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AN ETHNOGRAPHIC ANALYSIS OF THE PEDAGOGICAL IMPACT OF COOPERATIVE LEARNING

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ABSTRACT

This study uses an ethnographic approach to examine the pedagogical impact of cooperative learning for an undergraduate microeconomics class. An explanation of ethnographic analysis, as well as the details for its use in this setting, are provided. Ethnographic analysis is promoted as a alternative research technique in contrast to the more traditional controlled experiment in which formal hypotheses are tested and inferences are made. Ultimately, this study supports the findings from previous studies, which conclude that cooperative learning has an overall positive impact on learning and socialization.

INTRODUCTION

For the last three years, the authors have been extolling the benefits of cooperative learning for business students and have been conducting preliminary studies in this area. This paper is a continuation of several which investigated the learning and socialization effects of cooperative learning strategies on undergraduate business students (Markulis, et al., 1994). These studies found that cooperative learning generally was viewed as positive by the students and enhanced both their knowledge of the subject matter and their appreciation of working in a cooperative setting. Nonetheless, the studies were preliminary in nature and a major recommendation was that a more detailed, longer-term study be conducted, the principal objectives being (1) to devise as realistic a setting as possible in which to conduct a cooperative learning project for students; (2) to gain an appreciation of the dynamics of the setting in which students cooperate; (3) to determine if the cooperative effort had a positive effect on learning and on socialization, and why; (4) and to determine what might be done to enhance cooperation in future situations. This paper presents some of the findings of a recent study conducted by the authors, which attempts to accomplish some of these objectives.

The reader should be aware that this paper assumes cooperative learning augments both the knowledge and social skills of undergraduates (Beckman, 1990; Coffin, 1992; Cottell, 1991; Hiltz, 1990; Spare, 1991). It also assumes that one can intervene fruitfully in order to enhance cooperative learning projects (BarTal & Geser, 1980; Johnson, et. al., 1976; Katzenbach, 1993; Slavin, 1983).

In trying to design a traditional controlled experiment for the study, the authors encountered several hurdles. In order to meet the requirements of a good experimental design, the authors believed that it was necessary to employ the following: (1) randomization; (2) experimental and control groups; (3) tight control over the experimental conditions (Campbell and Stanley, 1963). The authors discovered, however, that the college policy covering human subjects did not allow experiments to be conducted in required courses because students had no choice in opting out of an experiment. This led the authors to investigate other means of conducting research. A review of the literature (Lancy, 1993; Sapre, 1981) and discussion with members of the education and anthropology departments suggested an ethnographic approach, given the broad nature of our research goals and the limitations relating to human subjects guidelines.

The research, while not an ethnographic study ipso facto, employs an ethnographic approach. This approach is naturalistic inquiry and follows a phenomenologically-oriented approach toward doing research (Erlandson, et.al., 1993). Hence, the study attempts to simultaneously understand the process or dynamics of cooperative learning and intervene in the process to facilitate the learning and social benefits of cooperative learning.

The project chosen, as will be described later in detail, was meant to put the students into a situation where it would "make sense" to cooperate while attempting to steer clear of overly contrived or forced situations. The faculty consultants from the anthropology and education departments believed that such a situation would be more representative and realistic in terms of what business students would face in the future.

PROJECT BACKGROUND

The Group. The subjects chosen for the study were 74 undergraduates taking an introductory course in microeconomics. The breakdown of the class was as follows:

6.8% Freshmen
74.3% Sophomores
12.2% Juniors
6.8% Seniors

Approximately 82% were management majors.

This class was chosen for two reasons: First, the instructor teaching the course had been using teams for group work for at least three years. However, student feedback suggested to the instructor that the team format was perceived as having little positive impact on learning. Second, since an overwhelming majority were freshmen and sophomores, most of these students would have had little previous exposure to team or group work in a college setting.

The Cooperative Situation

During the second week of the semester, a faculty member not teaching the course visited the class and laid out the cooperative assignment for the semester. The students were given a lecture on what was meant by cooperative learning, why cooperation was important, and the general benefits of cooperation. The lecture emphasized that today's work force would require them to form teams in a quick fashion and that cooperative efforts would be expected by their employers. They were told that by participating in this cooperative learning project they would gain valuable knowledge and experience, which would serve as the foundation for team situations that they would surely encounter in their futures. This theme was graphically reinforced through a college-wide lecture given by Dennis Basset, Vice-President of Human Resources at Bausch & Lomb, Inc. Mr. Basset told the audience that corporate recruiting officers were looking more and more for colleges which had given their students exposure to cooperative learning and diversity. Those institutions which had not provided this exposure would not be visited by recruiting officers.

Basically, cooperation for their project was defined as follows:

> Each team must work on a computerized tutorial package as a team. Each team member was to be assigned to review a particular module's subject matter and be prepared to 'teach' the other students the concepts relating to that module. The students would then take one of a series of 10 quizzes, which were administered and recorded by computer.

The students were told that the cooperative learning project would be factored into their final grade and weighted at 25 percent. The students were then divided up randomly into 24 three-person teams and one two-person team.

The reader should be aware that more exacting rules and procedures could have been established for the cooperative project, but the literature (Cohen, 1993), as well as the consultants from the education department believed that the project should be as realistic as possible and as a consequence formal interventions should be carefully calibrated and minimized. A project that was too artificially contrived or subject to excessive intervention might adversely affect the ability of the researchers attempt to understand and appreciation the dynamics of cooperative learning.

The Microeconomics Package

The students were given the microeconomics package (Economics in Action, by McTaggart et al., 1992) and told that the package would not only help them to understand microeconomics better, but that it would be used to help as the medium for cooperative effort during the semester.

Each student was given access to his/her own version. The package was fully explained, along with the protocols for taking quizzes, maintaining logs, and keeping journals. The class was told that the ten-module package would follow or complement the topics given in the class lectures.

The "Interventions"

There were three so-called cooperative "interventions" during the course (see TIME LINE in EXHIBIT A). Each intervention was conducted by a faculty member, but not the course instructor. Ethnographic research has demonstrated that interventions can have a positive effect on students' participation in cooperative learning (Campbell, 1992). The first intervention occurred during the third week of the semester. A guest speaker (a faculty member involved in the research project) gave a formal presentation in class and discussed cooperative learning in a general way. Details on keeping journals were also provided at this time.

EXHIBIT A:
INTERVENTION TIME LINE

				First Int.			Second Intervention			Third Intervention				
Module Weeks				1	2	3	4	5	6	7		8	9	10	
Semester Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

In the second intervention, again in class, and again offered by a faculty member other than the course instructor, students were reminded about the nature and purpose of the project and feedback was given regarding their journals. Teams not actively involved in cooperative learning were encouraged to do so. Some time was allocated to problem resolution and addressed 'typical' kinds of team problems as well as possible solutions.

The third intervention was also conducted during formal class time and took place after several teams had been interviewed. This session was used to help resolve various kinds of team problems.

DATA COLLECTION

Given the nature of the study, a multifaceted approach was used to collect data, which included personal journals, peer reviews and interviews with student teams. Several objective-type measures were employed also. All of these activities are described more completely below.

Personal Journals

The use of journals as a tool to facilitate critical thinking skills has been well documented in the literature (Brown, 1993; Browne & Keeley 1990; McCormick & Smith, 1992; and Ramsey & Couch, 1994). Each student was required to maintain a personal journal about his/her team. At the beginning of the semester, students were told that they must maintain a personal journal about their team experiences throughout the entire semester. Specifically, each student was told to record the following information:
(1)   when meetings occurred;
(2)   the length of the meetings;
(3)   absenteeism and/or lateness of anyone;
(4)   feelings about team cooperation;
(5)   the nature of the communication within the team;

(5)   major problems;
(6)   what went right;
(7)   what will be done to improve the group for the next meeting.

The students were told to write down simple phrases or sentences for each of these--or as many as they could--rather than to write long paragraphs. While the authors were eager to generate information they were conscious that excessive demands on students might result in unnecessary animosity.

The journals were collected three times during the semester to provide an opportunity to make adjustments as warranted. Each time the journals were collected the entries were recorded and evaluated by an "independent" faculty member (not the instructor of the course) and two students. Collecting the journals three times during the semester made coding the entries a reasonable task and reinforced the importance of the journals to the students. (see the TIME LINE in EXHIBIT A).

Peer Reviews

Each team member was required to complete a confidential peer review halfway through the semester and again at the end of the semester. The students were told that the peer reviews would be used to help determine the final grade on the cooperative project, but were not given specific details on how this would occur. Minimal details were given to students in an attempt to limit two of the classic problems associated with peer evaluations--dishonesty and collusion.

Interviews

Interviews were conducted for 10 of the 25 teams. Five teams were selected as solicited "volunteers" and five teams (of the remaining teaming) were randomly

selected for interviews. Students were told that the team interview would take from 15-25 minutes and that the interviews would be used to develop better ways to teach cooperative learning in the future. The purpose of the interviews was twofold: To determine what kinds of difficulties the teams had encountered in carrying out the cooperative project and (2) to see what techniques, behaviors or strategies had evolved which facilitated working cooperatively.

The interviews focused on the dynamics of the team, the team's perception of the value of cooperation, and the nature of their cooperation. Other questions were the same as journals and served as a reliability check on journals.

Raters/Judges

The raters consisted of 2 faculty persons and 2 students. One student was a Psychology major who used the project as an independent research study project and the other student was a senior management work-study student. The raters met several times to discuss the nature of the research as well as to discuss the scoring and coding of the journal and interview data.

The raters or judges reading and categorizing the data utilized a type of the content analysis, called pattern coding, which attempts to identify emergent themes, configurations, or explanations by summarizing pieces or segments of data into themes or meaningful units (Miles & Huberman, 1994; Silverman, 1993).

ANALYSIS & DISCUSSION

The authors developed a large Grid, which was used to categorize each team members response to the questions they were required to answer for all 10 modules. The Grid also was used to record various "themes" which appeared throughout the semester. These "themes" were derived and agreed upon by the raters after carefully reading several

journals and subsequently refined using interview data. Themes served as the basis for designating the type of cooperation that team exhibited. Three definable types were apparent and have been categorized as:

    Type A -- individual oriented
    Type B -- meeting oriented
    Type C -- cooperative oriented

The Grid used to identify themes is illustrated in APPENDIX A, and APPENDIX B presents more detailed operational definitions for the required and derived themes. A sampling of some of the major themes/issues is described below.

Meeting Length

The average meeting time for the first 5 modules was a hour and for the second 5 modules, it dropped to approximately 45 minutes.

Promptness

Several teams had problems with promptness of one or more of the members. This seemed to be most problematic during the initial modules or toward the end of the project.

Scheduling

Scheduling was a problem for fewer teams than was anticipated. Unfortunately, for some teams, it seemed to remain a problem for the duration of the project, despite the fact that one of the authors worked with these teams trying to help them alleviate scheduling problems.

Type of Cooperation

Table A shows a breakdown of cooperation type over the course of the 10 modules.

TABLE A
CATEGORIZATION OF TYPE OF COOPERATION

MODULES	1	2	3	4	5	6	7	8	9	10
COOPERATION TYPE										
Type A	8	6	5	5	4	4	3	4	3	5
Type B	5	10	11	10	10	10	10	8	7	6
Type C	5	4	5	7	7	8	12	12	12	9
not mentioned	6	4	3	2	3	3	1	1	2	4
	24	24	24	24	24	24	24	24	24	24

As can be seen, for most modules, cooperation seemed to steadily gravitate toward Type C (cooperative oriented), but one might say, not dramatically so. Also, there seemed to be a tendency to "slack-off" during the last module.

Comfort Level

Most team members reported that their comfort levels rose as the project went forward. The interview process was used in an attempt to determine the what factors influenced a team member's comfort level. While the self-reports must be weighed judiciously, most students reported that they started off with a fairly positive attitude and that they all made an effort to make the team viable. Just about every student interviewed who was on a team with good or positively growing comfort level said that they felt lucky to have good partners. These same students discussed their communications in a similar manner.

Free Rider

Free riders were a problem for several teams throughout the project. There were no Type C teams with free riders. The presence of free riders seemed to have a deleterious effect on both the functional as well as interpersonal aspects of teams. This was particularly true toward the end of the project.

Satisfied Understood Concepts

For most of the teams and for most of the modules, students reported that carrying out the modules was a valuable learning experience, Le., working through the modules in a team fashion helped in their understanding of various economic concepts. This was true much more for teams where there were good communications, no free riders, no dictators, and where the comfort level was high. It also was found to be higher for teams utilizing either Type B or C cooperative learning.

COMMENTARY

While all of the data and their implications have not been reported here, there are several comments and conclusions that can be drawn, It was clear that students perceived the cooperative learning project in a positive light. However, there are several caveats to this statement. Students perceived the experience in a positive light whether they used Type B or Type C cooperative learning, while students employing Type A cooperation had the least positive things to say about the experience.

Clearly, a type of Hawthorne Effect was operative throughout the project, meaning that the high and steady interest of the faculty in the process had a positive impact upon the students' interest and involvement in the project.

Those that employed Type B, were mostly scheduling type things and those that moved from Type C to Type B, were of the same type, while those of Type C seemed to either have few technical or other problems or were seriously working on them.

There were some prominent differences between those teams which used Type A Cooperation and those teams which used Type B or C Cooperation. Personal journals and interviews suggest that Type A Cooperative teams seemed to have difficulties in communicating, with comfortableness, but not as much with satisfaction with understanding the concepts. Type A teams had more trouble with scheduling, free riders and "dictators" than Type B or C teams, and these problems seemed to persist which suggests that team specific intervention strategy be employed by the instructors in the future.

If there was a direction of causality between a team's type cooperation and the incidence of problems, the direction was not obvious. Specifically, it is possible that a Type A orientation may have served the source of team problems, and it is also possible that the presence of team problems led to the evolution of a Type A cooperative mode.

It was interesting to note that students cooperated when told do so, and that many of them seemed pleasantly surprised at how well cooperation worked, but what was disappointing was that many teams which used Type A cooperation were not persuaded to move toward Type B or C, despite attempts to encourage Type C Cooperation.

Given these results, a few recommendations are in order. First, requiring students to keep journals and conducting team interviews helped the authors identify problems specific teams were having and gave the authors an opportunity to work with specific teams on their specific problems. During the interviews, it was mentioned that some of the discussions about teamwork as well as some of the experimental exercises conducted on a class-wide basis were felt to be redundant for those teams.

Second, specific types of interventions may be necessary to help teams resolve problems or to enhance team performance For example, the presence of a free rider had a particularly negative impact on several teams. Where it seemed

appropriate, the interviewer talked to one or more members of that team in an effort to resolve these problems-- sometimes these mediations were effective and other times they were not. In general, the existence the free rider problem should be anticipated an attempts and measures to discourage this behavior should be made early and should be applied to the entire class.

LIMITATIONS

The basic purpose of the study was ambitious in that it was designed to understand and to intervene simultaneously. As a result, all of the insights gained could not all be incorporated in the interventions that were applied during the semester.

Students were given significant latitude in their evolution of cooperation type (i.e., A, B, or C). Although the authors may have hoped that teams would utilize type C cooperation-- since students were being graded on team activities--it did not seem to be appropriate to impose a requirement that teams employ type C cooperation. Although the students were placed in an environment that was conducive to type C cooperation, it was not mandated per se. Since the authors were interested in gaining an understanding of dynamics of cooperative learning they were reluctant to force teams into a mode that the students might have felt was overly controlled and contrived, and which they might have therefore resisted out of hand.

The literature suggests that heterogeneous groups may be desirable to enhance effective cooperative learning. No attempt was made to insure heterogeneity beyond that which resulted from the random assignments to teams.

The researchers did not use direct observation to record team activities, although this might have been possible for a few selected teams. The large number of teams and numerous meetings by each, made a practical impossibility do conduct observation on any, but a very small sample. Observation was not utilized in this restricted context because it was believed that students would not act "naturally' while being observed in controlled setting, and that unobtrusive observations (viz., having a trained student observe the group in the computer lab) would be of questionable value and would raise ethical questions.

A more traditional' research design might have allowed the researchers to relate individual scores on quizzes and tests to other potentially relevant variables. The restrictions due to human subjects considerations, detailed earlier, clearly limited the ability to do this in a meaningful way.

A suggestion was made to the students early in the project to use a numbering system in place of their names on the journals to help insure anonymity. The idea being that team members would be more responsive and candid if they did not have to put their names on the journals. However, most students seemed to feel that it wouldn't make any difference so this procedure was not applied. This leaves open the question if such a numbering system would lead to more accurate information.

Interviews did not always identify problems, much less how to remedy them. For example, teams which mentioned that communications among members was a problem or/and which had low comfort levels did not always tell us why, how or what caused the difficulties. Conversely, teams doing well in these areas attributed their success to "being on the right team."

CONCLUSION

An important result of this investigation was to examine the usefulness of cooperative learning using an ethnographic approach. The nature of the conclusions that arise of ethnographic analysis are different from those of more traditional, controlled, research models in which hypotheses are tested and inferences are made. The ethnographic approach is clearly more subjective in nature. While this may leave some readers less comfortable than the usual pronouncements arising from traditional research methods, there is a great weight of contemporary literature that argues for that applicability of the ethnographic approach. Having said that, this study does not definitely conclude that cooperative learning is superior in enhancing both learning and/or socialization than more traditional pedagogies, and it does, in general, support the findings from previous studies which conclude that cooperative does improve learning and socialization.

Finally, the grid which was developed as a result of this research may be useful in future efforts to carry this research further. The delineation of cooperative learning into three discrete categories may also be useful for researchers as they attempt to examine the usefulness of cooperative learning.

APPENDIX A
PARTIAL EXAMPLE OF COOPERATIVE SCORING GRID

	Team Experience																										
	Satisfied Understood Concepts																										
Derived Issues/ Themes	Peer Pressure																										
	Communication																										
	Free Rider																										
	Dictator																										
	Comfort Level																										
Required Issues	Type of Cooperation																										
	PACE																										
	Scheduling																										
	Attendance																										
	Meeting Length																										
	Individual Team Members	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	TEAMS	A			B			C			D			E			F			G			H			I		

APPENDIX B:
OPERATIONAL DEFINITIONS

Required/Reported Information:

Type of Cooperation.

Type A -- individual oriented: simply meet together, little preparation, may take quiz together, no concern for whether all members understand concepts.

Type B -- meeting oriented, that is members wait until the meeting to discuss concepts and/or take quiz. No one person preparing for the meeting.

Type C -- cooperative oriented, whereby one person is assigned to learn and teach (or help clarify) the topic to other team members. Quiz is taken together and there is an effort to make sure all understand the concepts.

Meeting Length. Reported time it took for each module. (1 = less than 1 hour; 2 = 1 hour; 3 = more than 1 hour).

Attendance. # of students present 1,2,3, etc.

Promptness. # of members late

Scheduling. Problems in arranging a scheduled meeting. (Y= problems; N no problems).

Pace. Reference to how fast the group went. (f=fast; s=slow and tedious)

Derived Themes:

Comfort Level. Reference to how comfortable a member felt in the group (S=satisfied or better; U=uncomfortable).

Dictator. Explicit & negative reference to someone taking over, or a feeling that one is taking over (D=dictator, E=fairly equal and balanced; X=no reference).

Free Rider. Explicit reference to whether one or more group members acted as a free rider (P=present; NP=none present; X=not mentioned).

Communication. Some reference to how members communicated with each other (VG=very good; VP=very poor; XX=no mention).

Satisfied Understood Concepts. Explicit reference to one's satisfaction in understanding the concepts for that module (VG=very good; VP=very poor; XX=no mention).

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