

Group reporting as a tool to enhance the quality of courses

The response of database students to online cooperative learning

Mari Anjeli Lubrica Crisanto

*Faculty of Information and Communication Studies,
University of the Philippines Open University, Los Baños, The Philippines*

Group
reporting
as a tool

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Abstract

Purpose – Group reporting, a form of cooperative learning, is a learning tool often employed in residential teaching to facilitate quality learning. Like other cooperative learning methods, it enhances learning in classrooms by allowing students work on activities in small groups to receive rewards based on their group's performance. However, though group reporting is often done in face-to-face settings, few up-to-date literature has shown its application in online learning. Moreover, the question as to whether online cooperative learning through group reports yields positive or negative response from students has to be studied further. The paper aims to discuss these issues.

Design/methodology/approach – This study focuses on the students' response to the group reporting activity carried throughout one semester. A course offered by the University of the Philippines Open University on database management systems made use of group reporting to add to the students' learning experience. Group meetings along with regular online lectures were carried out during the first half of the semester. The output group reports were then presented during the second half and served as the main resource for those weeks' study modules. An online survey with Likert scales drawing out the student reactions on the learning activity impact was administered to volunteer respondents at the end of classes.

Findings – In total, 71.9 percent of 32 respondents observed changes in their behavior after using peer and cooperative learning technologies. The respondents also indicated that they enjoyed the group reporting activity (14 agreeing strongly, 14 agreeing moderately). They also indicated that they were motivated to learn the course through the group reports (8 agreeing strongly, 14 agreeing moderately). However, when asked if they preferred to have all the modules in group report format 9 agreed moderately, 8 disagreed moderately, 7 disagreed strongly, 4 agreed strongly, and 4 neither agreed nor disagreed. Still, overall, online cooperative learning facilitated quality learning based on this study's results.

Originality/value – This study contributes to the body of knowledge by showing how group reporting can be applied online and how students have responded to it. The study also provides recommendations on how to conduct online cooperative learning in order to enhance the quality of courses, with implications for further research to look into variations with respect to the technology used for reporting and its suitability to a given course.

Keywords Online learning, Cooperative learning, Group reports, Quality assurance in ODE, Open and distance education (ODE), Open pedagogies

Paper type Research paper

1. Introduction

Cooperative learning has had a substantial revival in educational research and practice in recent years. It is a technique wherein students work on learning activities in small groups and receive rewards based on their group's performance (Slavin, 1980). This type of learning is hinged on a learning theory called connectivism. Connectivism is a learning theory which moves the power in education away from individuals such as instructors and single learners



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onto a collective group. Although individual work still exists in connectivism, this learning theory focuses on the network and connections rather than individuals (Siemens, 2005). The more benefit learners could gain from connections with other learners, the more a course needs to make use of connectivism (Crosslin, 2016).

Connectivism makes use of learner-learner interactions. Moore and Kearsley identified three interactions in distance education: learner-content interaction, learner-instructor interaction, and learner-learner interaction. Of the three, learner-learner interaction “is a relatively new dimension for teachers in distance education.” Learner-learner interaction can be interaction between groups with students meeting face to face and it can be interaction where the individuals only meet in online settings. Students generally find interaction with their peers to be motivating. Course designers are recommended to use real or virtual groups to generate content, especially when students can be grouped to make presentations for their peers (Moore and Kearsley, 2012).

Cooperative learning in the form of group reports allows such groupings and presentations to take place. Aside from the benefits arising from it being a learner-learner type of interaction, cooperative learning is also beneficial because it combines and promotes both academic and social skills, in addition to being useful in culturally diverse classrooms. Cooperative learning gives students the chance to learn in an environment that is dynamic and creative growing out of the interaction of diverse backgrounds, interests, experiences, and ideas (Sharan, 2010). The cooperative learning mode provides a gender-friendly pattern that can empower students to have democratic values and behaviors needed for peaceful coexistence and sustainable development (Esiobu, 2011).

Using Jigsaw model of cooperative learning wherein a whole class can be divided into groups with four to six members with each group having diversity in terms of gender, race, ethnicity, and ability, a study was conducted to determine this strategy’s effect in promoting insightful learning of junior intermediate students in mathematics (Suresh and Reddy, 2017). The findings showed that the group of students who were assigned to the Jigsaw cooperative learning technique performed significantly better than those in taught using conventional methods. In addition, the performance of male and female students was also better when Jigsaw cooperative learning was done. Not only that, “Above average,” “Average” and “Below Average Students” who were part of the Jigsaw groups but also achieved significantly higher scores than counterparts who were taught conventionally.

Encouraging students to learn cooperatively will not only support their academic success but will also equip them for lifelong learning as well (Skalicky and Brown, 2009). In addition, students have also found the cooperative learning approach to be helpful in developing generic skills for their future careers (Ballantine and Larres, 2007).

Cooperative learning has also been found to enhance the quality of courses and students’ classroom experiences. Experiences of college students were compared during cooperative learning and large-group instruction and the overall quality of experiences was greater in cooperative learning. Different levels were taken into consideration but the research works reported that, “the quality of experience did not differ across instructional contexts for high- vs low-achieving students” (Peterson and Miller, 2010).

However, despite the potential benefits of cooperative learning at universities, implementing it is challenging (Buchs *et al.*, 2015). This holds not only in residential teaching but also for online teaching, where the literature for this is few.

Review of online cooperative learning studies resulted in the literature such as the following: one study had looked into the impact of online synchronous audio and video systems on the decision making and intellectual tasks of students who were engaged in cooperative learning (Chen *et al.*, 2006). Another looked into developing a system that enables teams to allocate project tasks and create ground rules, acting as a support for learners conducting virtual team working (Whatley, 2006). One also looked at how online

small groups can be created online and how their work practices and identities in turn develop (Goggins *et al.*, 2011). A more recent study, although focused on online collaborative learning, investigated the perspective of learners about how an ICT support system could facilitate peer interaction in the bachelor's and master's thesis process (Aghaei and Keller, 2016). In 2017, a study examined the effects of learner-learner interactions on satisfaction and learning in an online undergraduate course and found that "learner-learner interaction has a significant effect on students' achievement in an online course" (Kurucay and Inan, 2017).

The literature such as these provide respectable information. However, cooperative learning is constantly evolving with new models and procedures added all the time (Sharan, 2010). Thus, there is a need to conduct more up-to-date studies on how to conduct online cooperative learning so that educators can implement it especially as avenues for online learning continue to change. Moreover, since student perceptions of this type of learning provide a vital source for identifying necessary methods on how it can be carried out (Sharan, 2010), studies determining student response to online cooperative learning are necessary.

1.1 Background

Group reporting is a form of cooperative learning. Here, students are responsible for their own learning and for helping others learn. As a form of cooperative learning technique, it maximizes on the diversity of the people who are part of the group to foster dynamic and creative learning.

In the University of the Philippines Open University (UPOU), a course on database management systems (CMSC 206) includes a mix of students who are either taking up diploma in computer science or masters in information systems. The mix includes students who are learning about databases for the first time, those who are experts in databases and are using them daily in their occupations, and those who are in between. Because of this diversity, group reporting was included in the course's learning activities to enhance the students' learning experience. CMSC 206 classes, however, are conducted purely online. Students are often based in different parts of the Philippines as well as abroad and there are no face-to-face classes for this course.

1.2 Statement of the problem

Few literature have shown how cooperative learning in the form of group reporting is done online. Moreover, the question on what the responses of students are to online cooperative learning need to be studied further. This research paper focuses on determining students' response to cooperative learning done online.

1.3 Objectives

This study has the following objectives:

- (1) to identify the response of CMSC 206 students to online cooperative learning;
- (2) to determine if there were changes in behavior after the cooperative learning activities; and
- (3) to draw out from the students their observations about their behavior change.

2. Research design and methods

2.1 Online classroom setup

A semester in UPOU consists of 14 weeks. For CMSC 206, as taught in the first semester of 2016-2017, the first six weeks consisted of the faculty in charge (FIC) providing relevant resources and materials for modules on fundamental database concepts, database models, basic DBMS functions, transaction processing and concurrency control, and database

integrity and crash recovery. The next seven weeks then consisted of online group reports wherein groups consisting of nine to ten students presented topics on conceptual design, logical design, normalization, relational algebra, SQL queries, software system design, and database trends in the form of vlogs, screencasts, video animations and the like. These group reports served as the main resources for those weeks (i.e. Weeks 7-13). The online final exam was then held during the final week.

2.2 Group reporting guide

The students were given a group reporting guide at the beginning of the semester as instructions for the activity. The guide contained the groupings. Here, the students were grouped into seven groups with each group assigned to be a module topic to be reported from Weeks 7-13:

- (1) Group 1 – “Conceptual Design” to be released as a resource on Week 7.
- (2) Group 2 – “Logical Design” to be released as a resource on Week 8.
- (3) Group 3 – “Normalization” to be released as a resource on Week 9.
- (4) Group 4 – “Relational Algebra” to be released as a resource on Week 10.
- (5) Group 5 – “SQL Queries” to be released as a resource on Week 11.
- (6) Group 6 – “Software System Design” to be released as a resource on Week 12.
- (7) Group 7 – “Database Trends” to be released as a resource on Week 13.

The students were instructed to conduct group meetings using technologies of their choice by Week 2, several weeks before the first group reporting date. They were given the freedom not only to meet virtually through e-mail, Moodle, VoIP, or through their social networking sites, but they could also meet face to face in order to create their group reports. Group reports were to be presented in a form of a video or playlist uploaded online. The students had the freedom to create a vlog, a screencast, a video animation or anything that would meet the following criteria: content (50 percent); clarity (30 percent); and creativity and appeal (20 percent). Content would be assessed by the FIC, and clarity and creativity would be assessed by their peers. The total points for the group reporting activity would make comprise 20 percent of their final grade.

Each group was required to submit their output to the FIC one week before the topic was scheduled to be discussed in class so that their output videos could shown as the main reference in the course site during the week assigned to them.

2.3 Group membership

Each group had nine to ten members. The students were grouped according to the location they indicated in their profiles and, as much as possible, the groups contained students who specified the same location. However, there were a lot of offshore students and students who resided in different regions in the Philippines. Thus, most groups still had members who were spatially distant from each other.

2.4 Actual group meetings and group reports

The students were able to contact their groupmates upon the release of the groupings. They then conducted the group meetings as instructed using the technologies of their choice. Group meetings ran in parallel with their lessons for Weeks 1-6 until the group reports finally commenced in Week 7. Each group was able to submit their reports at least a week before the reporting date and the FIC was able to post these reports as the main resources for each corresponding week. Discussion questions based on the submitted reports were also posted in each week’s discussion forums.

2.5 Online questionnaires and analysis of data gathered

Online questionnaires were then distributed to the students at the end of the semester. This method of data collection was chosen taking into consideration the different locations of the students enrolled in the class.

The survey was voluntary and taking part in it did not affect their grades in any way. However, since the survey was not compulsory, there was a limitation in terms of the number of respondents. Of the 64 students who initially enrolled in the course, 57 remained active. This means that these 57 did not drop the course formally or informally. In total, 32 of 57 active students took part in the online survey (56 percent of the remaining population).

The questionnaire was divided into six parts: student demographics, technologies used, peer learning assessment, cooperative and collaborative learning assessment, overall evaluation, and comments and suggestions for CMSC 206. This research paper focuses on parts 1, 3, 4, and 5 of the questionnaire administered.

These were the questions asked for part 1 of the online questionnaire:

- (1) Gender (please choose only one):
 - Male.
 - Female.
- (2) Degree being pursued (please choose only one):
 - Diploma in computer science (DCS).
 - Master of information systems (MIS).
 - Other.
- (3) Age group (please choose only one):
 - Below 20 years.
 - 21-30 years.
 - 31-40 years.
 - 41-50 years.
 - 51-60 years.
 - Above 60 years.
- (4) What country do you reside in?
- (5) What group did you belong to? (Please choose only one):
 - Group 1: conceptual design.
 - Group 2: logical design.
 - Group 3: normalization.
 - Group 4: relational algebra.
 - Group 5: SQL queries.
 - Group 6: software system design.
 - Group 7: database trends.
 - Other.

For parts 3, 4, and 5 these were the questions asked:

(1) Peer learning assessment:

- Please evaluate each sentence as how you agree/relate with them personally. Please avoid answering (3) as much as possible. Only answer it if you truly do not have a stance in the statement:
 - the technologies I identified helped me learn from my peers;
 - the technologies I identified enabled me to share what I know with my peers;
 - learning from my peers (through these technologies) contributed positively to my learning experience;
 - I would have performed the same way or better if I worked in this course alone*;
 - interacting with my peers and sharing my work with them was difficult*.

(2) Cooperative and collaborative learning assessment:

- Please evaluate each sentence as how you agree/relate with them personally. Please avoid answering (3) as much as possible. Only answer it if you truly do not have a stance in the statement:
 - learning as a team enabled us to learn more about this course than learning alone;
 - the technologies we have used made it easier for us to collaborate;
 - the technologies we have used allowed us to accomplish our tasks quickly;
 - the technologies for collaboration made it more difficult for us to accomplish our tasks*;
 - we were able to accomplish more via face-to-face meetings than using the technologies*;
 - in accomplishing tasks, we were able to communicate with each other more conveniently through SMS, phone calls, and face-to-face conversations*;
 - having YouTube video presentations together allowed us to learn the course concepts more effectively; and
 - after taking this course I can see a positive impact in my behavior in terms of collaboration and cooperation in the work place.

(3) Overall evaluation:

- Please evaluate each sentence as how you agree/relate with them personally. Please avoid answering (3) as much as possible. Only answer it if you truly do not have a stance in the statement:
 - I liked and enjoyed the group reporting activity in this course;
 - I preferred to have all modules in group report format; and
 - I was motivated to learn the course through the group reports.
- Were there changes in your behavior after using peer and cooperative learning technologies? (Yes/No)
- If your answer was yes, please state your observations. If your answer was no, please state why.

The questions for parts 3, 4, and 5 were based on an earlier survey (Figueroa *et al.*, 2015) for peer and cooperative learning among distance learners in academic and private-public partnership initiatives. These were the parts adapted from Figueroa's questionnaire: Likert statements for "Peer Learning"; Likert statements for "Collaborative and Cooperative Learning in IS 272"; and the first part of "Perceived Behavior and Organizational Impact." Certain words (e.g. mentions of IS 272 and target organizations) were omitted from questions and were slightly modified to fit into the study's context. However, the thought and order of the Likert statements remained intact. The questions were then passed to a panel of online education experts who confirmed the face validity of each item.

Statements with an asterisk were negatively worded and had to be normalized during the analysis and interpretation stage.

The consolidated responses were analyzed by taking the Cronbach's α to test for reliability. The percent agree methodology was then used to determine the students' overall response to the online cooperative activity. The frequency of those who stated "strongly agree" and "moderately agree" were summed then divided by the total to determine the percent who agreed to the Likert statements. This was also done for the frequency of those who stated "strongly disagree" or "moderately disagree" to get the percent who disagreed. Neutral responses were simply divided by the total. As for the qualitative data gathered as responses to the question relating to observations in their change or lack of change in behavior after using peer and cooperative learning technologies, thematic coding analysis was used.

3. Results

In total, 32 of the 57 active students who took up CMSC 206 in the first semester of the academic year 2016-2017 participated in the online survey administered at the end of the course. The demographics of the participants are shown in Figures 1-5.

There were 19 female respondents (59.4 percent) and 13 male respondents (40.6 percent). In total, 19 (59.4 percent) were taking up master of information systems and 13 (40.6 percent) were taking up diploma in computer science. CMSC 206 is a core subject of DCS and an elective of MIS. In total, 50 percent (16 respondents) were 21-30 years old. In total, 34 percent

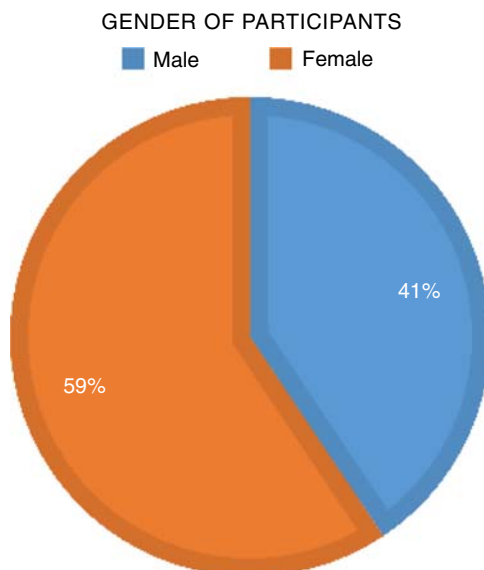


Figure 1.
Gender of participants

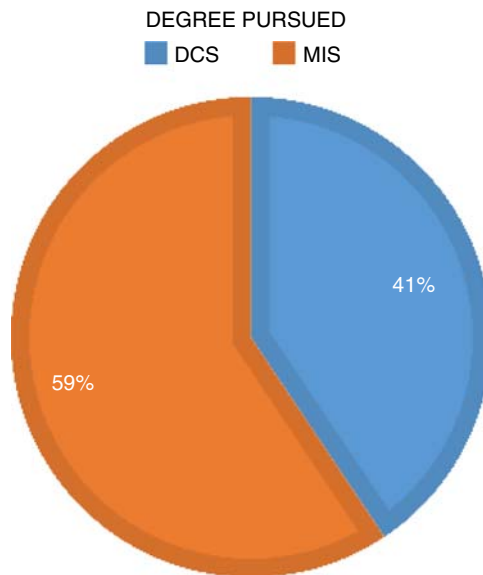


Figure 2.
Degree being pursued
by participants

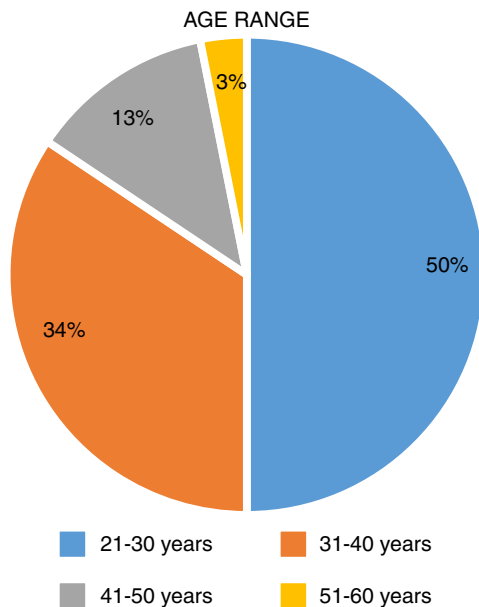


Figure 3.
Age range

(11 respondents) were 31-40, 13 percent (4 respondents) were 41-50, and 3 percent (1 respondent) was 51-60 years old. None of the respondents were below 20 years nor above 60 years.

As for the participants' location, the questionnaire only gathered the country where the participants resided in. In total, 24 were staying the Philippines, 3 in Singapore, and 1 each in Australia, Oman, the USA, Bahrain, and Nigeria.

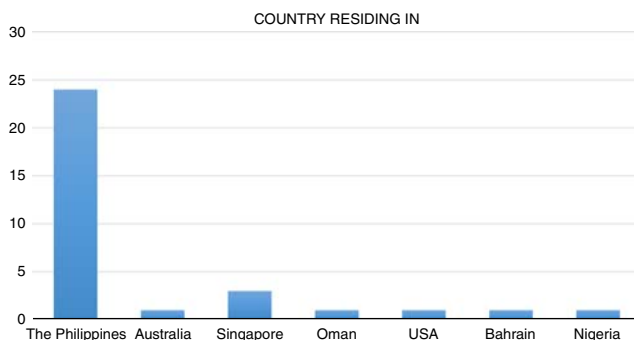


Figure 4. Country where participants are residing in

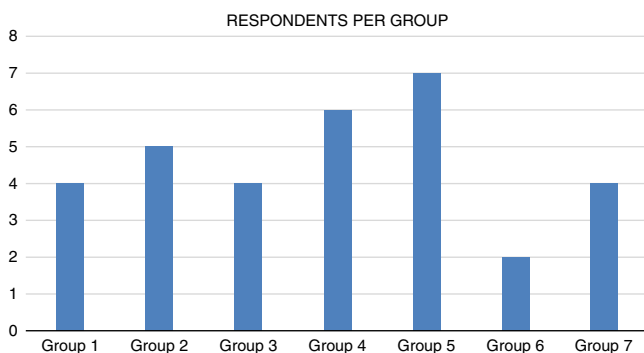


Figure 5. Respondents per group

The respondents comprised of four members from Group 1, 5 from Group 2, 4 from Group 3, 5 from Group 4, 7 from Group 5, 2 from Group 6, and 4 from Group 7.

These demographics show that the survey was able to gather results from almost equal number of males and females, thus giving little partiality to results in terms of gender. It was also able to gather results from almost equal number of master of information systems and diploma in computer science students, thus representing the two different levels of expertise in terms of degree being pursued. Most of the respondents were between the ages 21 and 40 implying this study's results could be relevant to Millennials (i.e. those born between 1996 and 1981).

The geographical data show that the respondents were indeed spatially distant from each other, though the cities of those who answered "Philippines" were not indicated.

As for the groupings, the survey was able to gather results from representatives of all seven groups.

3.1 Peer and cooperative learning results

Table I shows the agreement table of the consolidated responses to the Likert statements of parts 3, 4, and 5 of the administered online survey. Statements 1-5 comprise "Peer Learning Assessment" and statements 6-13 comprise the "Cooperative and Collaborative Learning Assessment" group. Statements 14-16 make up the "Overall Evaluation" portion.

More participants answered "moderately agree" and "strongly agree" compared to the other choices, indicating favorable responses to peer and cooperative learning through the technologies used. To interpret these ratings further, the percent agree scores were computed. The statements with an asterisk were those in negative wording and the

Table I.
Agreement table for
survey questions on
peer, cooperative, and
collaborative learning

No. Statements evaluated (Likert statements)	1	2	3	4	5
1 The technologies I identified helped me learn from my peers	0	1	1	16	14
2 The technologies I identified enabled me to share what I know with my peers	0	0	0	22	10
3 Learning from my peers (through these technologies) contributed positively to my learning experience	0	0	0	13	19
4 I would have performed the same way or better if I worked in this course alone*	10	13	5	4	0
5 Interacting with my peers and sharing my work with them was difficult*	17	12	1	2	0
6 Learning as a team enabled us to learn more about this course than learning alone	0	0	1	16	15
7 The technologies we have used made it easier for us to collaborate	0	0	1	14	17
8 The technologies we have used allowed us to accomplish our tasks quickly	0	0	1	16	15
9 The technologies for collaboration made it more difficult for us to accomplish our tasks*	17	10	2	3	0
10 We were able to accomplish more via face-to-face meetings than using the technologies*	9	11	10	1	1
11 In accomplishing tasks, we were able to communicate with each other more conveniently through SMS, phone calls, and face-to-face conversations*	8	7	7	7	3
12 Having YouTube video presentations together allowed us to learn the course concepts more effectively	1	0	1	19	11
13 After taking this course I can see a positive impact in my behavior in terms of collaboration and cooperation in the work place	0	0	4	12	16
14 I liked and enjoyed the group reporting activity in this course	0	0	4	14	14
15 I preferred to have all modules in group report format	7	8	4	9	4
16 I was motivated to learn the course through the group reports	0	7	3	14	8

frequency of “strongly disagree” and “moderately disagree” was computed for the percent agree scores and “strongly agree” and “moderately agree” for percent disagree. Figure 6 shows the percent agree-disagree chart of participants’ response to survey questions.

Looking at the general percent agree scores, only two statements had a percent agree score lower than 50 percent. In the statement “In accomplishing tasks, we were able to communicate with each other more conveniently through SMS, phone calls, and face to face conversations*,” the 47 percent score meant only 47 percent able to connect more conveniently using online technologies as compared to the offline ones mentioned. In the statement wherein they are asked if they preferred to have all the modules in group report format, only 41 percent agreed. Nine agreed moderately, eight disagreed moderately, seven disagreed strongly, four agreed strongly, and four neither agreed nor disagreed. It is unclear whether the students preferred just to have the seven modules in group report format as was done throughout the semester, or if they preferred to have some, or none at all. The statement could be worded better or a follow-up question on how many modules should be done in group report format could be asked.

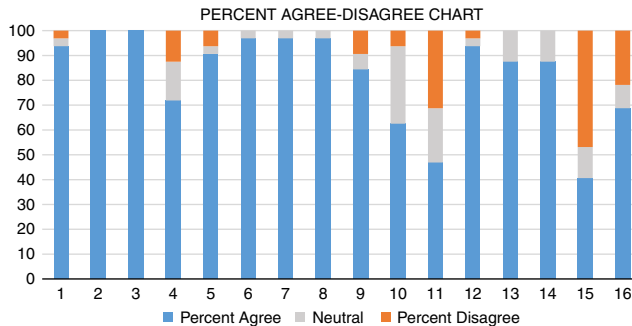


Figure 6.
Percent agree-disagree
chart of participants’
response to survey
questions

The rest of the statements (14 of 16 or 87.5 percent) had the majority agreeing as the percent agree scores were higher than 50 percent again showing that the students responded favorably to peer and cooperative learning. Seven of those statements had percent agree scores above 90 percent. These are shown in Table II.

These seven statements gathered the most favorable responses from the students. As a clarification, the technologies being referred to in the statements above were those which the participants identified as those used in their meetings and group reports (parts 1 and 2 of the online survey). Thus, based on these high responses, the activity allowed the students to learn from their peers and share what they knew easily, facilitated by the technologies used. They had a positive learning experience. Learning as a team helped them learn more and technology made collaboration faster and easier. Not only that, having YouTube video presentations together facilitated more effective learning. In addition, many of them found that interacting and sharing with their peers was not difficult (i.e. it was easy) as implied by the reworded Statement 5.

As for the "Overall Evaluation" section, 88 percent of the respondents had indicated that they enjoyed the group reporting activity. In total, 69 percent indicated that they were motivated to learn the course through the group reports. These indicate a positive evaluation though only 41 percent agreed to having all the modules in group reporting format.

Yet on the whole, the scores thus indicate that the participants found online cooperative learning to be agreeable.

Regarding the questionnaire's reliability, the responses for those 16 Likert statements had a Cronbach's α coefficient of 0.88 (good) indicating that the questions were reliable. The questionnaire's face validity was also confirmed by a panel of online education experts.

3.2 Behavior results

When asked if there were changes in their behavior after using peer and cooperative learning technologies, 72 percent (23 participants) responded yes while 28 percent (9 participants) responded no as seen in Figure 7. Table III shows the participants' observations on their changes in behavior copied in verbatim save for some minor grammatical edits.

The answers consolidated in the table show that many of the behavior changes were positive though there were some who did not experience any behavior change. Those who did not experience a positive change generally said no because the experience was not new or was not long enough to create a change.

However, those who experienced positive behavior changes outnumbered those who had none. Through thematic coding, most answers pointed out that they were able to experience improved personal dispositions, ways of thinking, social interactions, personal and group responsibility, and improved technological proficiency.

No. Statements evaluated (Likert statements)	Percent agree (%)
1 The technologies I identified helped me learn from my peers	93.75
2 The technologies I identified enabled me to share what I know with my peers	100
3 Learning from my peers (through these technologies) contributed positively to my learning experience	100
5 Interacting with my peers and sharing my work with them was difficult*	90.63 disagreed
6 Learning as a team enabled us to learn more about this course than learning alone	96.875
7 The technologies we have used made it easier for us to collaborate	96.875
8 The technologies we have used allowed us to accomplish our tasks quickly	96.875
12 Having YouTube video presentations together allowed us to learn the course concepts more effectively	93.75

Table II.
Likert statements with more than 90 percent participants agreeing

WERE THERE CHANGES IN YOUR
BEHAVIOR AFTER USING PEER AND
COOPERATIVE LEARNING
TECHNOLOGIES?
■ YES ■ NO

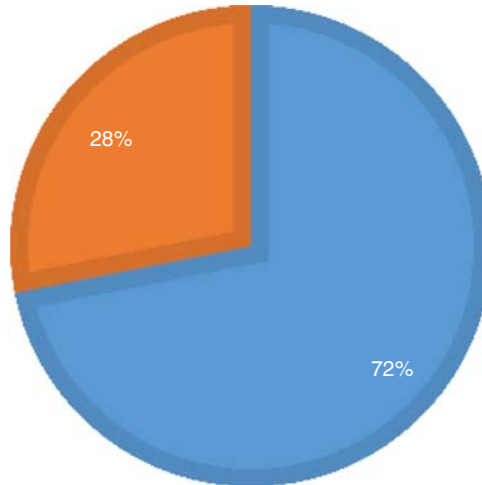


Figure 7.
Response of
participants to
changes in behavior
survey item

4. Conclusions and recommendations

The results of this study show that the CMSC 206 participants agree to online cooperative learning, their response toward this activity being positive.

For their overall evaluation, 88 percent of the respondents had indicated that they enjoyed the group reporting activity. In total, 69 percent indicated that they were motivated to learn the course through the group reports. However, when asked if they preferred to have all the modules in group report format, only 41 percent agreed. Nine agreed moderately, eight disagreed moderately, seven disagreed strongly, four agreed strongly, and four neither agreed nor disagreed. It is unclear whether the students preferred just to have the seven modules in group report format as was done throughout the semester, or if they preferred to have some, or none at all. Still, overall, online cooperative learning facilitated quality learning based on this study's results.

Moreover, 71.9 percent of 32 respondents observed changes in their behavior after using peer and cooperative learning technologies and the majority of their behavior changes were positive. There were positive changes particularly improved personal dispositions, ways of thinking, social interactions, personal and group responsibility, and improved technological proficiency.

Online cooperative learning through group reports thus facilitated quality learning based on this study's results.

This study therefore recommends that group reporting activities be integrated in online courses since students respond positively to it. Overall, students enjoy the activity, are motivated to learn through it, and have experienced positive behavior changes. Online learning practitioners can follow the method outlined in this paper, improving where they deem necessary.

Further studies can be done to determine how much or how less of the course should be done in group reporting format. In addition, studies can be done to determine links between the diversity within groups to their response and performance. Students can explicitly state

Answer Reasons for answer

Yes Using peer and cooperative learning technologies helped me become more of a “people-oriented” person, as I have to broaden my understanding about others and work with them harmoniously so we can accomplish our tasks
 It made me somewhat more interactive and added a sense of more involvement for me rather than solo reading and studying does
 I learned to take more initiative and learned to ask my peers about things I do not know about
 It made me more responsive to my (groupmates) given that we cannot meet face to face and do my best to explain my report via audio visuals
 Not a change in behavior, *per se*, but I gained some additional skills since I don’t normally do video-editing outside this course
 I become more responsible because we were working in a group
 My mindset changed that collaboration for school activity is feasible given the opportunity and was able to know my classmates besides their names
 Given that this is an online education and there is tremendous gap among the students, truly those technologies are great tool for collaboration. I am glad that I experienced to use Skype calls in a collaborative manner. Also I was very challenged (since) my groupmates are so active (giving so much ideas and sharing a lot) in doing our group projects
 I observe that by using peer and cooperative learning technologies, distance learning (has) no distance at all
 I learned to finish things way ahead of schedule in order for the group leader to compile all our works into one presentation
 I felt relieved that I was not alone having difficulties with new technologies
 My respect for my other classmates was increased, especially to those who took extra effort to make the group project a success
 Group reporting in online education is very difficult to (achieve) with a one hundred percent result since not everyone will be present on the scheduled meetings plus you cannot see the “real” reactions and emotions of your groupmates especially when there are conflicts in the agenda or intended output. Nevertheless, we were still able to (achieve) a positive result even though there was limited time for most of us
 I appreciated peer and cooperative learning technique. I liked how the course was structured which was a mix of teacher-student learning and the next half as group reporting. It was well structured and I learned a lot using this teaching method
 There is an (exchange) of ideas, and I have learned new technologies from my groupmates when we (discussed) about how to come up with the presentation
 I was able to manage my time because of the deadline. Patience in manipulating the technology used in our group report (Videoscribe) as I am new to it, and patience with my group members, as there are members who were not able to meet the deadline set by the group
 I feel more challenged and more responsible in terms of accomplishing the assigned task to me. I also become much inspired and able to work and study easily through the cooperative learning
 I learned a lot from my from group more specifically the technology we used in accomplishing our group report because it is new to me and I can use it in the future
 I felt more comfortable and confident in socializing with other people
 It made me realize that participation is needed and reading through their replies on the discussion forum opened my eyes on a lot of things that I do not know before
 The method forced me to do time management and (avoid) procrastination
 Yes, that each and (everyone) has (his) own way of presenting his report through (the) use of different tools like PowToon
 I learn new things like (PowToon)
 My (groupmates) are all contributed in the group report project. I would say their perseverance is contagious. The main reason why I work positively with them is because they are very encouraging and inspiring

No These are the same technologies I am leveraging in the office
 In a group where everyone has to contribute, there will always be some members who will not be able to do their part, whether the task is to be done face to face or offline. We will only be fortunate if

(continued)

Table III.
 Participants’ observations on their changes in behavior

Table III.

Answer	Reasons for answer
	someone else from the group steps up for that non-contributing member aside from the group leader.
	Lucky us
	I like my classmates. They were cooperative and easy to work with. I find it refreshing to meet (virtually) them knowing that it is rare to happen because of the distance learning format we have in UPOU
	No change really
	None
	I do not think it did a lot to change my behavior since the groupings was not that long enough to be able to change someone's behavior
	I am used to meetings or collaborative work from my work
	na
	These technologies have been a norm even before I was in undergrad

their levels of knowledge and grouping can be made based on those levels instead of grouping based on location. In relation to that, studies can also be conducted to determine which among grouping based on location, grouping based on knowledge level, or grouping based on other factors are more effective for online settings. Furthermore, research to look into variations with respect to the technology used for reporting and its suitability to a given course are also recommended.

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Corresponding author

Mari Anjeli Lubrica Crisanto can be contacted at: marianjeli.lubrica@upou.edu.ph