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Teamwork for Business Majors – The Impact of Peer Evaluation

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Abstract

The purpose of the study was to determine if peer feedback at midterm helped students improve their teamwork skills, and to identify variations in teamwork skills across course delivery modalities. This study focuses on peer evaluation of teamwork in an introduction to organizational behaviour course required for all business majors. The course is offered face-to-face and online, both of which include the high impact practices of service learning and a team ePortfolio. Findings indicate that teamwork skills, as assessed by peers, increased from midterm to final, which suggests the value of formative peer evaluation. No differences existed between delivery modalities.

Key words*: Teamwork; ePortfolio, peer evaluation.*

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Introduction

Conclusions from a large-scale employer survey indicated that "college students should have experiences that teach them how to solve problems with people whose views are different from their own" (Hart Research Associates, 2015, p. 4). Employers responding to this survey reported valuing abilities such as written and oral communication, teamwork, ethical decision making, critical thinking, and the application of knowledge (Association of American Colleges and Universities [AAC&U], 2011; Hart Research Associates, 2015). They gave greater consideration to college graduates who had completed applied learning projects, believing that this improves professional preparation and long-term career success (Hart Research Associates, 2015).

Students in this study agreed that cross-cutting skills are important yet had more favourable views regarding the degree to which they possess them than did employers. More than half of recent college graduates (64%) surveyed believed they were prepared to work in teams whereas only 37% of employers in the study felt similarly (Hart Research Associates, 2015). This pattern was consistent for other outcomes as well such as oral and written communication (62% v. 28% and 65% v. 27% respectively), applying knowledge and skills to the real world (59% v. 23%) and working with people from different backgrounds (55% v. 18%) (Hart Research Associates, 2015).

Schools of business commonly focus on the development of cross-cutting outcomes such as those identified. Written and oral assignments are the most frequent program assessments (Martell, 2007; Kelley, Tong, & Choi, 2010; Wheeling, Miller, & Slocombe, 2015) followed by measurements of business knowledge, integrity and ethics, and critical thinking (Wheeling et al., 2015). However, in spite of the importance of teamwork, fewer and fewer business schools are assessing it. In 2007, 42% of business schools evaluated teamwork (Martell, 2007); in 2010, this had decreased to 26.5% (Kelley et al., 2010), and by 2015, it had disappeared from the list (Wheeling et al., 2015). Additionally, few programs appear to be using real-world projects or other high impact practices (Kuh, O'Donnell, & Schneider, 2017) to assess outcomes although these may be included in specific courses. The most common program measures are rubric-scored assignments, test questions, and standardized exams (Wheeling et al., 2015). These practices at AACSB-accredited schools are in contrast with employer-identified needs (Hart Research Associates, 2015).

This exploratory study focuses on peer evaluation of teamwork in an introduction to organizational behaviour course required for all business majors. The course is offered in multiple modalities—face-to-face and online, both of which include the high impact practice of ePortfolio (Watson, Kuh, Rhodes, Light, & Chen, 2016). The study is designed to determine if peer feedback at midterm helps students improve subsequent contributions to their teams, and to identify any variations in team performance across course modalities. Previous research has not established any comparative analyses in this regard. With increasing enrolments in online courses as a means to accommodate diverse populations of learners (Andrade, 2016; Côté & Allahar, 2011; Roe, Toma, Yallapragada, & Mohan, 2015), and with significant attention being given to learning outcomes assessment, particularly for schools of business accredited by AACSB, this study is significant in informing current movements—high impact practices, specifically ePortfolio and collaborative assignments (Kuh & O'Donnell, 2013; Kuh et al., 2017), and learning outcomes assessment related to teamwork (AAC&U, 2011; Hart Research Associates, 2015).

Literature Review

The positive outcomes of teamwork in business education include deep learning, critical thinking, motivation, retention of knowledge, and the development of professional competencies (Biggs & Tang, 2011; Hall, Ramsay, & Raven, 2004; Ohl & Cates, 2006; Scott-Ladd & Chan, 2008; Volkov & Volkov, 2015; Wageman & Gordon, 2005). Virtual teams are also relevant in an increasingly connected global world, suggesting the need for preparation in this area. However, understanding the gap between student and employer views related to the achievement of learning outcomes such as teamwork is needed. One step toward this is to explore the role of feedback in helping students develop this skill. Several areas of research are relevant to this study. We first set the context by discussing learning outcomes and high impact practices. We then explore various aspects of teamwork.

Essential Learning Outcomes and High Impact Practices

Essential Learning Outcomes (ELOs) for higher education have been identified to address the need for high levels of "learning and knowledge as well as strong intellectual and practical skills" (AAC&U, n. d., para. 3). ELOs include knowledge of human cultures and the physical and natural world, intellectual and practical skills, personal and social responsibility, and integrated and applied learning (AAC&U, n. d.). A set of rubrics to assess these outcomes has also been developed (Rhodes, 2009). Designed and tested by faculty across disciplines, the rubrics are now being benchmarked in an initiative called the Multi-State Collaborative, which involves approximately 100 institutions and nearly 300 trained faculty raters (AAC&U, 2017).

High Impact Practices (HIPs) help students develop desired ELOs and reflect the real-world projects that employers value. They are characterized by high performance expectations, investment of time and effort over an extended period of time, experiences with diversity, frequent and timely constructive feedback, reflection, real-world application, and public demonstration of competence (Kuh & O'Donnell, 2013). Examples include first-year seminars and experiences, common intellectual experiences, learning communities, writing- and inquiry intensive courses, collaborative assignments and projects, undergraduate research, diversity/study away/global learning, service learning and community-based learning, internships and field experiences, capstone courses and projects, and ePortfolio (Kuh, 2008; Kuh et al., 2017). ePortfolio was added as the 11th HIP and is considered a sort of meta-HIP in which students actively engage, organize, and reflect on their learning and learning processes (Watson et al., 2016).

Business programs have implemented various HIPs such as real-world management projects (Weldy & Turnipseed, 2010), experiential learning initiatives (Kosnik, Tingle, & Blanton, 2013), and team-taught capstone courses, emphasizing critical thinking, global awareness, and ethics (Balotsky, Stagliano, & Haub, 2016). These projects encourage the development of ELOs, such as those assessed in business schools, namely communication, business knowledge, integrity and ethics, critical thinking, problem-solving, global competencies, technology skills, interpersonal skills, and multicultural/diversity issues (Wheeling et al., 2015). One study found that business students had participated in an average of eight group projects during their studies (Chapman & Van Auken, 2001). However, these types of projects are not being used as assessment measures by business programs as a whole nor is this type of learning being captured in ePortfolios (Wheeling et al., 2015).

Teamwork in Business Education

Teamwork is a cross-cutting skill critical to employment success, not only in the U.S., but in other national and business educational contexts (CPA, 2012; Jackling & De

Lange, 2009; Hart Research Associates, 2015; Kotey, 2007; Olson-Buchanan, Rechner, Sanchez, & Schmidtke, 2007; Tempone & Martin, 1999). Much discussion has focused on the discrepancy between employer needs and graduates' skills in this and other areas (Hart Research Associates, 2015; CPA, 2012; Crebert, Bates, Bell, Patrick, & Cragnolini, 2004; Deckinger, Brink, Katzenstein, & Primavera, 1990; Evans, Nancarrow, Tapp, & Stone, 2002; Jackling & De Lange, 2009; McLarty, 2000).

Familiarity with the stages of team formation (Tuckman, 1965; Tuckman & Jensen, 1977) as well as the components for creating effective teams can serve as a foundation for teamwork assignments (Gonzalez-Roma & Hernandez, 2014; Hackman, 2002; Peralta, Lopes, Gilson, Lourenco, & Pais, 2015; Stewart & Barrick, 2002; Thompson, 2000). Teamwork can engender a deep approach to learning due to the need for students to take responsibility for tasks and outcomes (Ohl & Cates, 2006; Scott-Ladd & Chan, 2008; Volkov & Volkov, 2015; Wageman & Gordon, 2005). It also creates motivation and helps develops professional competencies (Volkov & Volkov, 2015) as opposed to superficial learning (Campbell & Cabrera, 2014). Teamwork leads to increased subject understanding, critical thinking, and retention of knowledge (Biggs & Tang, 2011; Hall et al., 2004) as well as better deliverables, more ideas, less work, and anxiety reduction (Schultz, Wilson, & Hess, 2010). However, in some cases, students prefer individual work due to feelings of self-sufficiency, problems with social loafing, and scheduling challenges (Pfaff & Huddleson, 2003; Schultz et al., 2010).

Suggestions for improving the effectiveness of teamwork include explaining the its importance, effective team formation, teaching related skills, teambuilding activities, a reasonable workload, assigning roles, use of class time, incorporating feedback, monitoring problems, and peer evaluations (Hansen, 2006; Schultz et al., 2010). Others have identified similar factors such as a manageable workload, class time, and peer evaluation (Pfaff & Huddleston, 2003). These approaches help instructors leverage the positive aspects of teamwork and minimize the negative aspects.

Random team assignment or self-selection does not appear to affect teamwork, outcomes, or student attitudes (Chapman, Meuter, Toy, & Wright, 2006). Random assignment is perceived as being fair and reflects the realities of the workplace but lacks strategy in terms of assigning people with needed skills sets (Chapman et al., 2006; Bacon, Steward, & Anderson, 2001). Also, self-selection may result in some students feeling left out and the selection of friends as team members (Chapman et al., 2006).

Teamwork and distance learning. Virtual teams are becoming increasingly common due to globalization and technological advances. Tools and protocols include audio, video, and text and both asynchronous and synchronous delivery (Driskell, Radtke, & Salas, 2003). Disadvantages include coordination of activities when team members are apart while advantages suggest that the pressure to conform might be reduced in virtual teams (Driskell et al., 2003). Distance also impacts "cohesiveness, status, structure, counter normative behavior, and communication" (Driskell et al., 2003, p. 317). Some tasks (e.g., intellectual/analytical, mechanical/technical, imaginative/aesthetic, social, persuasive, logical/precision, etc.) may lend themselves more readily to virtual teams than others (Devine, 2002; Driskell, Hogan, & Salas, 1987), and temporality plays a role (e.g., short- or long-term nature of the interaction) (Driskell et al., 2003).

Comparisons of online and face-to-face teams has predominantly focused on student feedback through pre-determined survey items (Saghafian & O'Neill, 2017). An exception to this is a qualitative study on the lived experiences of MBA teams. Teams exhibited effective leadership, equal commitment to tasks, and shared ownership, but preferred to choose members with known qualities (Saghafian & O'Neill, 2017). The online teams had challenges establishing communication methods, largely due to attempts to accommodate communication preferences and masked communication

(e.g., not being able to sense facial and vocal expressions as video conferencing was not used). Task focus was heightened due to getting to the point quickly and avoiding chit chat (Saghafian & O'Neill, 2017). Face-to-face teams were concerned about creating harmony and demonstrating commitment through team meetings and collaboration. These differences suggest that team skills in one environment may not transfer to another (Saghafian & O'Neill, 2017).

Although management education has been critical of and reluctant to adopt online learning, recent data illustrates its' success in terms of learning outcomes, collaboration, use of the social environment, and students teaching each other (Redpath, 2012). "Attitudinal biases that assume face-to-face interaction and the physical presence of the instructor necessarily constitute a superior method of delivery are simply no longer valid" (Redpath, 2012, p, 136). Teamwork in online courses, in particular, addresses concerns about dropout rates in online MBA programs due to lack of social interaction (Williams, Duray, & Reddy, 2006).

Teamwork evaluation. Noting the issues that students may have with teamwork, such as preferences for working independently; issues with communication, conflict, and social loafing; and skill-level differences, business and management educators have recognized the need for both peer and self-evaluations to encourage reflection on both individual contributions and team processes (Dominick, Reilly, & McGourty, 1997; Gueldenzoph & May, 2002; Mayo, Kakarika, Pastor, & Brutus, 2012; Loughry, Ohland, & Moore; 2001; Ohland, Loughry, Woehr, Bullard, Felder, Finelli, Layton, Pomeranz, & Schucker, 2012).

Measuring such effects is critical to effective implementation of teamwork assignments that result in desired outcomes. However, students may lack the skills and training to accurately rate themselves and others (Kruger & Dunning, 1999; Jassawalla, Sashittal, & Malshe 2009; Walker, 2001). A range of measurement approaches exist—dividing points among team members (Erez. LePine, & Elms, 2002; Michaelsen, Knight, & Fink, 2004), student-created criteria (Thomas, Martin, & Pleasants, 2011), or rating scales such as the CATME (Loughry et al., 2007) or CATME-B (Ohland et al., 2012).

In particular, peer evaluation is often used to improve teamwork effectiveness (Fellenz, 2006; Hansen, 2006; Schultz et al., 2010). It may entail peer evaluations as part of the course grade (Fellenz, 2006; Fink, n. d.). In some cases, instructors provide a form, asking questions such as if each team member was prepared for meetings, contributed to discussion and tasks, encouraged the contributions of others, and exhibited flexibility when challenges occurred (Fink, n. d.). In other cases, it entails reflection papers or formative and summative evaluation forms (Fellenz, 2006). A study involving MBA project teams whose members evaluated themselves and their team members on four aspects of leadership at three different points in their studies found that their self-ratings decreased after receiving peer feedback (Mayo et al., 2012).

Scales such as the CATME (Loughry et al., 2007), CATME-B (Ohland et al., 2012), and the VALUE rubric (Rhodes, 2009) are designed to measure the effectiveness of teamwork and can all be used for self- and peer evaluation. The categories of measurement are similar across the instruments but have some distinctions as shown in Table 1. CATME-B is a shortened form of the CATME Likert Short Form, and as such, is easier to administer and less time-consuming for students (Ohland et al., 2012). These two forms of the CATME have from 4-10 individual items within each category that are ranked separately on a scale of 1-5 whereas the VALUE rubric simply has a descriptor for each of the five categories with a global ranking per category. A global rating is often as effective as individual item ratings in a variety of contexts (Dolbier, Webster, McCallister, Mallon, & Steinhardt, 2005; Williams & Smith, 2016). While the VALUE scale is not a single-item measure, it is simpler than other measures, yet allows student teams and professors to pinpoint specific issues.

Table 1:
Teamwork rubric comparisons

CATME & CATME-B	VALUE Rubric
Contributing to the team's work	Contributing to team meetings
Interacting with teammates	Facilitating the contributions of team members
Keeping the team on track	Individual contributions outside of team meetings
Expecting quality	Fostering a constructive team climate
Having relevant knowledge, skills, and abilities (KSAs)	Responding to conflict

The VALUE rubric, which was selected for this study, focuses on process rather than product (AAC&U, 2009). Reviewing samples of a team's work does not necessarily reflect evidence of team members' contributions. The rubric can be completed by individual team members as a self-evaluation, by having team members evaluate each other, or by an outside observer. The rubric is designed to measure individual team member behaviors (effort they put into team tasks, interactions with others, and the quantity and quality of contributions they make to team discussions)" (AAC&U, 2009). The rubric is one of a set of 16 rubrics measuring essential learning outcomes in higher education. It was developed and tested by faculty from a range of disciplines at over 100 institutions over a 2-year period (AAC&U, 2018). The VALUE rubrics were downloaded by over 32,000 first-time individuals and 5,600 institutions between June, 2010 and January, 2014.

The Multistate Collaborative to Advance Student Learning, involving 12 state higher education systems consisting of 88 campuses, is currently collecting student work samples and related demographic information (AAC&U, 2017). These are submitted to a national database and are then evaluated by trained faculty scorers using the VALUE rubrics. Scores can be compared with on-site campus scoring and used to set benchmarks across campuses with similar profiles. The goal of the project is to obtain valid, actionable data based on faculty judgments of authentic student work using a common set of rubrics.

Overall, then, this research is an exploratory study to investigate the effects on teamwork of online versus face-to-face instruction measured at both midterms and finals, using the VALUE framework's behavioral questions and its summative rubric levels.

Methods

All business majors at the institution where the study occurred take an introduction to organizational behavior course. For the sections of the course involved in this study, students were required to complete two team assignments—a community consulting project and an ePortfolio. Teams were created by the instructor to reflect the real world where individuals cannot choose their own team members but need to work with a variety of people to exchange ideas, assign and complete tasks, meet deadlines, and achieve goals. In the course, students learn about the stages of team formation and strategies for effective teams.

The community consulting project involved students selecting an organization in the community and working with that organization to identify a problem. They collected data about the issue and applied course concepts to make recommendations for resolving it. Each team also collaborated weekly to create an artifact in their team

ePortfolio reflecting a concept or theory from the topic of study that week. The instructor graded the artifacts and they were also posted for other teams to comment on. Both assignments are HIPs and reflect the elements of HIPs discussed earlier. The assignments were the same regardless of course modality—face-to-face or online. Students in the online sections needed to work in virtual teams. In all cases, students set a group charter outlining their norms and expected behaviors, including method of communication, meeting times, roles, tasks, deadlines, and consequences for those not meeting expectations.

Participants were 30 students in the face-to-face section and 40 students in the online section. Team size varied from 3 to 6 students. Data was collected by means of the VALUE rubric for teamwork (Rhodes, 2009). Students were required to evaluate each team members' contribution to the projects using this rubric. The purpose of the feedback provided to students by means of this peer evaluation was to encourage individual reflection on performance, which is a component of HIPs. Team members completed the rubric for each member on their team at mid-semester and again at the end of the semester. Members were sent individual reports on how their team members evaluated them after the first assessment. These scores served as a formative assessment. Each student also received an individual report of their compiled team evaluations at the end of the semester.

Students evaluated each team member's contribution with a rating of 1-4 on the VALUE rubric. Ratings were given in response to five questions aimed at identifying teamwork-positive behaviours: (1) contributing to team meetings, (2) facilitating the contributions of team members, (3) individual contributions outside of team meetings (4) fostering a constructive team climate (5) responding to conflict. The 1-4 scale corresponded to the four levels on the VALUE rubric, with 4 being the most teamwork oriented, and 1 being least. The four VALUE rubric levels from most impressive to least impressive are: Capstone, Upper Milestone, Lower Milestone, and Benchmark. An additional "No Mark" level was provided to rate students that did not meet even the Benchmark requirements. "No Mark" corresponded to a "0" on the scale. Every student was given the VALUE rubric beforehand and briefed to know what a teammate would need to accomplish to qualify for each category. A sample report from the midterm evaluation is provided in Figure 1 to illustrate (name is fictitious).

Figure 1:
Sample Midterm Report

John Smith

#	Field	Capstone (4)	Milestone (3)	Milestone (2)	Benchmark (1)	No Marks (0)
1	Contributes to team meetings	2	1	1	0	0
2	Facilitates the contributions of team members	3	1	0	0	0
3	Individual contributions outside of team meetings	2	2	0	0	0
4	Fosters constructive team climate	4	0	0	0	0
5	Responds to conflict	4	0	0	0	0
		15	4	1	0	0

Showing Rows: 1 - 6 Of 6

Figure 1 illustrates that in response to question number one, "Contributes to team meetings," two of John Smith's team members rated him as a 4, or Capstone, signifying ideal effort and ability in contributing to team meetings. Subsequently, one

other team member rated John a 3, or High Milestone, signifying good but not superb skills. Another team member rated him at a 2, or Low Milestone, signifying more mediocre skills. The same team members then rated John again on item two, "Facilitates the contributions of team members," resulting in three team members rating him a 4, and one team member rating him a 3. The process continued for the remaining five prompts. The total number of ratings across all prompts can be seen on the last row. These totals show that, for the midterm, John received fifteen Capstone ratings, four High Milestone ratings, and one Low Milestone rating.

Because of the ranging team sizes, it was determined that evaluating teamwork skills by merely counting the frequency of ratings, or "votes," that each student received for each VALUE level would pose an unfair advantage towards students with bigger teams (and consequently, more rating power). Instead, a percentage of each VALUE level was created for each student. For example, if we use the scenario of John Smith, who received the following total ratings for the midterm: Capstone: 15, High Milestone: 4, Low Milestone: 1, Benchmark: 0, No Mark: 0, John's new five new VALUE level percentages would be calculated from the total number of ratings he received for the midterm, which in this case is 20, from 15 Capstone ratings + 4 High Milestone ratings +1 Low Milestone rating. Therefore, John's new percentages for the midterm would be the following, Capstone: 75%, High Milestone: 20%, Low Milestone: 5%, Benchmark: 0%, No Mark: 0%.

To determine how a student performed overall and not just for each VALUE rubric level, two additional scores, dubbed "Teamwork Scores," were calculated. One score reflected overall midterm performance, and the other measured overall performance on the final. The following method was used in calculating the Teamwork Scores scale: A student's midterm or final Capstone percentage would be multiplied by 4, followed by High Milestone percentage multiplied by 3, Low Milestone by 2, Benchmark by 1, and No Mark by 0. This created five new numeric values corresponding to each VALUE level. These numbers were then summed together to create the overall Teamwork Score. The formula was formatted as: ((Capstone percentage*4) + (High Milestone Percentage*3) + (Low Milestone Percentage*2) + (Benchmark Percentage *1) + (No Mark Percentage *0)).

To use our earlier example in Figure 1, John Smith on the midterm received a 75% Capstone rating, 20% High Milestone rating, 5% Low Milestone Rating, 0% Benchmark rating, and 0% No Mark rating. 75% of Capstone points (4) is 3. 20% of High Milestone (3) is 0.6. 5% of Low Milestone (2) is 0.1. Benchmark Percentage was at the value 0, so no additional points can be derived from this VALUE level. No points are received from No Marks, as any percentage there would be multiplied by 0. We then add John's previous numbers together (3 + 0.6 + 0.1) and John Smith nets a teamwork score of 3.7 for the midterm. The highest teamwork score one could achieve would be a 4.0, or 100% Capstone nominations, while the lowest score achievable was 0.0, or 100% No Mark nominations.

In addition to using the VALUE rubric, at the end of the semester students rated their teammates' contributions. Each team had a total of 200 points per student to allocate and could assign points within a range of 180 to 220 points, with 180 being little to no contribution and 220 being above and beyond contributions. Students were also required to justify their point assignments – e.g., Sally did not respond to e-mail and her contributions were always done at the last minute. She missed a few tasks completely. John really led the team and pulled everyone together; he made final improvements to each assignment and helped out when someone had problems. The points from each team member were averaged and included as part of the students' final grades whereas the rubric scores were only informative.

Statistical software Tibco Statistica (2017) was used to calculate and determine statistical significance within and between the face-to-face and online classes. All tests of significance were conducted placing the level of significance at $\alpha = 0.05$.

Findings

First, we examine the descriptive statistics to compare midterm and final team peer evaluations across delivery modes. In all cases, students ranked each other predominantly with the highest, or capstone score. Ratings in the face-to-face course were slightly lower in the capstone score from midterm to final (see Figure 2*)* while those in the online section were slightly higher (see Figure 3). Percent of Ratings refers to the percent of ratings that students averaged for each VALUE category. For example, in the face-to-face class students averaged receiving 69% of capstone votes for the midterm.

Figure 2:
Teamwork Rubric Ratings – Face-to-face

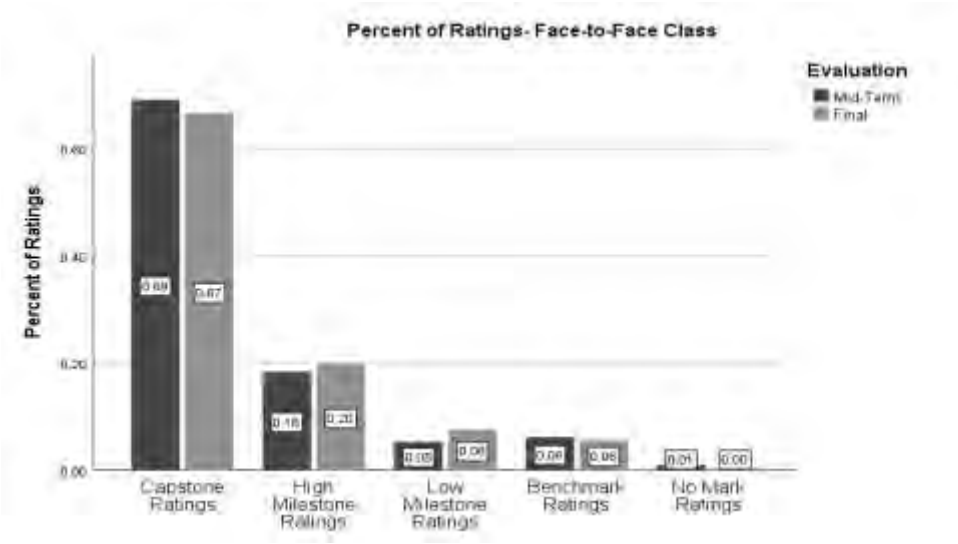
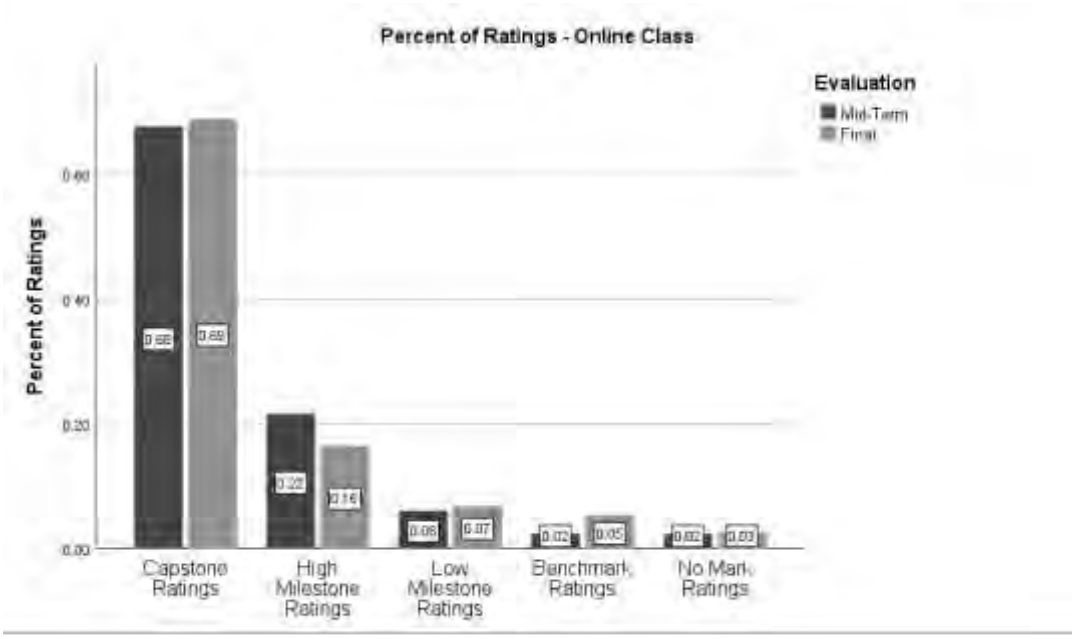
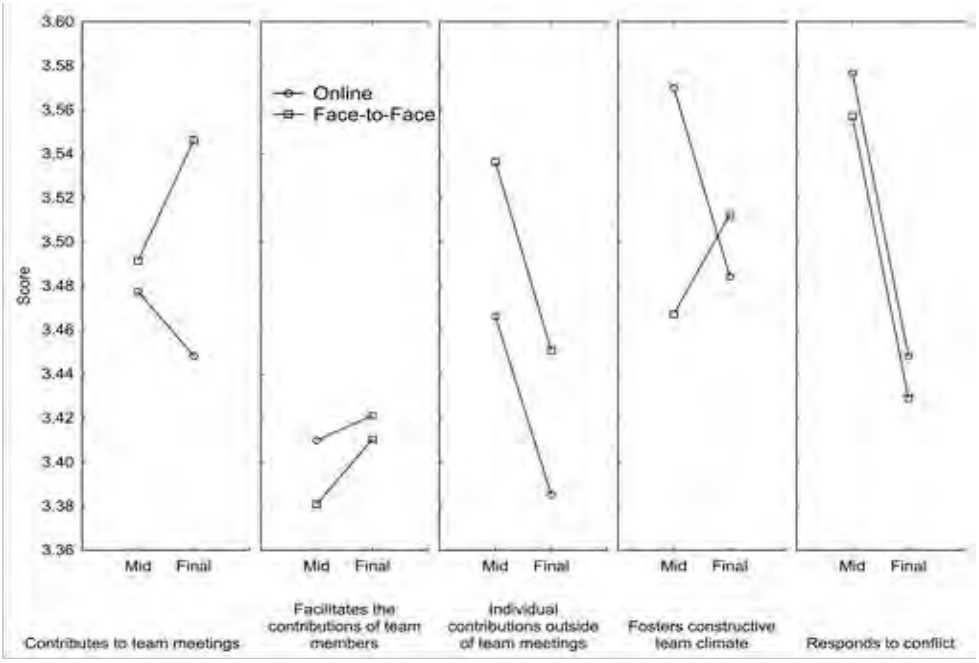


Figure 3:
Teamwork Rubric Ratings – Online



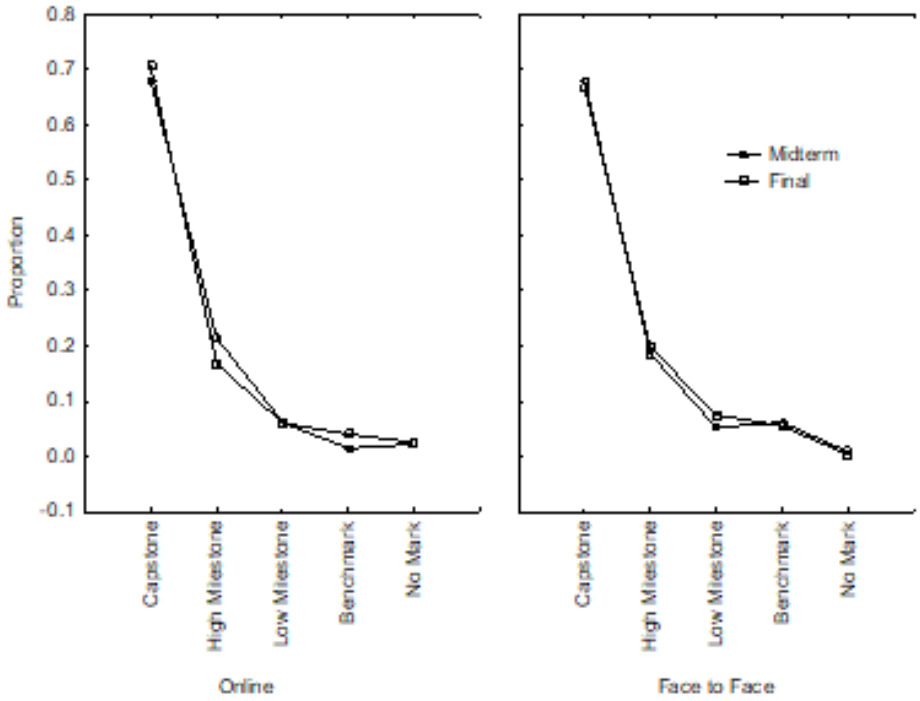
A 2 (Class: Online/Face-to-Face) X 5 (Category: Contributes to team meetings, Facilitates the contributions of team members, Individual contributions outside of team meetings, Fosters constructive team climate, Responds to conflict) X 2 (Midterm Ratings/Final Ratings) mixed model repeated measures ANOVA was conducted on the scores given to the students (ranging from zero to four). As exploratory research, we had nondirectional hypotheses that the teamwork scores might show differences between the class type, the category of evaluation, and timing of the rating, while the null hypothesis would suggest that no differences would occur across these variables. None of the main effects nor interactions was statistically significant, with $p>0.05$ in all cases. The overall ANOVA interaction, for example, was $F(4,310)=0.125$, $p>0.05$. This indicated that neither the online nor face-to-face classes experienced a significant change in their teamwork scores from midterm to final. Neither was there a significant difference in scores between the face-to-face and online classes (See Figure 4).

Figure 4:
Overall Interactions Across all Groups



A 2 (Class: Online/Face-to-Face) X 5 (Levels: Capstone, High Milestone, Low Milestone, Benchmark, No Mark) X 2 (Exam: Midterm/Final) mixed model repeated measures ANOVA was also conducted. For this exploratory research, our hypotheses were that differences might occur between the class delivery mode, the level of teamwork achieved, or whether the exam was given midway through the semester or as the final. The null hypothesis for each of these was that no differences should occur. While the overall ANOVA interaction was non-significant, $F(4,248)=0.52$, $p=0.72$, both the Exam, $F(1,62)=4.68$, $p=0.03$, and the Levels, $F(4,248)=148.26$, $p<.001$, main effects were significant. No other effects were statistically significant. Tukey post hoc tests indicate that, for the Exams main effect, scores on the Final were higher than those on the Midterm; for the Levels effect, the Capstone and High Milestone categories were significantly different from each other and statistically different from all other categories. See Figure 5.

Figure 5:
Levels Effect



Additionally, teamwork scores for each student were compared between midterm and final evaluations. Results showed that in the face-to-face class:

- 10 students regressed (40.7%)
- 11 students improved (37.0%)
- 6 students maintained a perfect score of only Capstone ratings (22.2%). It should be noted that 4 of the 6 all belonged to the same team.

In the online class:

- 14 students improved (37.8%)
- 14 students regressed (37.8%)
- 7 students maintained a perfect score of only capstone ratings (18.9%). It should be noted that 4 of the 7 all belonged to the same team.
- 1 student (2.7%) received the exact same ratings on the midterm and final, and therefore kept the same score.
- 1 student (2.7%) received the same teamwork score on both the midterm and final, although from a different combination of nominations from each evaluation.

Discussion and Implications

An important insight from the findings is that delivery modality did not impact ratings, suggesting that teamwork can be equally effective across student teams who meet in person or virtually. No significant differences were found between online and face-to-face with either the VALUE rubric of the 180-220 point scale. The online class obtained a higher percentage of Capstone, or highest, ratings from midterm to final, while the face-to-face regressed with a lower percentage of Capstone ratings. However, overall teamwork scores for both modes were nearly identical from midterm to final and

did not differ significantly differ. The finding is contrary to previous findings for non-student virtual teams (Driskell et al., 2003), but supports research that face-to-face and online student teams can both be effective (Saghafian & O'Neill, 2017). Given the increasing use of virtual teams in global contexts, preparation for this is important for business students.

Next, the analysis demonstrated that finals scores were higher than those on the midterm and that Capstone and High Milestone categories were significantly different from each other and statistically different from all other categories. This finding also differs from some previous research, which shows a regression over time and multiple evaluations (Mayo et al., 2012). The finding suggests that having formative feedback at midterm did impact subsequent behaviors, and specifically improvement in teamwork skills. It also indicates that students made a meaningful distinction between the two highest categories even though students gave each other high ratings overall. In other words, their evaluations may be more accurate than previously thought (Kruger & Dunning, 1999; Jassawalla et al. 2009; Walker, 2001). The structuring of the assignment and the tools provided may account, at least in part, for the effectiveness of the teamwork and the positive peer evaluations. Due to the quantitative nature of the study, insights into student experiences with successes and challenges, is not available although multiple factors were likely impacting students' performance such as personal and life situations.

It should be noted that research-based practices for effective teamwork were implemented in the course. Students had access to a number of tools to help them be successful, including study units on team formation (Tuckman, 1965; Tuckman & Jensen, 1977) and the characteristics of effective teams (Gonzalez-Roma & Hernandez, 2014; Hackman, 2002; Peralta et al., 2015; Stewart & Barrick, 2002; Thompson, 2000). They were required to submit a team charter which outlined their norms and roles, and the face-to-face class had class time to work together (Hansen, 2006; Pfaff & Huddleston, 2003; Schultz et al., 2010). They were assigned teams, rather than selecting their own team members (Chapman et al., 2006). The student teams were self-managed; that is, they planned their own work, assigned tasks, determined deadlines, made decisions, and addressed problems. Information about employer-valued skills and the role of HIPs was also provided.

Additionally, the findings of the study have real-world application. Businesses wanting to improve team performance should provide training on effective teamwork, including the creation of a team charter and possible guidelines with summaries of relevant organizational behavior concepts and theories (e.g., conflict, diversity, groupthink, etc.). They should also incorporate team member self-reflections and peer team member evaluations with careful review of the data to enhance effectiveness.

Conclusions

The positive impact of teamwork on students preparing for business careers and by employers across sectors is well-established (Biggs & Tang, 2011; Campbell & Cabrera, 2014; Hall et al., 2004; Hart Research Associates, 2015; Ohl & Cates, 2006; Pfaff & Huddleson, 2003; Schultz et al., 2010; Scott-Ladd & Chan, 2008; Volkov & Volkov, 2015; Wageman & Gordon, 2005). Somewhat surprisingly, however, is that assessment of teamwork in business schools is decreasing (Kelley et al., 2010; Martell, 2007; Wheeling et al., 2015).

Given the availability of the VALUE rubric and the various ways it can be used, much potential exists to give students formative feedback on their development of teamwork skills, particularly since teamwork is highly valued by employers. Similarly, AACSB schools should reconsider including this as one of their outcome measures (Wheeling et al., 2015). It should be noted that the VALUE teamwork rubric is typically

used as a summative rather than a formative measure. It is often used as program level assessment to determine the need for curricular changes. This study demonstrates that it can be effectively used to provide formative peer feedback, and also provide the instructor with insights into what is happening with teams while the class is in process (at least on a holistic level).

Key takeaways from the study are that team peer review encouraged a pattern of improvement for students in both face-to-face and online modalities. This occurred through the structure provided in the course based on assignment set-up and related course work. As such, business and management educators will want to ensure that guidance and supporting assignments, such as team charters and application of relevant theories, characterize their approach. Furthermore, students' score selections showed a distinction, suggesting that they gave some thought to their evaluations rather than giving in to peer pressure, wanting to be agreeable or lenient, or being unable to differentiate or make such judgments (Inderrieden, Allen, & Keaveny, 2004; Kruger & Dunning, 1999; Jassawalla et al., 2009; Saavedra & Kwun, 1993; Walker, 2001). Training is needed so that students are interpreting the descriptions and scales in the same way, but this study provided evidence that they are taking the task seriously.

Future research is needed to get student responses to the use of the rubric and to how they implemented it. Additional research is also needed to determine actual learning outcomes associated with teamwork to add to current evidence supporting the value of HIPs and their elements (Finlay & Brown McNair, 2013).

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