

Debate : An Activity to Enhance Collaboration in Online Courses

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Abstract—This paper will discuss the experience of using “debate” in online courses, and how argumentation helps in increasing the collaboration among online Graduate students. The paper investigated the relationship between the degree of online collaboration and quality of debate among four teams. Eighteen online graduate students were assigned in four teams of equal strength to work on a debate project during a 13 week semester. Data from discussion threads, emails, chat, online journals, and scores in the debate project were collected and analyzed. Hathorn and Ingram’s four online group collaboration characteristics were used as the basis of our analysis. Our results indicate a strong relationship between the degree of online collaboration and quality of debate as indicated by teams’ scores in these debates.

Index Terms—Collaboration, debate, interaction, synthesis.

I. INTRODUCTION

Since the 1990’s, corporate America has given great importance to teams and teamwork. Companies are seeking individuals who have the ability to work effectively in a team environment. Organizations are quickly learning that empowered work teams can and do offer creative and competitive solutions to problems such as product quality, morale, productivity, and most importantly, the viability of the organization [1]. The ability to work in a team and manage teams is an essential skill that quality employers are seeking in new employees. While academicians were working on developing ways of teaching “teamwork,” the new digital age pushed the concepts of virtual teams into the corporate world. In purest terms, virtual teams are individuals working together who have never met each other in person and probably will not meet face-to-face during the assigned project [2]. A similar work environment exists in the academic world’s increasingly popular online courses. Teaching students how to collaborate, or develop and work in teams while emulating a real work environment, is an essential part of any graduate and undergraduate program.

Hara and Kling, [3], conducting a study of online courses and found that feelings of isolation were an important stress factor for online students, but not the primary factor as frequently mentioned in the professional literature. For online graduate courses, teaching the principles of teamwork and letting students work in teams is a challenge for several reasons. In most cases, online students have the perception that they can complete the course work at their own pace, so when they interact in the online class they have difficulties in adjusting to the course outline. Secondly, students in multiple time zones make scheduling meetings a logistical nightmare. Finally, most of these online graduate students are full time employees, thus finding appropriate time to complete interactive activities also becomes an issue.

One way to teach such concepts would be collaborative learning. Collaborative Learning (CL) is a personal philosophy, not just a classroom technique. In all situations where persons come together in groups, it suggests a way of dealing with people which respects and highlights individual group members’ abilities and contributions. The underlying premise of CL is based upon consensus building through cooperation by group members, in contrast to competition in which individuals beat other group members. CL practitioners apply this philosophy in the classroom, at committee meetings, with community groups, and generally as a way of living with and dealing with other people [4]. Collaborative learning allows students to work in teams and encourages them to share multiple ideas and points of view that promote interaction between them [5].

The Engineering Management graduate online program at Eastern Michigan University has developed various courses that utilize the concept of Collaborative Learning. Several online learning activities were created in multiple courses where students are required to work in teams. Teams are provided with several collaborative tools, emails, chat, threaded discussions, facebook, and Skype. This paper will describe the online “Debate” activity. One of the objectives of such an activity is to enhance teamwork among students. We will also present the results of a study that gauged the collaboration among students during the debate activity.

II. DEBATE AS A LEARNING TOOL

Debating is a widespread teaching tool, from elementary schools to universities [6]. In the United States debates were popularized in 1858, when Stephen Douglas defended his Illinois senate seat against Abraham Lincoln [7].

A debate is a contest, or perhaps, like a game, where two or more speakers present their arguments intent on persuading one another or an audience. In his book, *How to Debate*, Harrison Boyd Summers, [8], identifies the importance of debate, including learning to use the library, finding exact information in the shortest possible time, learning to be thorough, improving accuracy, enhancing analytical ability, distinguishing between the vital and the unimportant, and supporting every statement with valid evidence and sound reasoning.

There are several aspects of learning, especially in higher learning, where analyzing various points of views before reaching a conclusion is important. In real life we make decision based on several point of views. In management, one is presented with facts, figures, data, and information. Managers have to create their own point of view and create a response based on the information. This also helps in making decisions. Making decisions based on quantitative data analysis is easier than qualitative data. Debate is an active learning technique

that encourages students to be interested in the teaching-learning process, while offering significant benefits [9]. Doody [6], demonstrated an increase in retentions and effective teamwork among residents who utilized debate as a class learning tool.

III. DEBATE PROCESS

Eastern Michigan University’s Engineering Management online graduate classes have been using debate as a way to teach, to extract information in the shortest possible time, to analyze differing points of view, and finally, to take sides and make effective decisions. Following is the debate process:

In the first week students are asked to create teams. The maximum number of team members can be either 4 or 5 depending upon class size. A web site is available that contains skills information for all students in the class. Students then place themselves in teams. Instructors ensure that both teams have an equal number of students and diverse skill sets. Each team selects a team leader and provides their name to the instructor by the second week. By the end of this week the online “Debate Discussion Board,” Table 1, is made available to the teams. This explains how the debate will function, and how much time will be available to write a response.

TABLE I.
ONLINE DEBATE FORMAT

<p>1. Introductory Statement: Working with you teams you will develop an introductory remark. This introductory statement should not be more than 600 words. You can start working on this statement at the start of this unit, however, please don’t post it until the debate day and time. You can write your introductory statement prior to starting the debate thus saving your team valuable time. You will have 10 minutes to post this statement from the start of the debate time.</p>
<p>2. Pro and Con Remarks: Next, using your opponent’s introductory statement, write your remarks refuting their statement. This remark should challenge your opponent’s point of view. This remark should not be greater than 700 words. You will have 20 minutes to post this remark, starting from the time when your opponent posted their introductory statement - e.g. if your opponent posted their introductory statement at 1:00PM then you need to post your remark by 1:20PM.</p>
<p>3. Response: You will now reply to your opponent’s remarks in no more than 600 words. You will have 20 minutes to post your response starting from the time when your opponent posted their remarks as in Step 2</p>
<p>4. Rebuttal-Questioning: Next, you can ask your opponent two questions. Each team will first post one question and wait for the other team to reply. You have 5 minute to post your first question from the time your opponent posted their response as in Step 3 and have another 10 minutes to reply to your opponent’s question once it is posted. You can then post your second question. Similar timing will be followed for posting and answering the second question. You should have answers prepared which will be used to respond to your opponent’s questions. To prepare, imagine that you are a member of the other team and determine what questions may be asked of your team</p>
<p>5. Closing Remarks: Using all comments in the first four steps, write a closing remark. This remark should not be more than 250 words. You have 20 minutes to write this closing remark after the questions are answered in Step 4.</p>

In the third week, teams are given the debate topic along with two documents describing opposing points of view. Students select a particular point of view, thus identifying if they will be speaking “for” or “against” the debate topic. During this week students are also given the

opportunity to learn ways to analyze various “points of view,” when to suspect information as propaganda, or generalization of ideas, appeal, etc. so that they can avoid such traps when analyzing the debate topic. The first step in preparing for the debate is to review and evaluate both sides of the discussion, which helps them in examining their positions. Lectures are provided on ways of examining points of views and how to create issue evaluation forms which help them outline various arguments and to organize their thoughts on types of questions that can be asked from the other side.

Next, team discussion boards are created. Students are asked to work in collaboration using email, conference calls, Skype, or any other net-meeting tool and discussion board. Teams are asked to keep instructors in the loop when they are corresponding among each other. Students are also given information on how the debate will take place.

Currently, we are conducting live online debates using Elluminate, and also through online discussion threads. This paper will explain the debate process offered though the online discussion thread only. In the online debate discussion thread, teams first agree upon a specific day and time to conduct the debate. Usually they are given four weeks to prepare. During this time, instructors monitor student collaboration and preparation through these team discussion boards, emails, chats, and conference call meeting minute notes they have compiled in their online journals.

On debate day, team members are in direct communication with each other through Skype and team threaded discussions, or a conference call to collaborate on their responses. It is usually the team leader who will post the arguments and information; however, any team member is able to write team comments.

Following guidelines were given to all students and debate was evaluated using the rubric provided in Table 2.

- Use of supporting materials outside of the text readings.
- Grasp of the issue and important related points.
- Proper use of supporting empirical evidence.
- Identification of points of agreement and points of disagreement.
- The ability to anticipate and counter opposing viewpoints.
- Use of supporting points.
- The ability to see and challenge flaws in the opposition's arguments and research, as well as in one's own.
- Use of constructive criticism and rationales.

IV. METHODOLOGY

Evaluating the effectiveness of any new learning activity is important to continuously improve the course. One of the objectives of using the debate activity is to make students collaborate in an online environment. Thus, gauging debate effectiveness, by comparing the degree of collaboration among team members and teams’ final debate scores based on the rubric defined in Table 2. Before we proceed, we should define the difference between cooperation and collaboration in learning.

TABLE II.
TYPE SIZES FOR CAMERA-READY PAPERS

The objective of debate on such topics helps in getting better understanding on facts/fictions, politics/science and ethics/freedom. This also helps in ensuring that points of view and opinions should be argued using concrete and defensible data. Finally, it's OK to back-off if the other party has better arguments and data. However, the latter did not happen in this debate, both teams did a great job in presenting their point of views. Below is your team marks in the 10 items you were evaluated on.	
1 = Weak; 2 = Moderately Weak; 3 = Average; 4 = Moderately Strong; 5 = Strong	TEAM Score
1 Team's statements are accurate and well researched	
2 Team's contributions demonstrate understanding of the topic and related concepts	
3 Team delivers ideas in a clear and concise manner, without too much reliance on notes	
4 Participants wrote clearly enough to be understood	
5 The debate follows the appropriate format and time limits	
6 Rebuttal statements are appropriate and show that participants read to and understood the opposing arguments	
7 The debate fulfills the requirements of the assignment	
8 Overall, the debate represents the full potential of the participants	
9, Claims show evidence of research	
10, Final statements effectively summarized salient points and improved the team's position	
TOTAL	

Cooperation occurs when individuals in a group divide the work so that each member solves a portion of the problem. In contrast, *collaboration* is the interdependence of the group members as they share ideas and reach a conclusion [10]. Reference [10] proposed that a *collaborative group* is a group that works together to achieve a common goal which exhibits attributes like: interdependence, synthesis of information, and independence. These attributes are measurable by analyzing the patterns of participation and interaction of groups. Reference [11] added participation as the fourth attribute to study the relationship between degree of online collaboration and the quality of the group project among four teams. In this study we have utilized these attributes to investigate the relationship between online collaboration and the quality of debate. Below are the definitions of these attributes that will be followed in this study:

Participation is measured by the total number of all the debate related messages sent and received by the members of the group to each other and the instructor [10].

The dynamics of each group are created by the *interdependence* of the individuals within the group as members work towards the common goal [10]. Interdependence includes supporting each other, offering help to others, attentively listening, quickly responding, and sharing workload [11]. It is not cooperation. The interaction among team members involves referring explicitly or implicitly to prior substantive messages in a discussion. In this study, all responses will be referred to as participation and discussion, but only threaded discussion will be referred to as interaction [10].

Synthesis of information refers to the generation of an outcome that is distinct from individual contributions [10].

This is actually a reflection of teamwork where multiple ideas are generated by team members that are then negotiated into a collaborative and collective outcome [11].

Independence involves solving problems as a team, and ultimately, is key for being independent. Not relying on instructors for answers is necessary for students to develop problem-solving skills with peers [12]. Any communication directed towards the instructor will thus be counted as opposite of independence

V. DATA COLLECTION

Eighteen students of a graduate online Ethics and Leadership course for the Engineering Management program participated in this study; the course is required for all Engineering Management students. Students used eCourse as the online learning management system. Within eCourse they were given the opportunity to communicate via email, discussion threads, chats, and journals. Students were also allowed to communicate via conference calls. When students communicated through conference calls they are required to write meeting minutes and must include, in detail, all discussed issues and participant contributions. All students were taught from the same course module.

There were four teams participating in two separate debates on the same topic. Team A and Team B had 5 members each, while Team C and Team D each had 4 members. Team A debated Team B, while Team C debated Team D.

Participation data was collected by counting the number of sentences on the team discussion board, reviewing email they have sent to each other, evaluating the number of chats, along with reading the conference call meeting minutes. In the meeting minutes, participation was judged by counting sentences that illustrated the fact that team members shared ideas or originated an idea. A higher participation number shows effective communication, a desired quality for teams. Table 3 illustrates the participation numbers for all teams. The number in (), is the average number of sentences per participant for that team.

To calculate interdependence, threaded discussions, chats, and meeting minutes were analyzed. Table 3 illustrates interaction patterns in discussion threads. Each team member is identified as an alphabet letter, so a team with 5 members will be a, b, c, d, and e. A qualified pattern is one where all members have participated in the discussion, e.g. a-b-c-d-e (sequence does not matter). Sometime such threads continue further, indicating an intense interaction. Such patterns are indicated as a-b-c-d-e-x. Similarly for Chats, patterns were identified and counted. Finally, meeting minutes were analyzed. To pre-qualify meeting minutes for qualified pattern recognition, all members of the team needed to be present in the meeting. Qualified patterns in such meeting minutes are the number of decisions that the team made in the meeting. Higher qualified patterns mean a higher team collaboration and interaction.

Synthesis was calculated by analyzing every threaded discussion, email, chat, and meeting minutes to identify when a new idea was generated or when team members discussed different points of view and illustrated hard facts or citations. A higher synthesis number meant that

the team members were constantly exploring new ideas and different views to create arguments against and in favor of their debate topic.

TABLE III.
DATA FOR DEGREE OF COLLABORATION

Debate 1	Team 1	Team 2	Team 3	Team 4
Participation (Total statements)	924 (184.8)	885 (177)	675 (168.75)	696 (174)
Interdependence (Interaction Pattern)	14 a-b-c-e	28 d-c	19 a-b-c-d	11 b-c
	18 c-d-a-e	59 a-e-d	22 a-d-c	21 b-d
	19 a-c-d-b-e	29 a-e-b	29 a-c-b	28 b-a
	15 c-d-a-e-b	29 a-d-c-b-e	12 a-d-b-c	33 a-c-b
	21 b-d-e	23 b-c-d	26 a-d	43 a-b-c-d
	29 c-d	12 a-c-b-d-e-x	13 a-c-b	34 c-d-b-a
	31 a-d-b	9 a-d-c-e	31 qualified patterns	8 c-d
	11 a-b	12 e-a-c	77 qualified patterns	
	34 qualified patterns	41 qualified patterns		
Synthesis (New ideas)	81 (16.2)	109 (21.8)	68(17)	95(23.75)
Independence (Interaction with instructors)	4 (0.8)	1(0.2)	5(1.25)	2(0.5)

Independence are the number of emails that team members sent to the instructor related to the debate topic, teams and team members. Emails related to the explanation of the debate process were not counted. A lower number illustrates higher team independence.

Debate scores for each team were also recorded using the rubric illustrated in Table 2. Team debate performances were then ranked. A higher score indicates that team performed well in the debate.

VI. DATA ANALYSIS AND RESULTS

The coding system used in this study was identified by Hathorn and Ingrams, [10], and was also used by Thompson and Ku [11]. Two different analyses were conducted. The first compared degree of collaboration among all four teams, and in the second, comparison was made among the competing teams only.

A. Comparison of Teams

Table 4 documents the analysis for all teams. As teams have different numbers of members, data was normalized for average. When all teams were compared, Team A turned out to be the most vibrant. Their five team members posted 924 sentences (or 184.8 sentences per team member) in the team discussion board, email they have sent to each other, number of chats, and in all conference call meetings. Team B (177) was second,

followed by Team D (174), with Team C (168.75) contributing the least.

The level of independence observed by the number of qualified pattern in participants was highest for Team D (77). On average 19.25 qualified interactions took place among the four team members. Although Team A generated the most participation sentences (184.8 sentences per team member), they generated the lowest qualified pattern. In reviewing Team A participation sentences it became apparent that not all Team A members always participated in discussions. Thus, most participation could not qualify as interdependence. Most participation from Team A took place among a few team members, as Team A had divided their work and only members of specific tasks participated in discussions. Therefore, although Team A members cooperated with each other, they did not collaborate.

In terms of synthesis, Team D made the most, averaging 23.75 statements per team member. Team B was second with 21.8 statements per team member that helped them develop new ideas and solve problems. Finally, the level of independence for Team B was the most as they, on average, sent only 0.2 messages to their instructor. It indicates their independence. Team C sent the most messages to their instructor, on average 1.25, indicating a very low independence. Complete analysis is summarized in Table 4.

TABLE IV.
DATA FOR DEGREE OF COLLABORATION

	Debate 1			
	Teams			
	A	B	C	D
Participation	924 (184.8) [1]	885 (177) [2]	675 (168.75) [4]	696 (174) [3]
Interdependence	34 (6.8) [4]	41(8.2) [2]	31 (7.75) [3]	77 (19.25) [1]
Synthesis	81 (16.2) [4]	109 (21.8) [2]	68 (17) [3]	95 (23.75) [1]
Independence	4 (0.8) [3]	1 (0.2) [1]	5 (1.25) [4]	2 (0.5) [2]
Degree of Collaboration	[12]	[7]	[14]	[7]
Rank	2	1	3	1
Debate score	46	48	45	49

* Total Score (Score /participant) [Rank]

Degree of Collaboration for all teams was calculated by adding their ranks for all attributes. The team with the lowest degree of collaboration number will have the highest degree of collaboration. To rank levels of participation, synthesis, and interdependence among the teams, all numbers were normalized per team members for all teams. Based on the ranking, Team B and Team D scored the lowest number (7), indicating a higher degree of collaboration among these teams. Team A scored 12 and Team C scored 14, and thus ranked second and third. Therefore, based on our analysis, Team C was the least collaborative team.

B. Comparison Among Competing Teams

Debates were contested among Team A and Team B, and among Team C and Team D. A second analysis was made to compare degree of collaboration among

competing teams. When Team A and Team B were compared, analysis similar to session 6.1 was conducted. Table 3 illustrates the analysis. The sum of ranking for Team B is 5 and Team A is 7. Therefore, Team B has a higher degree of collaboration than Team A. Comparing the individual attributes it can be seen that Team A has more participation statements (924), than Team B (885). However, Team B has generated more qualified patterns and new ideas. Thus, Team A has more cooperation rather than collaboration. This also reveals that participation alone is not sufficient in evaluating the degree of collaboration, and effective collaboration requires interdependence and synthesis.

Next, Team C and Team D were compared in similar fashion. The sum of ranking for Team C is 8 and for Team D is 4. Thus, Team D has a higher degree of collaboration than Team C. Team D is ranked number one in all attributes, showing a clear winner with highest degree of collaboration.

C. Debate Scores

Each team participated in the online debate and was evaluated by the instructor based on the rubric in Table 4. From the maximum of 50 points, Team D scored the highest points (49) followed by Team B (48), Team A (46) and Team C (45).

TABLE V.
DEGREE OF COLLABORATION-COMPETING TEAMS

Debate 1		
	Teams	
	A	B
Participation	924 (184.8) [1]*	885 (177) [2]
Interdependence	34 (6.8) [2]	41(8.2) [1]
Synthesis	81 (16.2) [2]	109 (21.8) [1]
Independence	4 (0.8) [2]	1 (0.2) [1]
Degree of Collaboration	[7]	[5]
Rank	2	1
Debate score	46	48
Teams		
	C	D
Participation	675 (168.75) [2]	696 (174) [1]
Interdependence	31 (7.75) [2]	77 (19.25) [1]
Synthesis	68 (17) [2]	95 (23.75) [1]
Independence	5 (1.25) [2]	2 (0.5) [2]
Degree of Collaboration	[8]	[4]
Rank	2	1
Debate score	45	49

* Total Score (Score /participant) [Rank]

Comparing team debate scores with the degree of collaboration, Table 3, revealed that Team D with highest degree of collaboration also scored the highest (49) points in the debate scoring. Similarly, Team C with the lowest degree of collaboration also scored the lowest (45). Team D and Team B are ranked number one and two in degree of collaboration, and their debate scores are also in the same order. This shows that there is a strong relationship between a team’s online debate score and the degree of online collaboration.

Comparing overall ranking of paired teams, Table 5, it was shown that Team D (4) and Team B (5) with similar

degrees of collaboration also have very similar debate scores (Team D 49 and Team B 48). Similar observations can be made in evaluating the lower scores for Team A and Team C.

VII. CONCLUSIONS

The study has supported the fact that team collaboration always enhances team performance. In our example, team performance in an online debate activity was studied. The study illustrated an improved team performance by utilizing online debate as a learning activity. Student used collaborative tools like discussion groups, affective meetings, chats, and emails to prepare for online debate. Developing creative online activities, like online debate, can help students to collaborate effectively while also addressing the issues with isolation or feeling “lost” in online classes. Research will continue in exploring how degrees of online collaboration will affect team performances for live debate using Skype (video chat), SMS/MMS, and discussion boards, along with how degrees of online collaboration can be related with a team’s peer evaluations.

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