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# A Comparison of Traditional Classroom and Distance Education Classroom on Global Logistics and Group Settings

## Keywords:

**Teaching Innovation; Global; Supply Chain; Online Learning**

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# A Comparison of Traditional Classroom and Distance Education Classroom on Global Logistics and Group Settings

## ABSTRACT

A new course was introduced in the Spring of 2018 at East Carolina University regarding Strategic Sourcing in the Global Market. This course had student enrollment in both in a traditional setting as well as through distance learning. Over a two academic year period, students in each classroom were assigned an end of the semester group project related to applying the course objectives to international logistics and business. The goal of the project was for students to choose an industry in another country and review the logistics and distribution involved in their chosen industry. Furthermore, students were expected to research differing cultural aspects of the chosen country as well as laws and ethics that impact their chosen industry. Students in both settings were given a pre and post survey regarding their attitudes toward global logistics, previous experiences with suppliers, attitudes toward group settings, and familiarity of supplier evaluation tools. The purpose of this survey was to understand student experiences for global logistics as well as use the feedback for potential curriculum building in the future. Students in both classroom settings did have a self-perceived increase in knowledge of supplier evaluation tools and sourcing strategies used by suppliers. Students rated the group project as a positive experience in gaining more awareness in cultural aspects that have an impact in business as well as an increase in knowledge of sustainability concepts related to their chosen industry. However, students in the distance education setting showed less of an increase in knowledge which may be due to these students have more experience in working in a related industry.

## INTRODUCTION

In today's time, universities are moving further away from faculty-centered and lecture-based paradigms to a model where learners are the focus, and faculty members become learning environment designers (Chiasson & Smart, 2015; Rovai & Jordan, 2004). Furthermore, classes these days are not set just in the traditional face-to-face setting, but through other means as well, such as distance education. Current trends have even shown that in the United States over 32% of college students, roughly 6.7 million, are currently taking at least 1 online course (Cavanaugh & Jacquemin, 2015). Educators who teach both course formats must find ways to have students interact as interactions are not only important for the learning experience, but also prepare students for their future careers (Martin, Ritzhaupt, Kumar & Budhrani, 2019). One way of doing this is by using group projects.

Group projects can be defined as "a graded assignment requiring students to work collaboratively across multiple class periods and involving some time outside the normal class meeting," (Aggarwal & O'Brien, 2008). The importance of group projects in education may be a way of preparing students for future careers as more and more businesses expect new hires to have experience and skills associated with group interaction (Aggarwal & O'Brien, 2008). Some managers have even reported to spending anywhere between 60% to 90% of their time in group activities (Chapman & Van Auken, 2001). Aggarwal & O'Brien (2008) stated that group projects can help pedagogically through four objectives:

1. Foster higher level learning outcomes as outlined in Bloom's Taxonomy
2. Enhance student learning by creating more opportunities for critical thinking and responding to critical feedback of papers
3. Promote student learning and achievement
4. Increase student retention

This study focused primarily on the first three of the objectives. Over a two-year period, students in a distribution and logistics course were given a group project to enhance student understanding of

the processes associated with global sourcing in the industrial sector. The first year of this project was also the first semester the course was offered to students. Students were given a pre- and post-project self-assessment related to the retention of knowledge of major points in the course outline as well as asked how the semester group project assisted in the development of knowledge of coursework. The four sections of this course taught existed in two face-to-face sessions and two online courses. Each semester consisted of one of each learning method. Assessments were compared between the four groups.

## REVIEW OF LITERATURE

When researching comparisons of face-to-face and online courses, several reoccurring themes appeared. First, it seems that the major advantage of online courses is related to the ease of accessibility of conducting classwork anywhere (Gibson, 2008). In a study of community college students regarding perceived differences between the two formats, students continuously echoed similar sentiments while also expanding upon the flexibility of being able to interact with course work on their time which was perceived as an advantage to those students who were working during the semester (Jaggars, 2014). In the same study, students also expressed that they believed they did less work in an online class than in traditional classroom settings which was another reason why they preferred online courses from the belief it was "easier" (Jaggars, 2014).

However, several disadvantages were perceived to exist in online courses as well. For instance, several articles stated that students listed some of the following reasons as why they did not enjoy the online class experience when compared to traditional students: lack of immediate feedback from educators, lack of face-to-face interaction, and tech problems (Gibson, 2008; Rovai & Jordan, 2004). In one study, only 3% of students believed they learned more in an online-only classroom setting (Jaggars, 2014). Furthermore, since many online classes are driven by online discussion form this could also be an issue as students may not believe that this is as adequate as in class interactions (Tichavsky, Hunt, Driscoll & Jicha, 2015).

Conflicting research was found on whether educational differences existed when direct classroom comparisons happened between the two formats. One five-year study of students from forty different community and technical colleges stated that students needed to be more disciplined to succeed in online courses as opposed to face-to-face courses (Xu & Jaggars, 2014). Xu & Jaggars (2014) compared average grades between multiple courses that were offered in both formats and noted that the grade was significantly lower in the online format when compared to face-to-face. They also stated that students were more likely to complete a course in a traditional setting rather than an online format (Xu & Jaggars, 2014). One interesting takeaway from this study was the notion of certain courses, such as those in business, had even larger discrepancies. The researchers concluded that hands-on learning may be better for courses related to this (Xu & Jaggars, 2014). Though logistics and distributions are not a strictly a "business" course, elements of business such as negotiation tactics and evaluating supply chains are examined in the course for this research paper.

A differing view was presented in a study by Cavanaugh & Jacquemin (2015). In this study over 5000 courses taught by over 100 faculty members over a ten-academic term period at a public university were examined. Cavanaugh & Jacquemin (2015) used grades of students in classes where both formats were used and concluded through data analysis that no significant difference could be accounted for between the groups. The conclusion was also reached that students who had higher GPAs performed better in online settings as well (Cavanaugh & Jacquemin, 2015).

Finally, another topic of relevance to this study was the role of the instructor in the course, specifically online. Xu & Jaggars (2014) stated in their research that some faculty stated that expectations of online students were to have a preexisting set of learning skills and the faculty did not believe they should be responsible for helping students develop these skills. However, faculty in another study stated that there were benefits for faculty when adapting to online courses. One faculty member stated that by having to be prepared and organized teaching online made them more efficient in delivering material to their face-to-face classroom (Chiasson, Terras & Smart, 2015). Most of the instructors noted that the framework developed in their face-to-face class was able to be transferred over and used in the online

counterpart as well. (Chiasson, Terras & Smart, 2015). Similarly, many of the faculty also stated that in online courses their role was shifted from being the center of the stage of material delivery to more of a facilitator as students took more control in their own learning (Chiasson, Terras & Smart, 2015). It seems from literature reviewed that this was something in agreement between both students and faculty, ultimately the amount a student learns is relative to the effort and ability for student to adapt an effective learning method for online courses.

## METHODS

### Research site and sample

The research site for this study was an upper level undergraduate course on strategic global sourcing. The data collected from this study was completed over two spring academic semesters for the years of 2018 and 2019. The first time the course was offered was in 2018. Each semester two sections of the course were offered, one online, and one in a traditional face-to-face setting. The spring 2018 online course had an enrollment of 16 students while the face-to-face course had an enrollment of 17 students. The spring 2019 online course had 15 students while the face-to-face course had an enrollment of 16 students. A total of 64 students participated in the survey related to course skills and attitudes toward group projects. Students were instructed that responses to the survey were kept anonymous and had no impact on their grade for the course.

The objective of the course as defined in the syllabus is to examine the role that the global sourcing function plays in enhancing value in the industrial sector. Topics included: strategy developments of businesses, cultural aspects that impact global business, sustainability, supplier evaluation tools, and global logistics.. The desired course outcome was to provide students methods, knowledge, and tools used in the distribution and logistics global sourcing field that would prepare students for future study. The focus of this study was data collected from student self-assessment for the attainment of knowledge related to course objectives from the use of the course group project between students in traditional classroom setting and those in an online course.

### Group Project

Students were divided into groups of 4 to 5 at the beginning of the second week and given a group project created by the instructor. The project encompassed many ideas and methods that would be taught during the semester and met course objectives. Each group was to select an industry in another country (approved by the instructor) that conducted business with the United States. Groups were expected to research the following: chosen industry's country demographics, how companies are set up in chosen country, work life, strategy development of company, create a sustainability statement, supplier selection of industry, and laws and ethics that impact that particular industry within their country. Finally, groups were asked to reflect on what the group learned from the project as well as the impact the project had on potentially changing their perspective of global logistics and supply chains. The assessments for this project were one group presentation and one research paper. Students were also given a peer evaluation to motivate students to stay engaged within their groups.

### Data collection

Data was collected twice during each semester. Initially, self-assessment surveys were sent out during the first week before students were arranged into their respective groups. This was done to limit not only potential peer influence, but also to limit the influence that coursework may have upon student response. Distribution of the survey was conducted by using Qualtrics via a Blackboard link. Responses to survey questions were coded on a Likert scale that can be seen in Tables 1-4. Tables 1 and 2 focus on the online section of the courses while Tables 3 and 4 focus on the face-to-face delivery courses. The post assessments were conducted during week 15 of the semester, after the completion of the group project. During this time students were asked the pre-survey questions again, but also had the option of adding feedback on the group project and whether they believed the project helped reinforce the course objectives for the semester.

The focus of this paper is the traditional and online course comparison of student self-assessment of

knowledge and skills learned after completing the group project versus the self-assessment of knowledge and skills prior to beginning the group project. Furthermore, the difference between the initial year the course was taught was examined against subsequent year. Students' attitudes towards group projects were also examined.

## RESULTS

The following tables show the mean, mode, and standard deviation of the student self-assessment of understanding terminology and processes before and after completing the group project between the online and face-to-face courses. Question 1 of the survey was broken down into 5 subsections and asked students "How familiar are you with?" with the subsections being: strategy developments of businesses, cultural aspects that impact global business, sustainability principles, supplier evaluation tools, and global transportation & logistics. For question 1 and all subsets students rated their experiences on a 0 to 10 scale ranging from "No knowledge" (0) "Moderately proficient" (5), to "Extremely proficient" (10). The first question on the survey was used as a baseline to understand student's perceived knowledge before class began. Question 2 asked students "What is your attitude toward working in group settings?" on a 0 to 10 scale that ranged from "Extremely negative" (0), "Neutral" (5), "Extremely positive" (10).

**Table 1: Online survey responses pre- and post-project analysis 2018 spring semester**

Please rate your level of proficiency (knowledge and skills) regarding the following		Mean		Mode		Std. Dev	
		Prior	Post	Prior	Post	Prior	Post
Q1.1	Strategy developments of businesses	2.44	8.80	2.00	9.00	2.32	1.05
Q1.2	Cultural aspects that impact global business	4.13	8.50	4.00	9.00	1.73	0.78
Q1.3	Sustainability principles	2.63	8.27	2.00	9.00	1.96	1.44
Q1.4	Supplier evaluation tools	3.81	8.93	5.00	9.00	2.24	0.85
Q1.5	Global transportation and logistics	4.88	9.00	5.00	9.00	2.23	0.89
Q 2.0	Attitude toward group projects	6.75	7.33	7.00	8.00	2.70	2.27

**Table 2: Online survey responses pre- and post-project analysis 2019 spring semester**

Please rate your level of proficiency (knowledge and skills) regarding the following		Mean		Mode		Std. Dev	
		Prior	Post	Prior	Post	Prior	Post
Q1.1	Strategy developments of businesses	4.01	8.80	4.00	9.00	2.33	1.04
Q1.2	Cultural aspects that impact global business	4.71	8.33	5.00	10.00	2.67	1.65
Q1.3	Sustainability principles	3.46	8.27	3.00	9.00	2.66	1.44
Q1.4	Supplier evaluation tools	4.77	8.93	5.00	9.00	2.59	0.85
Q1.5	Global transportation and logistics	4.57	9.00	5.00	9.00	2.85	0.89
Q 2.0	Attitude toward group projects	5.35	7.73	7.00	9.00	2.24	1.98

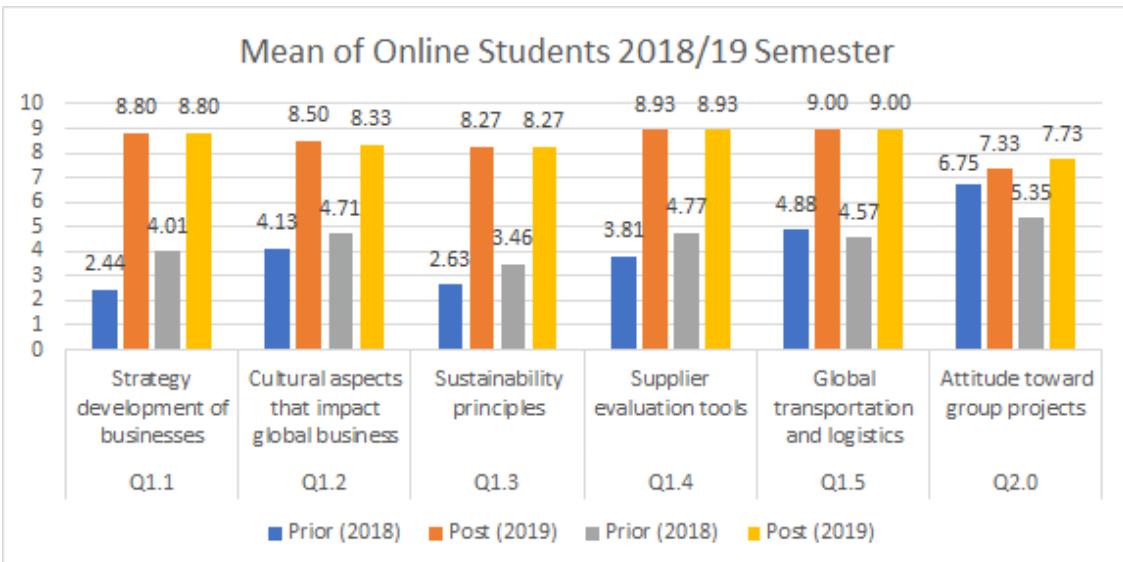
**Table 3: Face-to-face pre- and post-project analysis for 2018 spring semester**

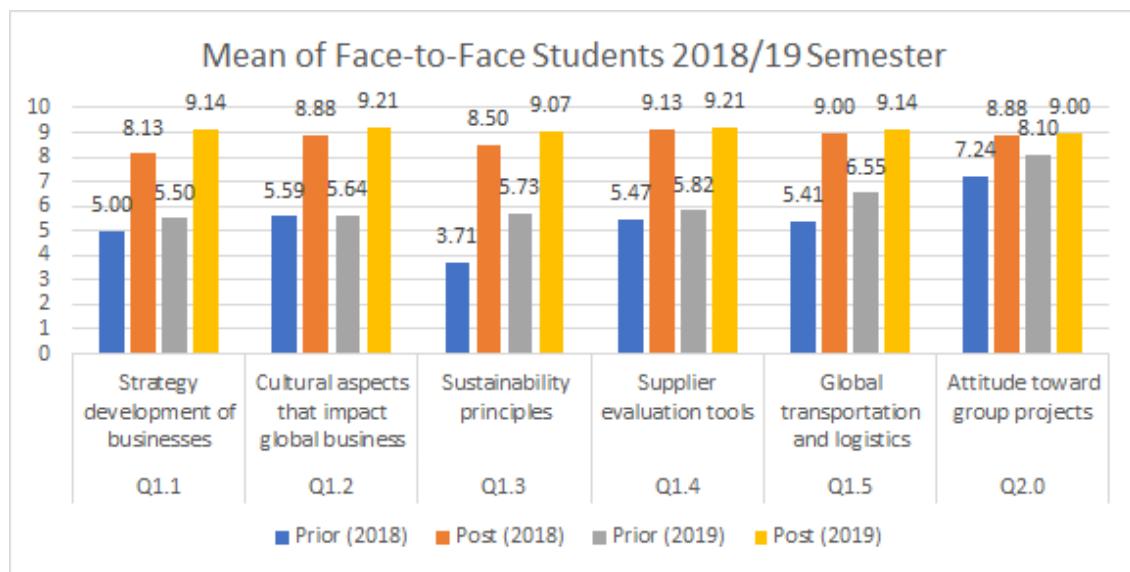
Please rate your level of proficiency (knowledge and skills) regarding the following		Mean		Mode		Std. Dev	
		Prior	Post	Prior	Post	Prior	Post
Q1.1	Strategy developments of businesses	5.0	8.13	5.00	9.00	2.33	2.52
Q1.2	Cultural aspects that impact global business	5.59	8.88	6.00	9.00	0.61	1.36
Q1.3	Sustainability principles	3.71	8.50	4.00	9.00	2.47	1.58
Q1.4	Supplier evaluation tools	5.47	9.13	6.00	9.00	2.83	0.93
Q1.5	Global transportation and logistics	5.41	9.00	6.00	10.00	2.81	1.32
Q2.0	Attitude toward group projects	7.24	8.88	8.00	9.00	2.36	1.17

**Table 4: Face-to-face pre- and post-project analysis for 2019 spring semester**

Please rate your level of proficiency (knowledge and skills) regarding the following		Mean		Mode		Std. Dev	
		Prior	Post	Prior	Post	Prior	Post
Q1.1	Strategy developments of businesses	5.50	9.14	8.00	10.00	2.54	0.91
Q1.2	Cultural aspects that impact global business	5.64	9.21	7.00	10.00	2.23	0.93
Q1.3	Sustainability principles	5.73	9.07	6.00	10.00	2.18	1.15
Q1.4	Supplier evaluation tools	5.82	9.21	5.00	10.00	2.44	1.01
Q1.5	Global transportation and logistics	6.55	9.14	7.00	10.00	1.30	0.99
Q2.0	Attitude toward group projects	8.10	9.00	10.00	10.00	1.93	1.64

The following figures illustrate the mean of responses from each question in the pre and post self-assessment surveys from each semester in 2018 and 2019 and are to be used to supplement the prior tables.

**Figure 1: Mean of online survey responses combined semesters**



**Figure 2: Mean of face-to-face survey responses combined semesters**

The use of the surveys was to aid in the 1st and 3rd point of Aggrawal & O'Brien's (2008) premises of group projects, fostering higher level learning outcomes and promoting student learning and achievement. This was accomplished by first establishing a baseline using the pre-surveys for the instructor to be aware of self-perception of the varying subjects being asked by the instructor. Furthermore, since a semester long group project was being administered, the researcher was also focused on attitude toward group projects before the project was assigned and after completion when students were given the post-survey. In regards to the 2nd point of Aggrawal & O'Brien (2008) for studying the enhancement of student learning by creating more opportunities for critical thinking, this was established by asking students during the post survey to provide feedback regarding the effectiveness of the group project related to course objectives and thoughts on the project overall.

From the four different tables that have been presented, there are several comparisons that can be made such as between the same formats during the two years, different formats each year, and some overall inferences to make. One inference is that in every category the face-to-face class rated themselves as being more proficient than their online peers for the pre-project phase during both years.

For the first year, the biggest difference in the formats of the pre-assessment came in the category of strategy developments of businesses with a difference of 2.56. This is extremely interesting due to more students in the online section came from traditional working environments when asked to openly identify previous experience. Because of that, it may be that those who were aware of industry standards and protocol have a better self-awareness of where they are lacking in skills. This category was the lowest mean for the online course, while the face-to-face course identified knowledge on sustainability principles as their lowest mean with a mean of 3.71. Both courses in 2018 rated their attitude toward working in group projects as their highest mean with face-to-face (7.24) slightly higher than their online counterparts (6.75).

During post-project assessment for 2018, all students recorded an increase in ratings in every category compared to their pre-project assessment. This increase in post-evaluation scores compared to pre-evaluation scores can be noticed in Figures 1 and 2. Interestingly, the differences between the two groups are more closely aligned during the post-project assessment. The online class showed the biggest jump in relation to their knowledge of strategy development of business (8.80), their previously lowest rated area. More surprising is the fact that students in the online course felt more confident in this area than their face-to-face counterparts (8.13). Another area to note was regarding both courses rated the same under "global transportation and logistics" (9.00).

In 2019, similar trends emerged as to the 2018 counterparts. For instance, in the pre-assessment once again the face-to-face class rated their skills higher in every category than their distance education counterparts. As with the 2018 face-to-face group, the 2019 group felt their strongest strength was in group settings and even rated themselves higher than the 2018 group. They also perceived their initial skills higher in every other category than their 2018 counterparts as well.

The 2019 distance education group also followed a somewhat similar trend as they too believed in the majority of categories their initial knowledge and skills were higher than the 2018 distance education class. The only difference was they rated themselves lower in two categories, global transportation (4.57 vs 4.88) and group projects (5.35 vs 6.75) than the 2018 class. However, it is interesting to note that though they initially rated themselves lower, the 2019 distance education group ended up rating themselves higher in group projects overall in post-assessment (7.73 vs 7.33).

Overall, it does appear from examining the tables that there was no particular area where all groups continuously struggled or excelled as a whole. Though in face-to-face both courses rated supplier evaluation tools as their highest areas in the post-assessment. Perhaps with more classes and data better trends can be noticed and different methods of data analysis could be used as well.

It is important to state that one critique of student self-assessment has been students having higher confidence in their abilities than what may be a reality (Darban & Polites, 2016). This assessment may be a reality; however, this study did not coordinate student performance with self-assessment which may have shown a correlation between the two variables. Because of that, the research relied on student assessment as a way to measure whether the incorporation of the group project achieved objectives that were set forth by Aggarawal & O'Brien (2008) related to knowledge and promoting learning.

As stated previously, in order to understand the effectiveness that the group project had on enhancing student learning by creating more opportunities for critical thinking, the instructor allowed students to provide feedback on attitude toward the group project and whether students thought the group project was effectiveness related to course objectives. When asked regarding effectiveness all respondents stated they did believe the group project was effective. No negative comments were recorded.

For feedback on the group project, all face-to-face students both semesters were very positive on the group project in how it helped with tying course content together as well as possibly preparing them for their future career, which is an important element of Aggrawal & O'Brien (2008) in having an effective group project. One student stated:

*"This group project helped me learn many skills and practices which I can use in the future in my future when working with teams in my career. This group project helped reinforce the course objectives we went over for the semester."*

The positive feedback also carried over to both sessions of the distance education courses as well as one student there noted:

*"I believe the project was a great way to learn more about the subject matter covered in this course, as the material covered throughout the project directly related to things learned in this course. The project also focused on teamwork and was a positive learning experience when it comes to working together through email/text."*

Though the majority of feedback was positive, it is worth noting one online student did mention that while they enjoyed the project, they did not enjoy working with people as they felt it defeated the purpose of taking an online class as family matters often made it hard to coordinate with their group. It does seem through feedback that the project gave students a chance to think critically on how the companies they selected worked within all the frameworks of the course on varying areas.

## DISCUSSION

The primary purpose of this study was to measure the effectiveness of incorporating a group project to advance knowledge and learning objectives. The study also documented the similarities and differences that may occur between a traditional and online class format through varying semesters. The student's perception of knowledge links back to the objectives this study was designed around. The self-assessment surveys observed how the students examine the role that the sourcing function plays in enhancing value in the industrial sector, topics identifying key suppliers and acquiring materials to improve customer satisfaction and profitability, as well as methods, knowledge, and tools used in the distribution and logistics global sourcing field. Comparing the results of the two semesters of online and face-to-face lecture, both achieved improvement in students understanding of the curriculum's objectives.

Based on feedback given during the self-assessment of surveys it does appear that student knowledge overall increases in both scenarios from the data that has been presented, the biggest gain overall occurred in the online course both semesters. It also appeared that differences between the two formats were marginalized after completion of the group project. Further research would need to be conducted basing self-assessment against objective measures.

Though it was to be expected that student self-perceived knowledge was shown to increase in all areas, this should not be discounted. Research has shown that learning occurs naturally because of participating in group simulations and projects (Anderson & Lawton, 2008). This can be taken as a positive since this was both the first time the course was offered, as well as the project incorporated for building an understanding of course objectives and outcomes. It is expected that further data collection in future classes will increase the instructor's knowledge of effectiveness of using the group project within the classroom. Trends may be seen between the two courses as well as understanding of creating other techniques in using groups for this course and others.

Several limitations should be noted for this study. As previously mentioned, when conducting self-assessments students may often view their ability higher than the reality of attainment (Darban & Polites, 2016). This study did not tie in actual achievement with self-assessed value. As it stands now, though students reported having higher gains throughout the survey, objective data may shed light on ability with perception. Further research would be beneficial in conducting a study linking the two variables. This study also was conducted during two semesters and just using four courses as a case study. The researcher plans to continue collecting future data to compare against the current data.

Another limitation to note was the course was taught by the same instructor. During the survey the students were not asked to rate the effectiveness of the instructor's teaching method. Though, some students did make comments on the survey regarding they enjoyed the instructor and course, this response is not quantifiable. Future surveys will include a scale for students to rate the instructor. This will assist the instructor in examining differences between how the online course and face-to-face courses rate instructor effectiveness and clarity for the course. The instructor can also use the results to improve on their own teaching methods as well.

## CONCLUSION

In conclusion, this study gave the researchers insight towards student self-evaluation of learning of course objectives while using a global sourcing group project between two different course formats. It seemed based on data received that conclusions that may be drawn from that data are that students overall felt more confident after the completion of the group project. Those in the online course had the bigger gains in self-assessment after completion of the group project. The perceived gap between the two groups on subjects also closed after the project as well. Both groups initially had positive attitudes toward group projects initially and reported slight increases in post-assessment. Finally, while insight was gained, future research will expand on this study by paring the self-assessment with an objective measure such as grade analysis to gain further insight into the differences and similarities of the two class formats upon completion of the group project analysis.

## REFERENCES

- Anderson, P. & Lawton, L. (2008). Business simulations and cognitive learning: Developments, desires, and future directions. *Simulation & Gaming* 40 (2), 193-216.
- Aggarwal, P. & O'Brien, C. (2008). Social loafing on group projects: Structural antecedents and effect on student satisfaction. *Journal of Marketing Education*, 30 (5), 255-264.
- Cavanaugh, J.K. & Jacquemin, S.J. (2015). A large sample comparison of grade-based student learning outcomes in online vs. face-to-face courses. *Online learning*, 19 (2).
- Chapman, K. & Van Auken, S. (2001). Creating positive group project experiences: An examination of the role of the instructor on students' perceptions of group projects. *Journal of Marketing Education* 23 (2), 117-127.
- Chiasson, K., Terras, K. & Smart, K. (2015). Faculty perceptions of moving a face-to-face course to online instruction. *Journal of College Teaching & Learning*, 12 (4), 231-240.
- Darban, M. & Polites, G. (2016). Do emotions matter in technology training? Exploring their effects on individual perceptions and willingness to learn. *Computers in Human Behavior* 62, 644-657.
- Gibson, J. (2008). A comparison of student outcomes and student satisfaction in three MBA human resource management classes based on traditional vs. online learning. *Journal of College Teaching & Learning*, 5(8), 1-9.
- Jaggars, S.S. (2014). Choosing between online and face-to-face courses: Community college student voices. *American Journal of Distance Education* 28 (1), 27-38.
- Martin, F., Ritzhaupt, A., Kumar, S., & Budhrani, K. (2019). Award-winning faculty online teaching practices: Course design, assessment and evaluation, and facilitation. *The Internet and Higher Education*, 42, 34-43.
- Rovai, A. & Jordan, H. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *International Review of Research in Open and Distance Learning*, 5(2), 1-13.
- Tichavsky, L., Hunt, A., Driscoll, A. & Jicha, K. (2015). "It's just nice having a real teacher": Student perceptions of online versus face-to-face instruction. *International Journal for the Scholarship of Teaching and Learning* 9 (2).
- Xu, Di & Jaggars, S.S. (2014). Performance gaps between online and face-to-face courses: Differences across types of students and academic subject areas. *The Journal of Higher Education* 85 (5), 633-659.