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The Value of Academic Group Work: An Examination of Faculty and Student Perceptions

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ABSTRACT

This research examined student and instructor perceptions on group work requirements in academic coursework. Results for 330 faculty and 1,589 students were examined. The study found that most faculty believed group work had academic value, had practical work applications and group project grades reflected individual contributions. Most faculty disagreed that all students working on a group project received the same grade regardless of effort; however the majority of students expressed the opposite view. Most students also indicated they would not take a course specifically due to a group project component, but that group work provided practical applications for work and, most importantly, that grading on group projects was fair. Recommendations include future research to study effectiveness of group projects in online settings and developing processes to encourage student participation in all modalities.

INTRODUCTION

Motivated by business trends and urged by accrediting agencies, academic administrators have responded to the need for students to have group experience prior to entering the workforce. Several studies show positive results on group work. Su (2007), however, called for more studies using both qualitative and quantitative methods to better understand the factors that impact group learning. In support of Su's idea, this study utilized both quantitative and qualitative methods to examine faculty (n=330) and student (n=1,589) survey responses.

SIGNIFICANCE

This research was conducted at Embry-Riddle Aeronautical University's Worldwide campus (ERAU WW), which has over 24,000 'non-traditional' working adult students located around the world (Embry-Riddle Aeronautical University, 2013). Course terms are nine weeks long that differs from many universities and may impact this study's results. The significance of this study is the large number of survey respondents and the inclusion of faculty views, as well as students, across various instructional modes including Lecture, EagleVision (webcasting) Classroom, EagleVision (webcasting) Home, and Online.

LITERATURE REVIEW

Researchers have attempted to assess the overall value of group work with mixed results. Academic institutions have added technology components including online resources that are considered non-verbal and non-personal communication (Lemke, 1996). Questions arose over grades for group work and whether a student's grade should be based on the group product, the group process or both. Psychologists in the 1960s conducted research on 48 advertising executives and 48 research scientists at the Minnesota Mining and Manufacturing Company to study the individual and group approach in brain storming. The results showed that ideas came from those working alone rather than in a group (Dunnette, Campbell & Jaastad, 1963). In his memoirs Steve Wozniak (2007), the Apple co-founder, said that he believed that an engineer, inventor, or artist worked best on his own and not on any committee or team. Counter to that perception Bennis (1997), an organizational consultant, ranked group work above all else when it fostered creativity and intellectual achievement in the workplace.

Studies show a disparity in the argument that businesses need employees with group work skills. A Northwestern University survey (2013) sampled national businesses and found that employers sought a broader range of skills, including written skills and collaboration, typically stressed in a liberal arts education. The New Groupthink phenomena calls for an environment that promotes creativity and intellectual achievement. The idea is that students control their education and learn from each other by using tools such as brainstorming techniques. Brainstorming can often lead everyone to contribute to a solution if there is conflict (Cain, 2013; Burgess, 2012). Cain urged a reappraisal of group work in academia, one in which the creativeness of different types of personalities

is considered. In association with Cain's suggestion, Porter (1990) argued for the importance of ideology and gender in studies on group cooperation. De Jong and Elfring (2010) noted that most Western societies, specifically the United States, are motivated by their own interests and needs, but that Eastern societies, like Japan, are motivated by the goals and values of a group. Using the Hofstede's individualistic-collectivist framework, Popov, Brinkman, Biemans, Mulder, Kuznetsov and Noroozi (2012) identified issues associated with multicultural student work groups such as insufficient English language skills and cultural differences.

Van Hattum-Janssen (2014) researched group work in a master's engineering group orientation that was to prepare students for course work. Conclusions included adding the following to student training: the concept of leadership, clarification of the student role within a group, and conflict management and group dynamics. Some students complained there was not enough guidance on group work processes implying that instructors needed to devote more time to clarifying instructions and managing dysfunctional groups (McKendall, 2000; Weimer, 2010). Springer, Stanne and Donovan (1998) studied undergraduate learning in STEM studies and concurred that small group work is most effective if instructors tailor group work to the course. Other literature concentrated on online graduate student classes and the student experience. Brindley, Waiti, and Blaschke (2013) referenced a Maryland University College survey that noted student complaints about synchronous meeting availability while working on group projects. Overall Brindley et al., questioned where required skills for collaboration are learned and the merits of not grading students as a group assessment motivator. Smith, Sorensen, Heindel, Caris and Martinez (2010) looked at a survey of online and face-to-face students to gauge the nature of the collaborative experience. Regarding group work attitude, the face-to-face students performed less positively than the online group; however, a large percentage of online responses to personal feelings about working in groups were negative. Smith et al. (2010) like Brindley et al. (2013) noted that students balked against use of synchronous meetings in group work and desired more instruction on how to operate in a group. In another online master's program Davis (1993) suggested group members need to develop a plan, show proof of progress and have an individual component as well as a group component. Slavin (1990), McKenzie (2002) and Swan, Shen and Hiltz (2006) similarly commented that specific goals and use of a rubric are essential to implementation of collaborative learning, and that there should be an individual and group grade earned within the overall project grade.

RESEARCH QUESTION

The purpose of this research was to determine perceptions of faculty and students in reference to group work in the learning environment and if there were any significant differences in perceptions between them. In other words, did the perceptions of faculty and students differ in any meaningful way?

Hypotheses Tested

- Ha₁** Significantly more faculty will indicate positive preferences regarding benefits of group work, group work grading procedures, group work scheduling and timing and instructions for group work in online courses.
- Ha₂** Significantly more students will indicate negative preferences regarding benefits of group work, group work grading procedures, group work scheduling and timing and instructions for group work in online courses.
- Ha₃** Faculty and students will have significantly different perceptions regarding benefits of group work, group work grading procedures, group work scheduling and timing and instructions for group work in online courses.

METHODOLOGY AND PROCEDURES

Researchers used a quantitative/qualitative research model through survey research (Gay Mills, Airasian, 2009). After a thorough review of related literature, the lead researcher developed a survey and obtained approval from the Embry-Riddle Aeronautical University Human Subjects Review Board. Faculty and students were asked 14 mostly similar questions to measure their perceptions in two major areas of concern: Value of group work in a learning environment and grading/assessment of group work. The 3 hypotheses listed above were tested using quantitative data. A free response area was offered to survey respondents to record additional perceptions. Surveys were distributed by e-mail with a link to the electronic survey in early 2014. The e-mail indicated that participation in the confidential survey was voluntary and response to the survey indicated agreement to participate with this research. Approximately 2,600 faculty of various ranks and over 10,659 students had the opportunity to respond to the survey. Response rates were 12% (n=330) for faculty and 14% (n=1589) for students. The quantitative data

collected was generated from 14 questions offering choices on a Likert scale. Although the answer choices given to survey respondents included 5 possible responses, the “Strongly Agree” and “Agree” categories were combined into one “Agree” category. “Neutral”, “Disagree” and “Strongly Disagree” responses were combined into a single “Disagree” category. This was done to more directly evaluate survey respondent perceptions. Once the data were combined into their respective “Agree” and “Disagree” categories, the nominal data were treated using Chi Square with an alpha level of .05 (Gay et al., 2009; Gould & Ryan, 2013). Qualitative data were evaluated using NVivo 10 software to code comments in the free response area at the end of the surveys from faculty (n=118), undergraduate (n=422) and graduate students (670) to identify perceptions not captured otherwise (Gay et al., 2009).

QUANTITATIVE FINDINGS

Instructor perceptions on the academic value of group work and group work skill building yielded mostly significant results supporting the research hypothesis as shown in Table 1.

Table 1: Instructor Responses (Ha₁). (Chi Square, $\alpha=.05$).

Perceived Benefit of Group Work	Agree	Disagree	n	DF	Chi Sq	P	Sig	Agree	Disagree
Requiring group work has academic value	259	64	323	1	117.725	0.000	Yes	80%	20%
Group research work is a way to prepare for future positions in the work force	259	64	323	1	117.725	0.000	Yes	80%	20%
Group work allows students to develop individual skills within the confines of group requirements	250	75	325	1	94.231	0.000	Yes	77%	23%
Given the choice, I would include group work as an activity in any class I teach	178	146	324	1	3.161	.0754		55%	45%
Group work has academic value for instructing to learning outcomes	255	72	327	1	102.413	0.000	Yes	78%	22%
Grading Procedures	Agree	Disagree	n	DF	Chi Sq	P	Sig	Agree	Disagree
One grade was given for all group members regardless of contribution.	98	222	320	1	48.05	0.000	Yes	31%	69%
An individual Grade was included as a component of the group project grade.	212	110	322	1	32.311	0.000	Yes	66%	34%
Individual research for all group members was required and graded as a component of the overall group grade.	257	70	327	1	106.939	0.000	Yes	79%	21%
The group grade reflected group and individual contributions within the group.	213	108	321	1	34.346	0.000	Yes	66%	34%
The instructor should set up group grading criteria and instructions for class.	261	65	326	1	117.841	0.000	Yes	80%	20%
Scheduling and Time Required to Grade	Agree	Disagree	n	DF	Chi Sq	P	Sig	Agree	Disagree
More than one week was given to accomplish the group project/task.	284	42	326	1	179.644	0.000	Yes	87%	13%
The time required for correcting group work was reasonable	221	99	320	1	46.513	0.000	Yes	69%	31%

Significantly more faculty agreed than disagreed that group work has academic value, prepares students for future positions in the work force and helps develop individual skills within the confines of group requirements. Data were further analyzed to compare answers from different instructor ranks. Adjunct faculty (n=253), full-time faculty (n=57) and tenured faculty (n=15) all agreed to a statistically significant degree for these questions. There were two additional questions asked that were not directly comparable to the student questions asked in this section of the survey. When asked “Given the choice, I would include group work as an activity in any class I teach,” 55% of 324 faculty agreed, though not to a statistically significant degree, which did not support the research hypothesis. When asked if: “Group work has academic value for instruction to learning outcomes,” 78% of 327 faculty agreed (p=0.000) supporting the research hypothesis for this question.

Overall, faculty disagreed to a statistically significant degree that one grade was given to all group members regardless of contribution. This disagreement was consistent across faculty ranks and statistically significant among adjunct faculty (n=249, p=0.000) and full time faculty (n=56, p=0.0005). Although 60% of full-time tenured faculty (n=15, p=0.439) also disagreed, the result was not statistically significant. When viewing the faculty as a whole, (n=320, p=0.000) the research hypothesis (Ha₁) that faculty would significantly disagree with this statement was supported. Faculty of all ranks agreed with statements regarding the inclusion of individual grades as a component of the group grade, requiring individual research for all group members which was graded as a component of the overall group grade and the group grade reflecting group and individual contributions within the group. Most faculty respondents also agreed with the idea that the instructor should set up group grading criteria and instructions for class. Findings support the alternative hypothesis (Ha₁) of statistically significant faculty agreement

($p=0.000$ on all four questions). This agreement was spread across all instructor categories with only a few cases where a sub category of faculty agreed but not to a statistically significant degree.

Faculty agreed with the statements that more than one week was given for assignments and the time required to grade group assignments was reasonable. This level of agreement was statistically significant ($p=0.000$). When examining the data by faculty sub-categories, (adjunct faculty, full-time non tenured faculty, and tenured faculty), all ranks agreed, to a statistically significant degree, with the idea that more than one week was given to accomplish the group project/task. All faculty sub-categories also agreed with the idea that the time required for correcting all of the requirements for the group work was reasonable. However, the tenured faculty level of agreement was not statistically significant ($n=15$, $p=0.0707$). The levels of agreement by adjunct faculty ($n=248$, $p=0.000$) and full-time faculty who were not tenured ($n=57$, $p=0.0243$) were statistically significant. Student responses to similarly worded questions are shown in Table 2.

Perceived Benefit of Group Work	Agree	Disagree	n	DF	Chi Sq	P	Sig	Agree	Disagree
Participating in Group research work is a good learning experience	791	795	1586	1	0.01	0.92		50%	50%
Group work is a way to prepare for future positions in the work force	810	765	1575	1	1.286	0.2568		51%	49%
Group work allows students to develop individual skills within the confines of group requirements	823	756	1579	1	2.843	0.0918		52%	48%
I would take a course with group work for the learning experience	538	1045	1583	1	162.381	0.000	Yes	34%	66%
Group work has practical application for future work	919	661	1580	1	42.129	0.000	Yes	58%	42%
Grading Procedures	Agree	Disagree	n	DF	Chi Sq	P	Sig	Agree	Disagree
One grade for all group members regardless of individual contribution.	931	650	1581	1	49.944	0.000	Yes	59%	41%
An option was available to have individual work count as part of the group grade.	476	1097	1573	1	245.963	0.000	Yes	30%	70%
Active discussion and individual research was required and graded as part of the group grade.	1006	573	1579	1	118.739	0.000	Yes	64%	36%
The group grade received reflected group and individual contributions.	810	767	1577	1	1.173	0.2789		51%	49%
Grading for the group project was fair.	1044	543	1587	1	158.161	0.000	Yes	66%	34%
Scheduling/Time Required	Agree	Disagree	n	DF	Chi Sq	P	Sig	Agree	Disagree
The group was given more than one week to accomplish the project.	1291	287	1578	1	638.793	0.000	Yes	82%	18%
The time required works with my personal schedule.	919	656	1575	1	43.917	0.000	Yes	58%	42%

Students were not overwhelmingly convinced that participating in group work was a good learning experience. Student perceptions were split literally 50% to 50%. Regarding the questions involving preparation for the work force or group work allowing students to develop individual skills within the confines of the work environment, slightly more students agreed than disagreed that group work was beneficial. None of these results, however, were statistically significant. The research hypothesis (Ha₂) that students would disagree to a statistically significant degree to these questions was not supported by the findings. In responding to the question “I would take a course with group work for the learning experience,” 66% of 1,538 students disagreed yielding a statistically significant result ($p=0.000$). With regard to the question “Group work has practical application for future work,” 58% of 1,580 students agreed yielding a statistically significant finding (0.000). Interestingly, undergraduates answered these questions differently than graduate students.

Undergraduate students ($n=917$) disagreed to a significant degree ($p=0.003$) that group research work provided a good learning experience, whereas graduate students ($n=669$) had the opposite view of group work. Graduate students perceived that group work provided a good learning experience ($p=0.000$). With regard to preparation for future positions in the work force or developing individual skills within the confines of group requirements, perceptions differed as well. Again more undergraduate students disagreed that group work was beneficial but not to a statistically significant degree. However, most graduate students perceived that group work was beneficial ($p=0.000$) to prepare for future positions in the work force and develop individual skills within the confines of group requirements. In responding to the question “I would take a course with group work for the learning experience”, undergraduate and graduate student perceptions were consistent with each other; disagreeing

to a statistically significant degree. With regard to the question “Group work has practical application for future work”, undergraduate agreement 53% ($p=0.0511$) differed from graduate agreement 65% (0.000).

Student responses greatly differed from faculty responses in two questions: “Grading included one grade for all members of a group regardless of contribution” showed significant agreement ($p=0.000$). The statement that “An option was available to have individual work within a group count as part of the grade” showed significant disagreement at ($p=0.000$) supporting the alternate hypothesis (H_{a2}) on these questions. “Active discussion and individual research was required as part of the group grade” and probably the most telling statement: “Grading for the group experience was fair” showed significant agreement ($p=0.000$). These results were surprising to the researchers contradicting the alternative hypotheses (H_{a2}) for both questions. The statement that “the group grade reflected group and individual contributions within the group” was also agreed to by most survey respondents, but not to a statistically significant degree. Graduate survey respondents ($n=664$, 53%) were more in agreement than undergraduate students ($n=913$, 50%) but these differences were not statistically significant. Aside from this question, undergraduate students and graduate students as subgroups had remarkably similar response rates.

Students agreed with the statement that more than one week was given for assignments ($p=0.000$) which was the opposite of what was expected by the researchers (H_{a2}). More students also agreed than disagreed that the time required to accomplish group tasks worked with their personal schedules. This level of agreement was statistically significant ($p=0.000$). When examining the data by faculty sub-categories, undergraduate and graduate students answered quite similarly; agreeing to a statistically significant degree. More faculty and students agreed, to a statistically significant degree, that students were given more than one week to complete group projects/tasks. This result implied that both faculty and students believe group work level of effort and timing are appropriate.

FACULTY PERCEPTIONS OF INSTRUCTIONS FOR GROUP WORK IN ONLINE COURSES

Faculty responses on instructions on how to accomplish group work in online courses are shown in Table 3.

All Faculty	Agree	Disagree	n	DF	Chi Sq	P	Sig	%	%
1. In non-online classes, adequate instruction was provided for how to accomplish group work.	239	83	322	1	75.578	0.000	Yes	74%	26%
2. In the online delivery, adequate instruction was provided to students by the course developer.	200	117	317	1	21.732	0.000	Yes	63%	37%

Significantly more faculty agreed than disagreed with both questions regarding instructions provided for group work in online courses ($p=0.000$) supporting the alternative hypothesis (H_{a1}). Adjunct faculty and full-time non-tenured faculty agreed with both questions to a statistically significant degree. More tenured faculty ($n=15$, question 1, $p=0.1967$, question 2, $p=0.0707$) agreed than disagreed, but not to a statistically significant degree.

DIFFERENCES IN FACULTY AND STUDENT PERCEPTIONS

A major goal of this research was to determine areas where faculty and students differed in their perceptions of group work in the learning environment. Table 4 summarizes major differences. (insert Table 4 here)

In this study, most faculty agreed that group work provided a good learning experience, prepared students for future positions in the workforce and helped students to develop individual skills within the confines of group work. When compared to answers from all students, slightly more students agreed than disagreed with these statements. However, when viewing students in sub-groups (graduate and undergraduate), a different picture emerged. Graduate students indicated significant agreement to all three questions similarly to faculty, however, undergraduate students disagreed. Undergraduate students did not appear to perceive a benefit of group work or disagreed that a benefit existed at all, supporting the idea that faculty and specifically undergraduate students have significantly different perceptions of group work. If one were to repeat a Chi Square test on the first three questions in Table 4 between faculty and undergraduate students, it would yield even greater significant differences in perceptions. A noted difference between faculty and student responses centered around answers on two questions regarding level of individual effort and group grades. When asked if “one grade was assigned to the group regardless of contribution” (of individual members), most faculty disagreed to a statistically significant degree, but most students agreed with that statement to a statistically significant degree.

Table 4: Summary of Questions Where Faculty and Student Perceptions Differed. (Chi Square, $\alpha=.05$).

Question	Faculty		Students		DF	Chi Sq.	p	Sig
	Agree	Disagree	Agree	Disagree				
(F) Requiring group work has academic value. (S) Participating in group research work is a good learning experience	259	64	791	795	1	99.622	0.000	Yes
Group research work is a way to prepare for future positions in the work force	259	64	810	765	1	90.01	0.000	Yes
Group work allows students to develop individual skills within the confines of group requirements	250	75	823	756	1	67.40	0.000	Yes
One grade was given for all group members regardless of contribution.	98	222	931	650	1	85.61	0.000	Yes
The group grade reflected group and individual contributions.	213	108	810	767	1	24.12	0.000	Yes

When directly compared, the difference in perceptions between the two groups was again statistically significant. Faculty responses indicated a significant level of agreement that “The group grade reflected group and individual contributions.” More students agreed than disagreed with that statement, but student level of agreement was not statistically significant. When faculty and student responses were directly compared on this question, the difference in responses between the two groups was statistically significant.

Faculty and student survey results yielded statistically significant levels of agreement on “Individual research was required and graded as part of the group grade” and “students were given more than one week to complete group projects/tasks.” Most faculty agreed to a significant degree that the time required for correcting all of the requirements for group work were reasonable and most students agreed to a significant degree that the time required for accomplishing the group project/case study worked with their personal schedules. Significantly more faculty agreed than disagreed that adequate instruction was provided on how to accomplish group work and adequate instructions were provided to students by the course developer. A telling question asked just of students was “Grading for the group experience was fair” which yielded a statistically significant level of agreement.

QUALITATIVE FINDINGS

Three hundred thirty faculty members responded to the survey and of those, 118 made comments in the free response area of the survey. Six major themes emerged. They were: student contribution to group grade, dislike for group work in classroom settings, guidance for group work, group work in online environments, group work helps prepare students for real life experiences and group work is beneficial. Faculty comments with regard to group work fell along six major themes: Student contribution to group grade (42 comments), group work is not beneficial (20), group work in online environments (20), guidance for group work (19), group work helps prepare students for real life experiences (15) and group work is beneficial (14). The most commented issue was with regard to the difficulty in evaluating individual student contribution when assigning grades. Several faculty comments indicated that students were reluctant to identify peers who were not doing their fair share. Those faculty who stated that they did not believe group work was beneficial used similar arguments by citing problems in assigning group grades to students due to the difficulty in evaluating individual student contributions. Faculty suggestions for group work guidance included closely monitoring individual student contributions to group work projects by monitoring Blackboard postings and/or directly assigning tasks within groups. Collaboration in online environments stood out as more difficult to effectively assign, monitor and grade group work. Issues cited were time zone differences, different work schedules of group members and lack of structure in group work assignments for online learners.

A total of 1,587 graduate and undergraduate students responded to the survey and of those, 692 made comments in the free response area of the survey. Five major themes stood out: students not contributing to group grades (266 comments), group work not effective in online environment (152), dislike of group work (147), collaboration difficult due to different time zones and work schedules (135) and suggestions for instructors ensuring all students participate (71). By far, the most common perception was that all students did not contribute equally when working on group projects but seemed to get the same grade. One student commented: “It usually falls on one or two people’s shoulders to get the work done. Individuals try to skate through it and usually get the same grade that the other members get”. Closely related to this issue was the idea that collaboration was difficult, especially in online or distance learning environments where classmates could be in different time zones or even differ countries.

CONCLUSIONS

Most faculty members agreed that group work provides a good learning experience, prepares students for future positions in the workforce, helps students develop individual skills and has applications for future work. These findings complement the business and professional trend to prefer prospective employees with group skills and experience as noted by Bennis (1997). Most graduate students agreed with faculty, but most undergraduates did not. A non-significant majority of faculty would include group work in any course they taught, but most students would not take a course just for the learning experience that group work would provide. Faculty disagreed that the same grade is given to all group participants regardless of contribution, but significantly more students held the opposite view. This result reflects the most common theme noted in faculty and student comments with regard to all students on a team not doing their fair share on a project, but all getting the same grade echoing findings by Van Hattum-Janssen, (2013). Most faculty and students believed that students were given enough time to complete projects. Most faculty believed that the time required to grade group projects was reasonable and a majority of students felt they had enough time to complete the projects. Most importantly, a significant number of students felt that the grading for the group experience was fair (66%). Faculty and student comments identified the greatest issue with group work was ensuring all students did their fair share of the work. Other issues noted were the difficulty of groups collaborating on projects in a distance learning environment (Online or EagleVision). Most recommendations focused on giving clear instructions to faculty and students regarding group work, the use of rubrics and assigning work teams by time zones to facilitate collaboration outside of class. These suggestions were similar to findings by Slavin (1990), McKenzie (2002) and Swan et al., (2006). Many faculty and students questioned the effectiveness of group work assignments in a strictly online learning environment and suggested that a short term (9 weeks) calls for shorter term projects.

RECOMMENDATIONS FOR FURTHER RESEARCH

One important area of future study is the effectiveness of group work in online settings since geographical distances can make collaboration more difficult. Additionally, researchers should explore differences in group work experiences between graduate and undergraduate students in business, engineering, and science programs as well as social sciences and humanities. Researchers should develop faculty training that encourages use of effective methods to achieve maximum student involvement in team projects. Future studies could seek to identify the intent (product vs. process) and highlight the real reason for including group assignments in a course. Using both a quantitative and qualitative approach could enrich results of any research. Lastly, the impact of personality, gender, and culture, as it impacts group work dynamics at the post-secondary level, needs further attention.

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