percent completed three or four distance learning courses. The mean number of distance learning courses completed by the 41 MBA students is 3.9 courses with a standard deviation of 3.4 courses. Fifty percent of MBA students completed three or fewer distance learning courses and fifty percent completed at least three courses. The modal number of distance learning courses completed is one. More MBA students completed online courses than compressed video courses. The mean number of online courses completed is 3.3 courses with a standard deviation of 1.0 course; the median is two courses; the modes are one and two courses.

**Table 1**  
**Number of Distance Learning Courses Taken**

| <b>Number of DL Courses</b> | <b>Number of Respondents for Both Media*</b> | <b>Percent of Respondents for Both Media</b> | <b>Number of Respondents for Compressed Video</b> | <b>Number of Respondents for Internet</b> |
|-----------------------------|--|--|---|---|
| 0                           | 0  | 0%   | 31  | 4   |
| 1-2                         | 20   | 49%  | 8   | 18  |
| 3-4                         | 9  | 22%  | 1   | 8   |
| 5-6                         | 5  | 12%  | 1   | 5   |
| 7-8                         | 1  | 2%   | 0   | 2   |
| 9-10                        | 4  | 10%  | 0   | 3   |
| 11-12                       | 1  | 2%   | 0   | 1   |
| 13-14                       | 0  | 0%   | 0   | 0   |
| 15-16                       | 1  | 2%   | 0   | 0   |
| Total                       | 41   | 99%**  | 10  | 37  |

\*The total number of distance learning courses taken should be the sum of the number of distance learning courses taken by compressed video and the number of distance learning courses taken by Internet. However, self-reporting errors occurred.

\*\*Total does not sum to 100% due to rounding error.

Question 2 asked for gender. Of the 41 MBA students, 21 (51 percent) are female and 20 respondents (49 percent) are male.

Question 3 asked respondents to identify their industries. Table 2 summarizes the results of this question. Almost 30 percent of the MBA students are in education and 15 percent are in the health industry. "Other" industries include: banking, computer, consultant, environmental assistant, food service, government, graduate student, wholesale distributor, and utility.

**Table 2**  
**Industry of Respondent**

| <b>Industry</b> | <b>Number of Respondents</b> | <b>Percentage of Respondents</b> |
|-----------------|------------------------------|----------------------------------|
| Education       | 11                           | 28%                              |
| Health          | 6                            | 15%                              |
| Insurance       | 1                            | 2%                               |
| Manufacturing   | 2                            | 5%                               |
| Mining          | 1                            | 2%                               |
| Oil and Gas     | 0                            | 0%                               |
| Service         | 4                            | 10%                              |
| Other           | <u>15</u>                    | <u>38%</u>                       |
| Total           | 40                           | 100%                             |

Question 4 offered a list of seven collaborative tools plus Other and asked respondents to list all tools they used in online courses. Question 5 offered the same list of seven collaborative tools plus Other and asked MBA students to list all tools they used at work. Table 3 summarizes the responses to these two questions. Email and Sharing Documents are almost as commonly used in business as in online courses. The Chat Room and Discussion Board are used substantially more in online courses than at work. Among the Other tools identified as being used at work are: Web-based compliance, conference calls, Netscape, Yahoo, university homepage, and listservs (newsgroups).

**Table 3**  
**Use of Collaborative Tools in Online Courses and at Work\***

| <b>Type of Tool</b>                     | <b>Number of Respondents Who Used Tool in Online Courses</b> | <b>Number of Respondents Who Used Tool at Work</b> |
|---|--|--|
| Chat Room                               | 29   | 2  |
| C-U-See-Me                              | 0  | 1  |
| Discussion Board                        | 38   | 3  |
| Email                                   | 40   | 37   |
| ICQ (or other instant messaging system) | 6  | 2  |
| NetMeeting                              | 1  | 3  |
| Sharing Documents                       | 16   | 14   |
| Other                                   | 2  | 5  |

\*Respondents could indicate more than one tool.

Questions 6 through 22 were a set of statements asking MBA students to describe their experiences working in groups in online courses; reactions were restricted to a four point Likert scale: Strongly Agree, Agree, Disagree, Strongly Disagree. The Neutral choice was intentionally deleted so that MBA students were forced to either agree or disagree. Table 4 summarizes the responses to these 17 questions.

**Table 4**  
**Percent Responses to Likert Scale for Questions 6 through 22**  
**(generally n=37)**

| <b>Question</b>   | <b>Strongly Agree</b> | <b>Agree</b> | <b>Disagree</b> | <b>Strongly Disagree</b> |
|---|-----------------------|--------------|-----------------|--------------------------|
| Q6: I enjoyed working in groups   | 11%                   | 24%          | 54%             | 11%                      |
| Q7: Group work fits the purpose of the course   | 8%                    | 30%          | 49%             | 13%                      |
| Q8: Working in groups was easy  | 24%                   | 30%          | 38%             | 8%                       |
| Q9: The instructor made it easy to work in groups   | 13%                   | 19%          | 55%             | 13%                      |
| Q10: Time was not a limiting factor in group work   | 22%                   | 35%          | 43%             | 0%                       |
| Q11: Group work provided opportunities for networking                                       | 5%                    | 31%          | 47%             | 17%                      |
| Q12: Group work provided more opportunities for interaction with peers                      | 5%                    | 17%          | 42%             | 36%                      |
| Q13: Group work provided more opportunities for interaction with instructor                 | 24%                   | 46%          | 24%             | 6%                       |
| Q14: Group work was convenient  | 34%                   | 36%          | 22%             | 8%                       |
| Q15: Group work encouraged teamwork   | 13%                   | 11%          | 57%             | 19%                      |
| Q16: The project completed in groups was better than a project completed as an individual   | 16%                   | 38%          | 38%             | 8%                       |
| Q17: Time was a limiting factor in group work   | 3%                    | 30%          | 30%             | 37%                      |
| Q18: The instructor made it difficult to work in groups                                     | 19%                   | 54%          | 27%             | 0%                       |
| Q19: I felt more involved in the course because of group work                               | 16%                   | 49%          | 32%             | 3%                       |
| Q20: I participated more in the course because of group work                                | 27%                   | 43%          | 24%             | 6%                       |
| Q21: Using collaborative tools at work prepared me for group work in online courses         | 22%                   | 24%          | 35%             | 19%                      |
| Q22: Using collaborative tools in online courses has prepared me for group work in business | 14%                   | 22%          | 50%             | 14%                      |

To make descriptive observations from the table, Strongly Agree (SA) and Agree (A) are combined and Disagree (DA) and Strongly Disagree (SDA) are combined. Consensual agreement (more than 50 percent of the MBA respondents) **supporting** group activity was reported on eight of the 17 questions. These are listed below on basis of descending strength:

- Q13 Group work provided more opportunities for interaction with instructor. (70% SA or A)
- Q14 Group work was convenient. (70% SA or A)
- Q20 I participated more in the course because of group work. (70% SA or A)
- Q19 I felt more involved in the course because of group work. (65% SA or A)
- Q10 Time was not a limiting factor in group work. (57% SA or A) substantiated by Q17: Time was a limiting factor in group work. (67% DA or SDA)
- Q8 Working in groups was easy. (54% SA or A)
- Q16 The project completed in groups was better than a project completed as an individual. (54% SA or A)

Consensual agreement (more than 50 percent of the MBA respondents) **criticizing** group activity was reported on nine of the 17 questions. These are listed below on basis of decreasing strength:

- Q12 Group work provided more opportunities for interaction with peers. (78% DA or SDA)
- Q15 Group work encouraged teamwork. (76% DA or SDA)
- Q9 The instructor made it easy to work in groups. (68% DA or SDA) substantiated by Q18: The instructor made it difficult to work in groups. (73% SA or A)
- Q6 I enjoyed working in groups. (65% DA or SDA)
- Q11 Group work provided opportunities for networking. (64% DA or SDA)
- Q22 Using collaborative tools in online courses has prepared me for group work in business. (64% DA or SDA)
- Q7 Group work fits the purpose of the course. (62% DA or SDA)
- Q21 Using collaborative tools at work prepared me for group work in online courses. (54% DA or SDA)

One of the strongest benefits of group work is that it provides an opportunity for interaction with the instructor. Surprisingly, MBA students consider group work to be “easy” and “convenient.” Furthermore, responses to two different questions (Q10 and Q17) indicate “time” is not a limiting factor. These observations are interesting to the researchers because the use of group work in a graduate statistics class results in comments that group work is too time consuming and is very inconvenient.

As expected, MBA students participated more and felt more involved in the course as a result of group work. By a small majority, MBA students agree that the project completed in groups was better than a project completed as an individual.

Almost two out of three MBA students do **not** like working in groups and over 60 percent of the MBA students do **not** consider that group work fits the purpose of the course. MBA students do **not** perceive that group work increases interaction with peers, teamwork, or networking. **Nor** do MBA students view using collaborative tools as preparing them for other online courses or for the group work in business.

Around 70 percent of the MBA students agree that the instructor made it difficult to work in groups; this question appeared in two different wordings of the survey (Q9 and Q18).

Perhaps the greater interaction with the professor reported as a **supporting** characteristic is driven by students attempting to receive direction from professors who make it difficult to work in groups.

Question 23 asked respondents to name the **one** online class in which they felt group work was **most** effective and why? Thirty-five of the 41 MBA students identified a “most effective online course.” Question 24 asked respondents to name the **one** online class in which they felt group work was **least** effective and why. Thirty-one of the 41 MBA students identified a “least effective online course.” Table 5 presents a partial list of courses, which students listed according to **most** and **least** effective in the use of group work.

**Table 5**  
**Courses Identified as *Most* and *Least* Effective Use of Group Work**

| <b>Most Effective Use of Group Work</b> | <b>Least Effective Use of Group Work</b> |
|---|--|
| Organizational Behavior                 | Survey of Accounting                     |
| Computer Productivity Tools             | Human Resource Topics                    |
| Human Resource Development              | Managerial Accounting                    |
| Business Policy and Strategy            | Advanced Bank Management                 |
| Management Information Systems          | Corporate Finance                        |
| Corporate Finance                       | Social Responsibilities of Business      |
| Marketing Administration                | Managerial Economics                     |
| Financial Markets                       | Management Information Systems           |
|   | Organizational Behavior                  |

Summary comments from students related to their choices for **most** effective use of group work included: group members were active and came up with ideas from our different experiences; team members collaborated together to make sound decisions; different ways of solving a problem; real-life scenario; instructor gave feedback and was knowledgeable; group assignments were appropriate for subject matter; instructor was very active in discussion board; assignments were well planned and thought out; group work allowed it to flow; team competition made it like real business; a lot of pre-work and screening was put into selecting the teams; and clearly stated instructions and objectives.

Summary comments from students related to their choices for **least** effective use of group work included: other members of my group did no work; nature of course material does not lend itself well to group work; no feedback; more concern for MLA format than business content; more concern for layout and format of the group reports than the actual product; first-time instructor; blind leading the blind--no procedures; group work for the sake of group work; the class did not take advantage of the technology; and lack of knowledge of how to create an online course.

Question 25 asked respondents to formulate an **ideal** online course by allocating the percentage of time spent for Independent Study, Lecture, Classmate Interaction, Group Work, and Other. Table 6 summarizes the responses to this question. For each of the five categories, the range, mode, median, and arithmetic mean are provided. Amazingly, the total percentage for each of the three measures is very close to 100. Interestingly, the three measures of central tendency are very close together in “pinpointing” the **ideal** allocation.

The last column presents a composite constrained so the percentages sum to 100. Therefore, on basis of input from 39 MBA students, an **ideal** online course consists of 48 percent independent study, 20 percent lecture, 15 percent classmate interaction, 15 percent group work, and 2 percent Other.

**Table 6**  
**Ideal Time Allocation in an Online Course**

| <b>Activity</b>       | <b>Range</b> | <b>Mode</b>       | <b>Median</b> | <b>Arithmetic Mean</b> | <b>Composite (adjusted to sum to 100%)</b> |
|-----------------------|--------------|-------------------|---------------|------------------------|--|
| Independent Study     | 10% to 90%   | 40%               | 50%           | 48%                    | 48%  |
| Lecture               | 0% to 50%    | 10%<br>20%<br>30% | 20%           | 20%                    | 20%  |
| Classmate Interaction | 0% to 35%    | 20%               | 15%           | 14%                    | 15%  |
| Group Work            | 0% to 60%    | 20%               | 15%           | 15%                    | 15%  |
| Other Activity        | 0% to 25%    | 0%                | 0%            | 3%                     | 2%   |
|                       |              | 90-110%           | 100%          | 100%                   | 100%                                       |

### **Inferential Analysis**

The research design sent the survey instrument to a population of 151 MBA students enrolled in online courses at a regional university during the Spring 2000 semester. As noted above, 41 questionnaires were returned and usable. These 41 questionnaires represent a sample from the population of 151 MBA students. The sample is not a probability or random sample. It is a convenience sample, representing the opinions of those who felt motivated to respond to the questionnaire. Statistical inference requires a probability sample. Since the sample is not a probability sample, statistical inference is technically inappropriate in this study. However, the literature contains many survey studies, which attribute probability sample characteristics to a convenience sample and, subsequently, use the sample to make statistical inferences about the population. And, if the researchers in this study **assume** that the convenience sample of 41 MBA students does, indeed, represent a random response of all 151 MBA students, then the researchers can explore statistical relationships between gender and each of the 17 Likert scale statements related to working in groups in an online environment. The chisquared test of independence is an appropriate statistical model to test a set of hypotheses that there are no statistical relationships between gender and opinions of working in groups in online courses. Since the sample size is so small, Pearson's chisquared statistic is inappropriate; however, the maximum likelihood ratio (MLR) statistics is appropriate.

Table 7 reports the p-values for the cross tabulations between gender and Questions 6-22. The analysis appearing in the table assumes: (1) the convenience sample possesses the same characteristics as a probability sample and (2) a level of significance of five percent. If the p-value is less than the level of significance, then the hypothesis of independence is rejected and a Type I Error (rejecting a true null hypothesis) is risked. If the p-value is greater than the level of significance, then the hypothesis of independence is accepted and a Type II Error (accepting a false null hypothesis) is risked.

**Table 7**  
**Hypotheses of Statistical Independence Between Gender and Responses to Likert Scale for Questions 6 through 22**

| <b>Null Hypothesis</b>   | <b>p-value<br/>Use MLR</b> | <b>Action</b>               |
|--|----------------------------|-----------------------------|
| No statistical relationship between gender and Q6: I enjoyed working in groups   | 0.381                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q7: Group work fits the purpose of the course   | 0.160                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q8: Working in groups was easy  | 0.415                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q9: The instructor made it easy to work in groups   | 0.332                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q10: Time was not a limiting factor in group work   | 0.089                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q11: Group work provided opportunities for networking                                       | 0.692                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q12: Group work provided more opportunities for interaction with peers                      | 0.870                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q13: Group work provided more opportunities for interaction with instructor                 | <b>0.010</b>               | <b>Reject H<sub>o</sub></b> |
| No statistical relationship between gender and Q14: Group work was convenient  | 0.248                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q15: Group work encouraged teamwork   | 0.754                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q16: The project completed in groups was better than a project completed as an individual   | 0.147                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q17: Time was a limiting factor in group work   | 0.657                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q18: The instructor made it difficult to work in groups                                     | 0.051                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q19: I felt more involved in the course because of group work                               | 0.564                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q20: I participated more in the course because of group work                                | 0.176                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q21: Using collaborative tools at work prepared me for group work in online courses         | 0.802                      | Accept H <sub>o</sub>       |
| No statistical relationship between gender and Q22: Using collaborative tools in online courses has prepared me for group work in business | 0.250                      | Accept H <sub>o</sub>       |

Assuming that the convenience sample possesses the characteristics of a probability sample, there are no statistical relationships between gender and 16 of the 17 statements related to working in groups in an online environment. The one hypothesis that indicates significance is between gender and interaction with professor. Since the p-value is 0.010, reject at the five

percent level of significance the hypothesis that there is no relationship between gender and Q13: Group work provided more opportunities for interaction with the instructor. The cross-classification table indicates that female MBA students are more likely to Agree or Strongly Agree with this statement while male MBA students are more likely to Disagree or Strongly Disagree. However, if this analysis were based on a probability sample, this one statistically significant gender relationship could be a Type I Error – rejecting a true null hypothesis. Probability theory predicts that in testing a family of 20 hypotheses at the five percent level of significance, one of the 20 hypotheses will be rejected when, indeed, all 20 hypotheses are true.

### **Conclusions and Recommendations from the Study**

This study focused on the views of MBA students related to group work in the online, distance-learning environment. A review of the related literature would seem to support the formation of groups for increased student participation, learning, and involvement. Several techniques were cited which appeared to encourage interaction and collaboration between students and between students and the instructor. Do students hold these same views? Conclusions from the responses from students appear to negate the findings in the literature. These are noted below.

Students in the study completed a mean of 3.9 distance-learning courses. Therefore, the MBA students participating in this survey have experience on which to base their responses to the survey statements and questions.

In comparing compressed video to Internet, it appears that students have more experience with Internet courses than with compressed video (interactive television) courses. The results of this question reflect the conscious decision at this regional university to move the MBA program from the compressed video environment to the online environment. However, some instructors in the MBA program employ a hybrid approach, using compressed video and face-to-face meetings occasionally--depending on the location of the students enrolled in the course and the course content.

Email and sharing files are similarly used in online courses and at work. The Chat Room and Discussion Board are used substantially more in online courses than at work. This finding may be an artifact of the training and encouragement that instructors receive to involve their MBA students in the online environment. Additionally, the purpose of education is to provide students with more tools to enhance their success in an increasingly technological work environment. However, even though MBA students report more use of collaborate tools in online courses than in business, over sixty percent Disagree or Strongly Disagree with the statement: "Using collaborative tools in online courses has prepared me for group work in business."

Responses on 8 of the 17 questions on the survey resulted in consensual agreement **supporting** group activity:

- Group work provided more opportunities for interaction with instructor.
- Group work was convenient.

- I participated more in the course because of group work.
- I felt more involved in the course because of group work.
- Time was not a limiting factor in group work, substantiated by responses to: Time was a limiting factor in group work.
- Working in groups was easy.
- The project completed in groups was better than a project completed as an individual.

Responses on 9 of the 17 questions on the survey resulted in consensual agreement **criticizing** group activities:

- Group work provided more opportunities for interaction with peers.
- Group work encouraged teamwork.
- The instructor made it easy to work in groups, substantiated by responses to: The instructor made it difficult to work in groups.
- I enjoyed working in groups.
- Group work provided opportunities for networking.
- Using collaborative tools in online courses has prepared me for group work in business.
- Group work fits the purpose of the course.
- Using collaborative tools at work prepared me for group work in online courses.

Clearly, students do not view collaborative work in the online environment as serving any purpose even though they admit it is easy and convenient, and it provides them with more interactions with the instructor. The results of this study may be useful for instructors when deciding about instructional strategies. Group work that does not compliment the content of the course will be less than successful. On the other hand, effective collaborative projects used effectively will enhance course content.

Students offered insight into courses which used group work **most** effectively: Organizational Behavior, Computer Productivity Tools, Human Resource Development, Business Policy and Strategy, Management Information Systems, Corporate Finance, Marketing Administration, and Financial Markets.

Students offered insight into courses which used group work **least** effectively: Survey of Accounting, Human Resource Topics, Managerial Accounting, Advanced Bank Management, Corporate Finance, Social Responsibilities of Business, Managerial Economics, Management Information Systems, and Organizational Behavior. An interesting finding was that several classes were listed in both columns as **most** and **least** liked.

One has to ask: Do the findings in the above two conclusions reflect the attitude of the student toward the course, toward the instructional strategies used in the course, or toward the instructor? The findings do not present a clear picture of the answers to these questions. However, according to the comments from students, group assignments that are well planned; fit with the content, instructions, and objectives of the course; and are set up by a knowledgeable instructor will be **most** effective.

Students agreed that an **ideal** online course would consist of independent study (48%), lecture (20%), group work (15%), classmate interaction (15%), and Other (2%).

Assuming that the convenience sample possesses the characteristics of a probability sample, there are no statistical relationships between gender and 16 of the 17 statements related to working in groups in an online environment. The one hypothesis that indicates statistical significance is between gender and Q13: Group work provided more opportunities for interaction with the instructor. Female MBA students are more likely to Agree or Strongly Agree with this statement while male MBA students are more likely to Disagree or Strongly Disagree. However, finding one out of 17 hypotheses to be statistically significant could easily be a Type I Error.

Heightened awareness of students' feelings about collaborative projects in the online environment can assist faculty in using appropriate instructional techniques to enhance student learning. Faculty at this regional university must initiate guidelines or procedures to change students' strong belief that the instructor makes it difficult to work in groups or that group work does not fit the content of the course.

An interesting contrast and follow up would be to ascertain faculty views of collaborative learning in the online environment. Results from this study can inform and guide online instructors in creating learning strategies that can be meaningful and empowering.

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