STUDENT PERSPECTIVES ON THE EFFECTIVENESS OF GROUP PROJECTS

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ABSTRACT

An exploratory study of marketing and business administration students was undertaken to determine their experience with and reaction to group projects. Students were asked to evaluate various aspects regarding the participation level and management of the projects, focusing on their best and worst group project experiences. Students then indicated how important they thought certain factors (e.g.: group sizes, helpfulness of the instructor) were to the effectiveness of group projects.

INTRODUCTION

During the past decade business schools across North America have advocated the increased use of group (or team) projects in their classrooms. The main reason is to provide business students the kind of team atmosphere that is experienced in industry, thereby heightening students' educational reality and preparing the student for the kind of interactions they would likely face in the business world after graduation.

Conversations over the years with several constituents (faculty, students, and industry leaders) have shown that their reactions to group (two or more persons working together) projects and their effectiveness have been mixed. This begs the question "what can be done to improve the effectiveness of group projects in business classes?" In order to answer this question, we will first examine related literature for clues and then provide the results of this exploratory study which was designed to identify potential strategies.

RELATED LITERATURE

Several conceptual articles and research efforts relating to group or team projects have emerged in the decade of the 1990's. One of the stronger advocates of the use of group projects (Hebein 1993) finds them to be a sound multi-dimensional learning tool. He acknowledges that some problems with group projects do occur but feels that they can be mitigated by peer evaluations. Williams, Beard, and Rymer (1991) also explore the many benefits of group projects. They further propose a reward structure with both individual and group grading as a means of achieving the full potential of group assignments.

Two studies were conducted to find predictors of student team performance. Bacon, Stewart, and Stewart-Belle (1998) found that the "average" of the individual abilities on a team predicted student team performance. Team size and gender diversity seemed to have little effect on team performance. Among graduate teams those that had moderate national diversity outperformed teams with high or no national diversity. Van Auken and Chapman (1997) found that the most satisfied groups were those that had the most participation. Additionally, the greater the satisfaction the greater the perceived social benefits, willingness to commit time, and desire for group (versus individual) grading.

Free riding and social loafing are problems that can occur with group projects when one or more group members makes little contribution to the group or completely rides on the coattails of the group. Strong and Anderson (1990) studied student perceptions of the effectiveness of six techniques for reducing free riding. The authors made a number of recommendations, including allowing teams to select their own group, using evaluations, keeping group size as small as possible, discussing potential problems with free riders in advance, and encouraging students to confront free riders in a non-threatening manner.

A number of authors recommend the use of group evaluations as a means not only of assessing individual performance but as a motivating mechanism for team members. Van Auken (1996) assessed the pros and cons of three types of measurement scales (semantic differential, constant sum, and anchored expectation). He suggests that all three types of scales be used in evaluations in order to bring as much information to the instructor as possible. Beatty, Haas, and

Sciglimpaglia (1996) feel that the problem of inequitable contributions can be lessened with a grading system that gives weight to both individual contributions and group achievement. In a related article Haas and Sciglimpaglia (1994) discuss a process to facilitate more equitable grading using peer evaluations which use nine semantic differential items that allows a group member to rate themselves and others on criteria such as member dependability, input, quality of work, and an overall evaluation. A later study by Haas, Haas, and Wotruba (1998) investigated self and peer ratings. They found self-ratings to be more positive than peer ratings for the same student regardless of gender. Peer ratings, however, do differ by gender--with males being the most generous. With these findings in mind the authors attempted to investigate which factors seemed to contribute to student perceptions of group project effectiveness.

RESEARCH METHODS

In-class, self-administered surveys were used to capture the data for this study during May 1998. Six undergraduate business classes at a western state-supported university were chosen using a schedule of classes and systematic random sampling. Overall, 153 business majors responded to the survey. Data were entered into an Excel spreadsheet and descriptive statistics, some cross-tabulations, and a few difference tests were employed. As this was intended to be an exploratory study with the purpose of developing hypotheses for future research, a basic level of analysis was considered appropriate.

FINDINGS AND DISCUSSION

Characteristics of the Respondents

A near equal amount of males and females participated in this study. Nearly 61% of the respondents were seniors, while about 23% were juniors. Approximately 43% of the respondents were between the ages of 22 and 25, with 23% between the ages of 18 and 21, 14% among 26 and 29 years, and 20% at or above the age of 30. Approximately 88% of the respondents were native or naturalized U.S. citizens, and 12% international students. About 60% of the students were Caucasian, 27% Asian, and 13% from other ethnic backgrounds. As the sample was of a cross-section of business administration classes, a number of different majors emerged. Accounting represented the largest student major (26%), followed by Management (22%), Information Technology (18%), Marketing (16%), Finance (14%), and Other (4%).

Group Project Experience and Optimal Group Size

All but one student had previous experience with group projects at their current institution. While the typical respondent had participated in approximately eight group projects, over 35% had participated in ten or more. As a result, one can say that the respondents were sufficiently familiar with working in groups to be able to possess perceptions and experiences that could be shared with the researchers.

The typical respondent felt that the optimal size for group projects was approximately four people. This perception varied little by major, race, or citizenship status. However, younger students aged 18-21 were much more likely to desire larger (mean = 4.34) group sizes than older (30+) students (mean = 3.73).

Importance of Factors Contributing to Group Effectiveness

Nine factors were evaluated to determine whether respondents felt that they were important in contributing to group project effectiveness. Students were able to answer the question with a yes, no, or not applicable. The results in Table 1 show the proportion who answered "yes"--indicating that the factor was important. Interestingly enough, in all nine cases at least 70% of the respondents considered these factors to be important.

TABLE 1
Importance Of Factors To Effectiveness Of Group Projects

Factor	% Noting Factor is Important
Equal participation by group members	94.4%
Instructor is helpful	88.1
Project topic is interesting	85.4
Group size	84.6
Evaluations handled fairly	81.0
Effectiveness of group leader	79.0
How group leader is chosen	76.4
How groups are selected	75.0
Receive instruction in group skills	70.6

The four factors considered to be most important to the effectiveness of the group project are equal participation by group members (94.4%), helpfulness of the instructor (88.1%), the student's interest level in the project topic (85.4%), and number of students in the group (84.6%). Oddly enough, the factor receiving the least importance was whether they received instruction in effective group skills within the class for which the project had been assigned.

One would think that knowledge of communication skills, conflict resolution methods, work delegation, supervision, and control methods would be considered more important by students than it was.

Comparing "Best" and "Worst" Group Experiences

Respondents were asked to identify the "best" and "worst" group project experiences they have had and to answer a series of questions about each. The results of these comparisons are found in Table 2. The first measure was an overall rating of the group project experience on a 1-10 scale with 10 being a very effective learning experience. The respondents' best group experience averaged a 7.04 rating while the worst experience averaged a 3.13 rating.

TABLE 2
Comparison Of Best And Worst Group Experience

Factor	Best	Worst
Overall rating (1)	7.04	3.13
Group size (2)	5.35	3.88
Receive instruction in group skills (3)		
Assigned by instructor	23.0%	40.6%
Chosen by students	62.5%	44.0%
Chosen at random	14.5%	15.4%
Group Leadership was:		
Assigned by instructor	1.3%	4.8%
Chosen by group	73.7%	46.2%
Fought over	1.3%	15.9%
Non-existent	23.7%	33.1%
Group leader was effective (4)	3.26	2.91
Participation was equal among group members (4)	3.46	2.19
Evaluations were handled fairly (4)	3.64	2.54
Project topic was interesting (4)	3.64	2.82
Instructor was helpful(4)	3.67	2.82

Notes:
(1) rated on a scale of very effective learning experience (10) to a waste of time (1)
(2) mean number of persons
(3) proportion saying "yes"
(4) rated on a scale of strongly agree (5) to strongly disagree(1).

For the **best** group experience males and females rated the group experience almost identically. Marketing majors rated their best experience at 7.67 on average, while accounting majors felt their best group experience rated a lesser 6.14 on average. International students also rated their best group experience below the overall mean at 6.59. Younger students aged 18-21 were more prone to find their best experience (7.65) much worthier than their 30 and over counterparts (6.00). Perhaps older students felt that because of their wisdom in years, they were slowed down by the more inexperienced students. Of course, the reverse could explain why younger students enjoyed the experience more because they might have perceived the opportunity to learn from those with more experience.

Group size had some correlation to one's overall evaluation of their best group experience. Persons in groups of size two or three rated their best experience between 5.96 and 6.00. Persons in groups of four, five, and six rated their best experiences between 7.13 and 8.00. How the groups and leaders were selected and whether the group had training also had some relationship to one's overall evaluation. Despite rating group skills training as the least important factor, persons in groups that had training yielded average evaluations of 7.22, while those that did not averaged 6.90. Additionally, persons in groups where the leaders were chosen by the group had more positive evaluations (7.26) than in situations where leadership appeared to be non-existent (6.36).

For the **worst** group experience marketing majors rated their experience slightly lower (3.05) than the group as a whole. Females rated their experience as less worthy (2.94) than did males (3.25). International students rated their worst project higher (3.38) than did U.S. citizens (3.06). Age-wise, 26-29 year-olds rated their worst group experience the highest (3.47), while those 30 and above had the lowest overall evaluations (2.93). These comparisons, perhaps, are moot since the evaluations were so abominable to begin with, suggesting they may have used the survey as an opportunity to vent frustrations.

Group size seemed to have little bearing on the evaluation of the worst group experience. Persons in groups that received training evaluated their worst experience more positively (3.53) than those who received no group training (2.47). When group leadership was assigned by the instructor, the overall evaluation was highest (4.17), but when leadership was fought over (in nearly 16% of these negative experiences) it produced the lowest evaluations (2.53). Leadership was only fought over 1.3% of the time in the best group project situations. This additional friction certainly can add to the burden of the group.

Interestingly enough, the **size of one's group** seemed somewhat related to their best and worst group experiences. The average size of respondents' best group experience was 5.35 persons, while the mean size of their very worst group experience was 3.88 persons. Although students had indicated earlier that an optimal size was 4 persons, it seems that the better group experiences were enjoyed when the group was slightly larger.

Although students thought **instruction in group skills** was not as important as most other measured factors, the results show that in the best group experience 45.4% received instruction as compared to 25.7% in the worst group experience ($Z = 3.60$, $p < .005$). Also worth noting is that both best and worst group experiences received higher ratings when instruction had been provided than when it had not.

The method by which **group members were selected** appeared to vary a bit by group experience. In the best group experience the majority (62.5%) were chosen by the students themselves. In the worst group experience that incident was 44.0%. On the other hand, in the worst group experience 40.6% were assigned by the instructor as compared to 23.0% in the best group experience. Although some bad choices can occur, it appears that students having some control of their composition might pay dividends.

The prevalent manner in which **group leadership was chosen** for both best (73.7%) and worst (46.2%) situations was when the students, themselves, did the choosing. Group leadership was more likely to appear non-existent in the worst group situation (33.1%) than in the best group situation (23.7%).

Finally, five Likert scale items were posed to assess the students' degree of agreement or disagreement with a number of group-related dimensions. The mean scores, even for the best group experience, averaged only between "neutral" and "moderately agree" ratings. This is consistent with the fact that the overall rating for the best group experience was only 7.04 on a 10-point scale. This suggests that even in the best group experiences students are not strongly positive about the situation.

Students were only slightly more likely to agree that group leadership in their best group (3.26) was more effective than in their worst group (2.91). They were much more likely to agree that participation was equal among group members in their best group (3.46) than in their worst group (2.19) experience. These two findings suggest that the composition of the group more so than the leadership might contribute to an effective group experience. A rating of 3.46, however, suggests that even in the best groups there is some incidence of unequal participation among the group members.

Students were more likely to agree that evaluations were handled fairly (3.64), the project topic was of interest (3.64), and the instructor was helpful (3.67) in their best group compared to their worst group experiences (2.54, 2.82, and 2.82 respectively).

Some Overall Reactions to Group Projects

Students were asked on a Likert scale (5 = strongly agree, 1 = strongly disagree) to rate three statements about their overall feelings about group projects. First they were asked to react to the statement: "I've learned more in group projects than I've learned in classes where I have worked individually." The overall rating for this was just above neutral (3.03). Overall students do not perceive any learning advantage to group projects, or perhaps faculty are unknowingly structuring them so that students do not see the benefits. Marketing students rated this slightly higher (3.42) than the sample, but accounting majors agreed with this statement the least (2.74). There was little difference in agreements between genders, but older students (30+) agreed less (2.73) than the group as a whole. International students agreed (3.67) that they learned more than the sample as a whole.

There was strong overall agreement (4.13) with the statement: "I feel that the ability to work effectively in a group is necessary to be productive in the work

environment." Younger students (18-21) agreed with this more (4.42) than older (30+) students (3.80) and females agreed with this more (4.23) than men did (4.03). International students agreed slightly less (3.85) than did U.S. citizens (4.18).

Lastly, students were asked to respond to the statement: "I feel that most group projects are graded fairly in accordance with each student's participation level." This must have hit a nerve, as the overall rating was between "neutral" and "moderately disagree" at 2.86. Marketing (3.21) and international (3.61) students were slightly more likely to agree, while accounting (2.67), management (2.15), and older (2.63 for 30+ year) students were not. Females disagreed with the statement (2.79) more so than men (2.91) did.

CONCLUSIONS AND RECOMMENDATIONS

The total quality management movement brought with it a focus on process, benchmarking, teamwork, identification of publics, and a focus on customer satisfaction. Academics in the 1990's have identified the student as one of their primary customers. As such, we owe it to our students to continue to find ways in which pedagogy can improve students' sense of learning and accomplishment. To this end, this study has pointed out some avenues for further investigation. Hopefully with additional research we can gain the confidence to develop strategies that will work better. This is not to say, however, that we cannot begin to test out some of these strategies in our own classes right now.

Students seem somewhat cool or indifferent to group projects. Even their best experiences averaged only seven on a ten point scale. In open-ended comments many said that they felt that group projects were overused. Students did not perceive a learning advantage to group versus individual projects as a result of their experiences, yet felt that working effectively in groups is a necessity in the work environment. Perhaps the answer to this dichotomy of thoughts is that faculty could do more to ensure that the group project experience is an enjoyable and productive one. Perhaps we can improve the outcomes by structuring projects upon what we have learned in this and previous studies.

First it appears that we need to choose topics for group projects that will hold the students' interest. Such topics could easily be pretested the term or semester prior on a group of students. Secondly the results suggest that if the students participate in the selection of group members and leaders the experience is more likely to be a successful one. Third, try to staff each group with between four and six members. The students felt that four students was optimal, but the best group experiences were those averaging 5.35 persons. Fourth, try to insulate the negativism about groups by the older (30+) students. Mention to the class that some students feel the group process is not efficient but that, in actuality, it can prove to be more efficient than individual efforts if all viewpoints are allowed to be heard and the group as a unit follows the majority opinion--even though some might oppose the direction. Grouping older students together is not the solution, as the younger students will then not have the opportunity of learning from the older, and sometimes wiser, students.

Fifth, provide group skills instruction. If particular faculty do not feel adept at this invite other faculty in to do so. Our study shows that although 70% of the students felt that group training was important it received the least support of nine strategies. Further, students with best group experiences were nearly twice as likely to have received group training skills in their class than those in the worst group situations. This is a case where the faculty members should do what is right versus what is most preferred by the students.

Finally, we need to ensure that participation is equal among all group members. Students felt very strongly that this needed to occur and it was the factor that most strongly separated best from worst group experiences. We, as faculty, can not only encourage it but institute evaluations mid-project as well as at the end to ensure that does happen. In addition we can and should tie at least a part of these evaluations to how we grade individuals in the project. Perhaps this would create a perception among students that there was more fairness in the grading of projects because it would reduce the overvaluation of underperforming members in the group.

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