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Evaluating the Influence of Venue on Experiential, Project-Based Learning

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ABSTRACT

Experiential, project-based learning is widely endorsed as an effective pedagogy for enhancing the understanding of theory, increasing critical thinking skills, and preparing students for future roles as contributing employees. Likewise, the use of online classes at universities is becoming popular. A logical evolution of course venues would be the appearance of project-based, online courses. However, there is scant research on whether online, experiential learning is as effective as face-to-face courses. In this study, comparisons are made between online and face-to-face classes of a project-based, strategic management course at a regional university. No statistically significant differences were found in the course measurements of student grades, teammate evaluations, or client project evaluations.

Keywords: project-based learning, experiential learning, active learning, strategic planning

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Face-to-face and online courses have been compared in the past in a variety of fields with mixed conclusions (Dendir 2016; Morgan, 2015). Project-based pedagogy has also been compared to traditional classes; however, few, if any, comparisons have been made of face-to-face, project-based teaching to online classes and virtual projects. In this paper, the researchers compare the results of an online, project-based strategic management course with those of a face-to-face, project-based class.

For several years, the authors have taught face-to-face, project-based strategic planning classes in a business capstone course. Prior to the start of each semester, regional businesses were interviewed and screened to find appropriate clients for strategic planning projects for student teams. Also, the authors have taught an online, strategic management class in a non-project-based format. In the previous

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semester, faced with a plethora of clients, the instructors decided to try assigning actual clients to the online student teams to work with virtually. The motivation to aid these additional clients provided the opportunity for this study with the research question determined as "how would online, project-based learning compare to the face-to-face, project-based course?"

As a capstone course in the College of Business at Western Carolina University, three metrics are commonly used by all instructors: an overall student grade, a team's assessment of the student's contribution to the project (Ohland, Loughry, et al., 2012), and a client satisfaction rating. These measurements were analyzed to see if venue (face-to-face or online) or instructor had any influence on the outcomes.

Literature Review

The Association to Advance Collegiate Schools of Business (AACSB) defined applied experiential learning as: "A business curriculum-related endeavor which is interactive (other than between teacher and pupil) and is characterized by variability and uncertainty" (Gentry, 1990, p.10). The experiential approach to teaching strategic management was outlined by Singh (2018) as a process requiring students to 1) conduct external and internal environmental analysis on a market and an organization, 2) create various analyses and forecasts based on possible situations, and 3) develop potential strategies that would guide the firm to an aspired future state. Canziani and Tullar (2017) argued that the primary goal of student-led, client-based experiential projects is to develop critical thinking skills and that consulting opportunities enhance these competencies in ways that differ from other instructional methods. Business schools and colleges of business utilize multiple methods to teach strategic management. George (2015) reported that the use of experiential teaching and learning is instrumentally invaluable in guiding students to learn and grasp real-time challenges businesses face in today's complex environment. Further, the author noted that the experiential learning process provides hands-on involvement that can enhance the development of hard skills, soft skills, and foster behavior modification in students. Beyond the traditional textbook-based approaches to learning, three primary experiential methods have been adopted in Strategic Management education: case studies, simulations, and project-based learning (Jennings, 2000).

Case studies, popularized by the Harvard Business School, can be characterized as a description of a business or a specific set of obstacles confronting the organization or its activities (Cornwell, 2012). According to Davis and Wilcock (2003), case studies are "student-centered activities based on topics that demonstrate theoretical concepts in an applied setting" (p. 3-4). Instructors can utilize these problems in various teaching modalities as illustrations of real-life lessons.

The use of case studies to teach strategic management has both its advocates and its critics. Mintzberg, Quinn, and Voyer (1995) noted that case studies are ideal scenarios for investigating real-world issues. Jauch and Glueck (1988), Johnson and Scholes (1993), and Thompson and Strickland (1999) put forth similar arguments regarding the efficacy of utilizing case studies to teach strategic management. Chang (2003) declared that numerous researchers affirmed that the use of case studies could advance the student's capacity to understand and retain information by inserting a dose of realism into the classroom (Christensen & Hansen, 1987; Dooley & Skinner, 1977; Osigweh, 1989; Romm & Mahler,

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1991). On the flip side, Yin (1989) and Garrido-Lopez, Hillon, Cagle, and Wright (2018), argued that case studies, while offering a clear contextual framework for analysis and synthesis, are limited in representing the complexities of the real world. One criticism of using the case study method to teach strategy is that due to the static nature of data available in a case, the scope of decisions available to the student is narrow (Mitchell, 2004). According to Jack (2018), considering the rapid change in global demographics, women managers are not sufficiently represented in the case study method of instruction. Further, given the widespread argument over globalization, a disproportionate percentage of cases are focused on U.S. organizations. Certain viewpoints, including those of labor unions, are underrepresented. Anand (2017) posited that the utilization of case studies was quite suitable for a more settled world, but the breadth and scope of today's challenges call for a new approach.

Simulations are the business game approach to the analysis of an organization in a competitive situation. A realistic simulation enables students to analyze various factors that can impact an outcome while developing analytical expertise, management skills, and communication (Schroder & Liviu, 2012). Ceschi, Sartori, Tacconi, and Hysenbelli (2014) stated that the primary goal of a business game is to develop management skills, analytical know-how, and to teach decision-making skills relative to business strategies. In a review of the literature assessing the value of simulations, Reid, Brown, and Tabibzadeh (2012) maintained that despite the high degree of attention spawned by the simulation teaching mechanism, the preponderance of the literature examined did not indicate statistically significant confirmation that the learning outcome was more compelling than the use of other educational methods. One ongoing criticism of the use of simulations to teach strategic management has been the automation of the decision-making process. For example, emergency loans to bail out a poor decision are allowed with little, if any, regard to overall financial planning (Poisson-de Haro & Turgut, 2012). An argument was put forth by Jennings (2000) that claimed the use of simulations may not readily be translated to real-world business circumstances.

Project-based learning "Is a student-driven, teacher-facilitated approach to learning. Learners pursue knowledge by asking questions that have piqued their natural curiosity" (Bell, 2010, p. 39). Thomas (2000) noted from various project-based learning handbooks for instructors that projects are complicated assignments built on the foundation of demanding situations that require student immersion in analytical activities, problem-solving and outcome resolution. Additionally, with project-based learning, the students must work independently and as a team to develop and deliver a final product or presentation (Jones, Rasmussen, & Moffitt, 1997; Thomas, Mergendoller, & Michaelson, 1999). The essence of project-based learning is the examination process. This process requires students to develop questions relative to the project being directed through the research procedure by the instructor.

Xiao and Carnes (2017) observed that when teaching strategy to college level undergraduates, a significant challenge is the students' dearth of relevant work background, participation, and know-how. Often lacking the appropriate job experience, students find that many of the topics covered in a strategic management course are problematic relative to their ability to embrace and comprehend when being taught by traditional methods. Students who learn through project-based experiential methodology can more readily grasp first-hand the intricacies of day-to-day life in an organization and how to deal with multiple challenges both internal and external. Project-based learning, where students

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engage in projects related explicitly to real-world business situations, has proven to be a boon for not only the students but for the outside clients, many of whom return for additional assistance by future student teams (Thompson & Edwards, 2009).

Distance education is defined as "Education that uses one or more technologies to deliver instruction to students who are separated from the instructor and to support regular and substantive interaction between the students and the instructor synchronously or asynchronously" (Seaman, Allen, & Seaman, 2018, p. 5.). Driscoll, Jícha, Hunt, Tichavsky, and Gretchen (2012), wrote that numerous researchers (McFarland & Hamilton 2005; Parkhurst et al. 2008; Summers, Waigandt, & Whittaker 2005; Tucker 2001) reported the positive attributes of online learning versus face-to-face. Conversely, other investigators (Logan, Augustyniak, & Rees 2002; Urtel 2008) offered contradictory arguments to the view that online learning was as effective as face-to-face teaching in providing an overall positive learning experience.

The review of the literature assessing distance learning versus face-to-face teaching revealed conflicting views when examining course-specific subject matter. Morgan (2015) found that students graduating from online accounting programs scored lower on the CPA exam than those who graduated in a matched set of face-to-face accounting programs. Contrary to Morgan's (2015) findings, Dendir's (2016), examination of two Principles of Microeconomics courses at a U.S. public university determined that the online students earned higher scores on a set of universal questions given over three exams. In a study of a college level operations management course delivered by both online and face-to-face classroom instruction, Nemetz, Eager, and Limpaphayom (2017) research revealed that student performance as measured by their grades were the same regardless of the delivery mechanism. In an exploration of educational delivery methods on knowledge retention, Turner and Turner (2017) concluded that while online instruction may deliver greater short-term knowledge procurement, the synchronous face-to-face instructional delivery yields more significant levels of knowledge retention. Stern (2004) put forth the suggestion that future research might evaluate which types of courses are more applicable to distance learning while others may be less suitable.

While academic literature provides multiple examples of varying pedagogical methods as well as comparisons of face-to-face and online courses, there are few, if any, evaluations of face-to-face, project-based curricula to online, project-based courses. And, although the effectiveness of project-based, experiential pedagogy is well acknowledged and the growth of online courses widely recognized, an investigation of the effect of combining the two approaches was of interest to the researchers. Could an online, project-based course with virtual student teams be just as effective as a face-to-face, project-based class? If so, online curricula could benefit from the enhanced, project-based learning experience. Similarly, the application of project-based, experiential learning could be substantially expanded due to the growth and convenience of online venues. Taking the opportunity presented by a semester with too many client projects, the researchers adapted the structure and syllabus of the online program to closely match the traditional course.

Method

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Students who major in a business discipline within the AACSB-accredited B.S.B.A. program at Western Carolina University are required to take a management capstone strategic planning course during their final academic year. Students in four sections of this course were surveyed in the Fall and Spring semesters of the 2018-2019 academic school year. Participation did not have any impact on the student's final grade. The demographic make-up of the classes was unremarkable with no differences in sex, age, or ethnicity. Gauging the impact of venue on the project-based learning approach was accomplished by comparing the group results of overall grade, teammate evaluation, and client satisfaction scores of the online and face-to-face classes.

One hundred and fifteen (115) students participated in this study. Seventy-two (72) took the class in a face-to-face classroom setting. Forty-three (43) took the online version of the course. All elements of the course: the syllabus, class materials, team make-up processes, client projects, and grading schemes were closely duplicated except for venue and instructor (two instructors participated).

Several assessments of the students' performances were integrated into this study. All these assessments were based on a 100-point scale. A student's overall grade was compiled from multiple components including quizzes, a mid-term exam, written assignments, a final strategic plan report, and teammate assessments. The teammate assessments were based on an instrument validated by Ohland, Loughry, et al., (2012); whereby, students confidentially rate their teammates on five attributes (contributions to the team's work, interactions with the team, keeping the team on track, dedication to quality, and having relevant skills, knowledge, and ability). A sample of the survey is included in the Appendix A. In addition, each student project team was assessed by the external client at the end of the term using a survey tool in widespread use over the past ten years that was developed by the North Carolina Small Business Technology Development Center (SBTDC). This assessment considered the student's professional behavior, communication, depth of content, oral presentations skills, and final project results. A sample of the survey instrument is included in the Appendix B.

Results

Assessments of student performance in the capstone project were conducted from the following perspectives: the project's external sponsor, the instructor of record for the class project, and the members of the student team. These assessments were based on a 100-point scale. An independent samples student's t-test was performed to identify if there were differences in the assessments of the students based on the course venue. The independent samples t-test is a parametric test that compares the means of two independent groups to determine whether there is statistical evidence that the associated population means are significantly different.

A total of 115 students were involved in the capstone projects discussed in this research study. Client evaluations were collected on 77 of these students (34 students in face-to-face and 43 students in online classes), and team and instructor evaluations were collected on all 115 students (72 students in face-to-face and 43 students in online classes). Results of the independent samples student's t-test on these client evaluations resulted in a t-statistic of 1.716 (p-value = 0.090), indicating a statistically non-significant result. Team and instructor evaluations also resulted in statistically non-significant results, with t-statistics of -0.867 (p-value = 0.388) and -1.073 (p-value = 0.286) respectively. These statistically

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non-significant results indicated that the venue did not impact client, team, or instructor evaluation (see Table 1).

Table 1
Results of t-tests on effect of venue on client, team, and instructor evaluations

Assessment	Face-to-Face	Online	t	p-value
Client Evaluation	91.18	87.95	1.716	0.090
Team Evaluation	87.00	89.42	-0.867	0.388
Instructor Evaluation	86.69	88.09	-1.073	0.286

The assessment data was also analyzed to determine if there were differences in these assessments of the students based on the instructor of the class, independent of the venue (see Table 2). All 115 students involved in the capstone projects were divided between the two course instructors. Instructor 1 supervised 65 of the students, and Instructor 2 supervised the remaining 50 students. Results of the independent samples student's t-test on the team and instructor evaluations for the students in these two instructors' classes resulted in a t-statistic of 0.573 (p-value = 0.568) and a t-statistic of -0.725 (p-value = 0.470), indicating statistically non-significant results. The absence of statistically significant results with regards to team and instructor evaluations demonstrates that the choice of instructor had no impact on the findings. A comparison of client evaluations by the instructor was not performed due to a low response rate by the clients of one instructor.

Table 2
Results of t-tests on effect of instructor on team and instructor evaluations

Assessment	Instructor 1	Instructor 2	t	p-value
Team Evaluation	88.58	87.02	0.573	0.568
Instructor Evaluation	86.81	87.74	-0.725	0.470

Discussion

Academic literature continues to advocate the superiority of project-based learning pedagogy over traditional, lecture-based courses (Garnjost & Lawter, 2019); yet, there is little research comparing online versus face-to-face, project-based learning. This may be due to the dearth of available online, project-based courses. In the experience of the authors, such courses require a good deal of extra effort in preparation and execution by the instructor. Adding the burden of an online classroom and virtual clients for the student teams makes the undertaking even more burdensome and may discourage educators from designing such pedagogy. Further research is warranted to discern the most effective approach to teaching project-based strategic management online, including the development of appropriate interpersonal skills, empathy, patience, and time management.

The findings of this research show the benefits of online project-based learning to be substantial and worthwhile. Like Neuhauser, (2002) in a comparison of online and face-to-face class venues, this study demonstrated no essential differences in the outcome measurements (student grade, teammate

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assessments, and client satisfaction) of project-based pedagogy as well. The researchers posit that this is due to the focus of the course on the work itself-- working with teammates on a real business project with an actual client. No matter the venue (face-to-face or online), students concentrate on getting work done and meeting the client's expectations. Venue does not appear to matter.

The indications of this research suggest the opportunity for expanding the curriculum of online educational programs to include more project-based courses which are widely acknowledged to provide superior learning experiences to traditional, lecture-based classrooms. Mills and Treagust (2003) noted that the engineering profession and those charged with teaching the subject matter are exceedingly familiar with projects and that the use of project-based learning should be a key component of their curriculum. Research should be conducted on the use of this learning medium in the ever-growing realm of online engineering education. Given the relative infancy of online project-based learning versus more traditional modes, future research efforts should include an examination of student experience. For example, why is it that venue has no impact upon student performance? Laguna, Razmus, and Zalinski (2017) suggest viewing this question through the framework of social cognitive / self-efficacy theory (Bandura, 1993) would be a worthwhile approach. Perhaps students are so motivated to succeed by the project-based approach that the choice of venue has no influence on performance. Another question to be explored is related to the nature of distance learning. Are students with a broader range of work/life experiences more influential in this modality than in the classroom setting? The learning outcomes would be of interest and possibly guide the composition of student teams. The results of future research into these areas could lead to the development of new pedagogical configurations that enhance student learning.

The intention of the authors is to continue to collect data over time to gain confidence and credibility in the findings. It is hoped that other researchers may pursue additional comparisons of project-based venues in a variety of other settings.

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Appendix A
Team Assessment Instrument

Comprehensive Assessment of Team Member Effectiveness—Behaviorally Anchored Rating Scale (BARS) Version

	Your name					← Write the names of the people on your team including your own name. This self and peer evaluation asks about how you and each of your teammates contributed to the team during the time period you are evaluating. For each way of contributing, please read the behaviors that describe a "1", "3," and "5" rating. Then confidentially rate yourself and your teammates.
Contributing to the Team's Work	5	5	5	5	5	• Does more or higher-quality work than expected. • Makes important contributions that improve the team's work. • Helps to complete the work of teammates who are having difficulty.
	4	4	4	4	4	Demonstrates behaviors described in both 3 and 5.
	3	3	3	3	3	• Completes a fair share of the team's work with acceptable quality. • Keeps commitments and completes assignments on time. • Fills in for teammates when it is easy or important.
	2	2	2	2	2	Demonstrates behaviors described in both 1 and 3.
	1	1	1	1	1	• Does not do a fair share of the team's work. Delivers sloppy or incomplete work. • Misses deadlines. Is late, unprepared, or absent for team meetings. • Does not assist teammates. Quits if the work becomes difficult.
Interacting with Teammates	5	5	5	5	5	• Asks for and shows an interest in teammates' ideas and contributions. • Improves communication among teammates. Provides encouragement or enthusiasm to the team. • Asks teammates for feedback and uses their suggestions to improve.
	4	4	4	4	4	Demonstrates behaviors described in both 3 and 5.
	3	3	3	3	3	• Listens to teammates and respects their contributions. • Communicates clearly. Shares information with teammates. Participates fully in team activities. • Respects and responds to feedback from teammates.
	2	2	2	2	2	Demonstrates behaviors described in both 1 and 3.
	1	1	1	1	1	• Interrupts, ignores, bosses, or makes fun of teammates. • Takes actions that affect teammates without their input. Does not share information. • Complains, makes excuses, or does not interact with teammates. Accepts no help or advice.
Keeping the Team on Track	5	5	5	5	5	• Watches conditions affecting the team and monitors the team's progress. • Makes sure that teammates are making appropriate progress. • Gives teammates specific, timely, and constructive feedback.
	4	4	4	4	4	Demonstrates behaviors described in both 3 and 5.
	3	3	3	3	3	• Notices changes that influence the team's success. • Knows what everyone on the team should be doing and notices problems. • Alerts teammates or suggests solutions when the team's success is threatened.
	2	2	2	2	2	Demonstrates behaviors described in both 1 and 3.
	1	1	1	1	1	• Is unaware of whether the team is meeting its goals. • Does not pay attention to teammates' progress. • Avoids discussing team problems, even when they are obvious.
Expecting Quality	5	5	5	5	5	• Motivates the team to do excellent work. • Cares that the team does outstanding work, even if there is no additional reward. • Believes that the team can do excellent work.
	4	4	4	4	4	Demonstrates behaviors described in both 3 and 5.
	3	3	3	3	3	• Encourages the team to do good work that meets all requirements. • Wants the team to perform well enough to earn all available rewards. • Believes that the team can fully meet its responsibilities.
	2	2	2	2	2	Demonstrates behaviors described in both 1 and 3.
	1	1	1	1	1	• Satisfied even if the team does not meet assigned standards. • Wants the team to avoid work, even if it hurts the team. • Doubts that the team can meet its requirements.
Having Relevant Knowledge, Skills, and Abilities	5	5	5	5	5	• Demonstrates the knowledge, skills, and abilities to do excellent work. • Acquires new knowledge or skills to improve the team's performance. • Able to perform the role of any team member if necessary.
	4	4	4	4	4	Demonstrates behaviors described in both 3 and 5.
	3	3	3	3	3	• Has sufficient knowledge, skills, and abilities to contribute to the team's work. • Acquires knowledge or skills needed to meet requirements. • Able to perform some of the tasks normally done by other team members.
	2	2	2	2	2	Demonstrates behaviors described in both 1 and 3.
	1	1	1	1	1	• Missing basic qualifications needed to be a member of the team. • Unable or unwilling to develop knowledge or skills to contribute to the team. • Unable to perform any of the duties of other team members.

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APPENDIX B
Client Satisfaction Survey Instrument

sbtdc
Your business. Better.

Thank you for your participation in the business student team program at WCU. Below you will find a survey to assess the work the students from WCU completed with your company. Your comments are greatly appreciated and will be used to improve the program for future semesters.

Date: _____ Your Name: _____

Your Company or Organization: _____

(Please circle the most accurate answer to each of the questions below; include additional comments in the space provided)

1. Did you find the team's communication and behavior to be polite and professional?

Always Generally At Times Seldom Not At All

Comments:_____

2. How many times were you in contact with your student team over the course of this project?

More than 15 15 10 5 1

Comments:_____

3. Was the content of the team's report meaningful and of adequate depth?

Very Much So Generally Neutral A Bit Weak Not At All

Comments:_____

4. Was the content of the team's final presentation meaningful and of adequate depth?

Very Much So Generally Neutral A Bit Weak Not At All

Comments:_____

North Carolina Small Business Technology Development Center