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Leveraging Group Diversity to Improve Student Learning

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Management of classroom diversity may contribute to creating a structured collaborative learning environment that supports student learning. This research explores whether leveraging students' diverse skills and cultural backgrounds through teamwork improves student performance in finance courses. The study involved seven sections of the Introductory Finance course, offered in a hybrid modality, across two semesters. Results indicate that the classroom intervention effectively generated more culturally diverse groups. Additionally, students in more diverse teams performed significantly better in perceived learning and the actual class performance.

Keywords: cultural diversity, student learning, heterogeneous groups, teaching innovation, competency diversity

Introduction

The U.S. Census predicts that over half of the nation's population will be people of color by 2044. A recent NBER analysis attributes about 25% of the GDP growth per capita to the increase in female participants in the workforce. In addition, the increase in diversity does not only relate to race and ethnicity. It also includes sexual orientation, gender, language background, etc. Therefore, it is essential to encourage diversity in the classroom to prepare students for the increasingly diverse workforce.

Diversity in higher education has benefited students in their learning and overall experience. Students exposed to diverse student bodies reported more remarkable educational growth and satisfaction with their personal college experience (Kuh & Hu, 2003). Similarly, the business workplace emphasizes group heterogeneity as cultural diversity has increased work performance (Richard, 2000). Most companies expect employees to work within cross-functional teams (Henke et al., 1993).

Diversity and inclusiveness have become increasingly important in the finance industry. Among the financial services CEO surveyed in the PwC Global survey (2018), 85 percent said

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promoting inclusion and diversity helps enhance business performance. In a recent CFA Institute (2020) Earning Investors' Trust study, they find a growing number of investors prioritizing racial diversity to create a more inclusive society. Other research also supports the business case for inclusive cultures that increase profitability, creativity, and innovation. Indeed, a McKinsey & Co. (2020) study revealed top-quartile companies for racial and ethnic inclusion outperformed those in the fourth quartile by 36% in profitability. Additionally, Gompers and Kovvali (2018) find a positive relationship between organizational diversity and financial performance. Specifically, they find that Venture Capital firms with more female partners have greater investment returns than those that do not.

We can consider the classroom as a microcosm of future work settings. It is possible to encourage inclusiveness and build awareness of the diverse world we live in, so students can be better prepared to succeed in business environments characterized by increasing diversity (Curşeu & Pluut, 2013; Kuh & Hu, 2003; Terenzini et al., 2001). Working in teams provides students a natural learning environment to gain exposure to a culturally diverse economy (Popov et al., 2012). Group projects are commonly used in business curricula (Huff et al., 2002) to enable students to take part in more complex or challenging projects as well as acquire the organizational, technical, and interpersonal skills required for them to succeed in their professions (Kozlowski & Ilgen, 2006).

However, educators often fail to explicitly convey the merits of working in heterogeneous groups to students due to classroom time constraints or the assumption that such benefits should already be evident to students. Meanwhile, students may be too caught up in the day-to-day dynamics of group work to fully realize and appreciate the advantages of working in such groups, thus influencing their perceived learning. As a result, students often end up with homogeneous groups, which forfeit the benefits of teamwork. To address this issue, a teaching innovation was developed and implemented to:

1. increase students' awareness of diversity,
2. motivate students to self-assign into more heterogeneous groups,
3. influence students' self-perceived learning, and
4. improve students' performance in core business courses.

The rest of the paper proceeds as follows. Section 2 outlines the teaching intervention. Section 3 presents the findings, and Section 4 concludes.

Teaching Intervention

The design of the intervention

The classroom intervention was broken down into multiple steps.

- Understanding diversity
    - This took place at the beginning of the semester. Instructors led a 15-minute session involving a brief video clip on workplace diversity featuring well-known motivational and organizational speaker Simon Sinek and a Ted talk by entrepreneur James Sun and a discussion on research highlighting the benefits of team diversity for student learning. This information was presented to start a class discussion on students' knowledge and perception about diversity and working with diverse team members.

- Forming student groups
    - Following the diversity introduction session, the students are incentivized to form diverse teams to work on their semester-long projects. The incentives were in the form of extra credits.
- Mid-semester checking-in
    - Instructors met with each group to minimize teamwork challenges and to help them work well together.
- End-of-semester survey
    - The students were incentivized to complete the end-of-semester survey to reveal their teamwork experience. The incentives were in the form of extra credits. The details of the survey are included in the methodology section. The survey results were used for the analysis.

Participants

Students enrolled in the Introductory Finance course were recruited to be part of the study. The course is a core course for the Bachelor of Science in Business Administration (BSBA) degree, so every student takes it during their Junior year at CSU Monterey Bay. The multi-section course uses a common syllabus and as a final group project that involved the completion of a financial analyst report. All sections were offered in a hybrid modality to ensure the consistency of the study.

All participants worked in groups of 5-6 students to complete the final project. A total of 165 students (74 male and 91 female) participated in the study and completed the required survey. Table 1 shows that most of the sample identified as Hispanic/Latino (52%), and 23% as Caucasians. Approximately 10% of the sample considered themselves international students. A variety of business concentrations were represented, including marketing (9.7%), management (18.2%), accounting (21.2%), and information systems (6.1%).

Table 1 presents the basic descriptive statistics of the student sample that participated in the study. A total of 165 students that were enrolled in the Introductory Finance course in 2017 and 2018 participated in the study. Panel A reports the ethnicity breakdown of the participants. Panel B reports the number of languages spoken among the participants. Panel C reports the concentration breakdown, and Panel D reports the gender breakdown.

Table 1
Descriptive Statistics

Panel A			
Ethnicity	Frequency	Percent (%)	Cumulative Percent (%)
Hispanic/Latino	86	52	52
White	51	31	83
Asian	10	6	89
Black/African American	5	3	92
Other	13	8	100
Panel B			
Number of Languages Spoken	Frequency	Percent (%)	Cumulative Percent (%)
1	70	37,6	38,0
2	97	52,2	90,8
3	11	5,9	96,7
4	6	3,2	100,0
Panel C			
Concentration	Frequency	Percent (%)	Cumulative Percent (%)
Accounting	35	21	21
Marketing	16	10	31
Management	30	18	49
Information system	10	6	55
Entrepreneurship	6	4	59
Ag business	9	5	64
General business major	15	9	73
Not a business major	44	27	100
Panel D			
Gender	Frequency	Percent (%)	Cumulative Percent (%)
Male	74	45	45
Female	91	55	100

Methodology

In order to analyze the effectiveness of the intervention, the student data was collected via a 10-15 minutes online survey using Qualtrics. The survey results were used to construct a few key variables.

To identify the overall effectiveness of teamwork from students' perspective, we asked students to report on a 5-point Likert-type scale how group work influenced their self-perceived performance on the college's major learning outcomes (*How has group work influenced your performance in each of the following areas*; *(1) very negatively to (5) very positively*). Following Rinaldo et al. (2013), items were developed to assess major learning objectives associated with specialized knowledge (i.e., the ability to understand key concepts in marketing) as well as four intellectual skills (i.e., ability to write professionally, deliver a professional oral presentation, use quantitative data to support business analysis, and produce a critical analysis for the assigned business project) based on self-reports. Unfortunately, due to the anonymous nature of the survey, it was not possible to connect individual responses to their actual course performance, so we can only analyze the data at an aggregate level.

To identify *actual level of heterogeneity* in each group, students were asked to characterize their group by reporting the presence of six different diversity identifying factors, namely: gender, age, international background, exposure to foreign culture, language(s) spoken, and field of study. To explicate, when gender diversity is reported as present (1=present; 0=not present), at least one member of the group is of the opposite sex. Similarly, when 'language(s) spoken' is marked present, it indicates at least one group member who speaks a second language. An overall diversity count was created by summing the presence of all the diversity factors (0=no presence of any of the diversity categories listed; 6=presence of all listed diversity categories), which quantified the level of heterogeneity in each group.

Perceived diversity was measured by asking students to rate a 5-point one-item bipolar scale anchored on low (1) to high (5) for the following statement: *"The overall level of diversity represented in my group is..."* A median split was conducted to reclassify students as either perceiving low (i.e., group is relatively homogenous) or high levels of diversity (i.e., group is relatively heterogeneous). Additionally, *group effectiveness* was included as a control variable and measured by asking: *How effective was your group in working together to complete the assigned final project?* (1= not at all effective; 5=extremely effective).

Aside from the indirect data collected from the survey, we also collected two direct performance measures to study the effectiveness of the intervention. The *participation grade* captures students' in-class performance, and the *project report grade* measures the quality of the group report. Unfortunately, the study's design does not allow analysis at the individual student level, so the results we presented below are all at the aggregate course level.

Results

Effectiveness of the diversity reinforcement intervention

To identify whether the teaching intervention motivated students to self-select into more heterogeneous groups, we conducted an independent-samples t-test comparing students' group culture diversity among those exposed and not exposed to the classroom intervention. Overall, students exposed to the intervention reported a higher culture diversity level than those in the

control group (Table 2). The difference is statistically significant at 1% confidence level. This finding highlights the effectiveness of the intervention in motivating students to self-assign into more heterogeneous groups. However, when examining student perception towards the level of diversity represented in their respective groups, there were no differences between those exposed and those not exposed to the intervention. Although the perceived level of cultural diversity is higher for the students exposed to the intervention, the difference is not statistically significant.

Table 2
Impact of intervention on team diversity

	Treatment		Control		Treatment - Control	
	Mean	Std Dev	Mean	Std Dev	T-stat	P-value
Perceived level of culture diversity	4.56	0.7346	4.25	0.8969	1.44	0.1541
Actual level of culture diversity	5.08	1.1557	4.04	1.6806	2.85	0.0061
Perceived level of competency diversity	3.86	1.7428	3.25	2.0483	1.24	0.2199

Note: Table 2 reports the mean and standard deviation of the three types of diversity measure that are used in the study. It also reports the differences between the treatment and control group.

In addition to the cultural diversity, the study also examined the impact of the intervention on competency diversity. Similar to what we find about the perceived level of cultural diversity, the difference in perceived level of competency diversity was not significant, either. In other words, despite the classroom intervention and having unequal levels of actual culture diversity represented in their groups, all students reported comparable levels of perceived diversity.

Impact of team diversity on group effectiveness and individual perceived learning

We used simple regression analysis to investigate the impact of team diversity on group performances and individual student perceived learning. The dependent variables are different measure of group performances (i.e., group effectiveness, quality of group work) and individual skills (i.e., writing ability, presentation skills, quantitative reasoning skills, critical thinking skills, and major learning). The independent variables are the actual level of cultural diversity and the perceived level of competency diversity.

Table 3 shows that both diversity measures improve group effectiveness significantly while only competency diversity improves the quality of group work and other individual skills. The results are interesting and somewhat expected. Competency diversity has a greater influence on student learning since it was constructed using different skillsets. Students are more likely to learn from each other if they possess various abilities. For instance, students with strong writing skills can help improve the writing of other students if he/she lacks such ability. On the other hand, the cultural diversity is not directly related to learning, so it is not surprising to see there is little impact on perceived learning.

Table 3
Impact of diversity on group effectiveness and individual perceived learning

Parameter	Group effectiveness	Quality of group work	Improve Writing	Improve presentation	Improve QR skills	Improve critical thinking	Improve understanding of key concepts
Intercept	2.809*** (<0.0001)	2.5450*** (<0.0001)	2.7276*** (<0.0001)	3.1340*** (<0.0001)	3.1715*** (<0.0001)	3.3864*** (<0.0001)	3.1996*** (<0.0001)
Actual level of culture diversity	0.1805* (0.067)	0.1330 (0.2007)	0.0487 (0.5563)	-0.0061 (0.9385)	0.0683 (0.3299)	0.0660 (0.355)	0.0730 (0.3284)
Perceived level of competency diversity	0.1401** (0.039)	0.2184*** (0.003)	0.2746*** (<0.0001)	0.2355*** (<0.0001)	0.1934*** (0.0002)	0.1662*** (0.0016)	0.1842*** (0.0006)
Adjusted R-sq	0.09	0.08	0.10	0.08	0.08	0.09	0.08
N Obs	165	165	165	165	165	165	165

Note: Table 3 presents the results of seven different regressions. The analysis examines the impact of diversity on various learning outcomes. The *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively, in two-tailed tests.

Impact of team diversity on students' actual class performance

To examine the effectiveness of the teaching intervention on students' actual performances in class, we conducted two independent-sample t-tests comparing students' 1) participation grades and 2) project written report grades among those exposed and not exposed to the classroom intervention. By comparing the performance differences between the sections exposed to the intervention and the one that was not, we can isolate the impact of the intervention. We only compared the class-level performance instead of individual student-level because the survey was done anonymously, which was impossible for us to match the student's response to his or her grades. We could not include the Marketing course in this analysis because Finance and Marketing courses are taught very differently, making them incomparable.

Table 4 shows that students achieve significantly higher grades on participation and the group project report following the teaching intervention. By encouraging students to form diverse teams, they can take advantage of the increased diversity to achieve a better grade in the class. Students leverage the diverse skills present in their teams to enhance the learning experience. Written communication skill is one of the essential skills that all college students should master by the time they graduate. It has also been shown as one of the most valued skills in the real world.

Table 4
Impact of intervention on actual class performances

	Treatment		Control		Treatment - Control	
	Mean	Std Dev	Mean	Std Dev	T-stat	P-value
Participation Grade	80.31	25.3436	70.56	25.1756	1.7	0.0936*
Group Project Report	46.83	2.1038	45.52	1.9387	2.81	0.0062***

Note: Table 4 presents the difference in students' performances between the class that was exposed to the teaching intervention and the class that was not.
The *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively, in two-tailed tests.

However, it is typically hard to teach written communication in a quant-heavy course, such as finance, because it is packed with key concepts. As a result, students often do not get many improvements in writing when they are taking Finance courses. Our study suggests that instead of asking instructors to spend precious class time to teach written communication; we can have students learn from each other by putting them into diverse groups. In other words, students who have better-written communication skills can teach those lacking such skill sets. This is a cost-effective method that does not require much time from the instructor but can generate significant improvements.

Conclusion

In sum, the study responds to an urgent need in finance education to prepare our students for increasingly diverse and inclusive finance industry. The CFA Institute already points out "inclusion and diversity are critical to the future of the investment management industry" (CFA Institute, 2021). Therefore, students need to be better prepared to participate in a diverse workforce. The results of the study suggests it is possible to have students self-select into more diverse teams for group projects as long as they are aware of the diversity measures and are properly incentivized to

do so. In addition, diversity significantly enhances group effectiveness, so students are more likely to get the benefits of teamwork when working in a heterogeneous group as opposed to a homogenous group. Similar to what Gradel and Edson (2010) documented, we also find a significant improvement in perceived learning when the groups are more diverse, which suggests that being able to learn from each other and/or serve as resources for one another enhances the learning process. Moreover, not only the perceived learning was improved, but the classroom intervention enhanced the actual class performances. The sections exposed to the intervention performed significantly better than the ones not.

The adaptability of the intervention is very high and could be adaptable horizontally (across various types of courses) and vertically (across various levels of courses). Any course that requires some form of teamwork could utilize such intervention with the suggested scaffolding tips and resources in mind to form diverse groups and reap the student learning benefits by ensuring "perceived diversity" in the groups. Instructors are encouraged to base the criteria for forming diverse groups on the composition of the class. The instructor can scale up or down the criteria for group formation based on classroom conditions to maximize the diversity presented in each group. Instructors should spend more time helping students understand diversity dimensions that have more layers and levels to it to allow for the students to fully incorporate this understanding into group formation.

It may take longer for students to become acquainted and comfortable working with diverse team members. Given that perceived diversity is key, instructors should assist students in overcoming such challenges and reinforce the benefits of being in a diverse context by incorporating team building strategies and activities, including understanding the role of trust in managing group dynamics amongst diverse group members. Trust can play a crucial role in the performance of the team. Without trust, the team can be split into subgroups, minimizing collaboration, which defeats the purpose of diverse teams (Gratton et al., 2007). Instructors can scaffold diverse team-building activities throughout the semester and intervene at different project stages to further help educate students about handling conflicts remind them of the benefits of working in diverse teams.

Although the innovation was carried out and tested in undergraduate-level courses, it is likely to also be helpful in a graduate (i.e., MBA) level course where a strong emphasis on teamwork is expected. In fact, in the case of MBA courses where more team-building strategies are often implemented in the program, such innovation for group forming could be fruitful in the long run for students. MBA students often have specific professional experiences coming in, and such workplace experiences may allow them to be more appreciative of the challenges and benefits of working in diverse groups.

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How to Improve Grades Earned in Big Business Finance Classes

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Using samples from large Business Finance classes (other variations of the course name could be Financial Management, Corporate Finance), we explore in this study the key determinants of student performance. We find empirical evidence that supports the hypothesis that grades earned in big Business Finance classes are positively related to the students' seating proximity to the front podium. Specifically, when the repeating students, which consist of a small fraction, are deleted from the analysis, the remaining students' grades earned are related to their Euclidean distance from the front podium at 5% statistical significance level. Furthermore, we find the grades earned are also related positively and significantly to the attendance rate but are not related to the number of times the students who voluntarily attended the optional tutoring sessions conducted by the teaching assistants. This study shed light on improving student performance in future finance education for large business school students.

Keywords: Business finance education, financial management education, corporate finance education, pedagogy, Euclidean distance

Introduction

Teaching big classes of Introductory Business Finance to all business students of various sub-disciplines has become an economic reality, especially in recent years in view of the decrease in state funding and the increased demand for junior faculty members to conduct academic research. The effectiveness of educating large lecture classes in the introductory finance classes has become more of an imperative matter than ever. In this paper, we use samples from large Business Finance classes and explore the key determinants of student performance, i.e., the relation between seating position, attendance, tutoring, and students' class grades, respectively. We find empirical evidence that supports the hypothesis that grades earned in big Business Finance classes are positively related to the students' seating proximity to the front podium. We will examine the literature in the next paragraph and discuss how our findings fit and contribute to the current literature.

Studies have found evidence that shows front and center seating positions are characterized by high student-teacher interaction (e.g., Leavitt, 1951; Liem, 1975; Howells and Becker, 1962; Adams, 1969; Totusek and Staton-Spicer, 1982). There is also a rich number of studies that focus on the seating and class performance in various disciplines, for example, medicine, sociology, biology, accounting (see Stires, 1980; Montello, 1988; Kalinowski and Toper, 2007; Marshall and Losonczy-Marshall, 2010; Tagliacolloab et al., 2010; Zomorodian et al., 2012; Shernoffa et al., 2017; Will et al, 2020). None of current literature we find are conducted in finance discipline. Most of the studies find positive effect of close proximity on class performance. Specifically, Becker et

al., (1973) show that front and center seated students tend to get better grades. Holliman and Anderson (1986) study the relationship between student grades and proximity, centrality, density, and aisle seating. They find only the proximity has a positive effect on grades, while no significance found with centrality, student density, or aisle seating. Benedict and Hoag (2004) find that students in their Introductory Economics classes who prefer to sit near the front of the room have a higher probability of receiving A's, whereas those who prefer the back have a higher probability of receiving D's and F's. McGowan et al. (2017) use a 12-week Java programming university module, The *PinPoint.* They concluded that the best assessment results were achieved by the students in the front rows and that assessment scores degraded the farther students sat from the front. Additionally, while the most engaged students were found to regularly sit at the front, the same was not true for the most academically able or those with the greatest prior programming experience. On the contrary, Armstrong and Chang (2007) find no evidence that seat location affects college-level Introductory Biology student achievement even in very large classes where students sitting in the back are a considerable distance from the instructor. Rather, the differences in performance observed are consistent with the idea that highly motivated students are more likely to sit in the front, resulting in an uneven distribution of scores.

In this study, we differentiate from the previous studies by using samples of large finance classes (Introductory Business Finance to be exact) to start with. The student body is primarily from business school. This gives us firsthand direct evidence related to finance education. We study the direct relation between a student's final grade earned and the student's seating Euclidean distance from the front podium, the student's class attendance rate, and the frequency of attending the optional tutoring sessions conducted by teaching assistants. Our results are generally consistent with the current literature. We find empirical evidence that supports the hypothesis that grades earned in big Business Finance classes are positively related to the students' seating proximity to the front podium. We next delete a small fraction of the repeating students (those who had failed once or more times in the same course in prior semesters) from the analysis. We find the remaining students' grades earned are related to their Euclidean distance from the front podium at 5% statistical significance level. The grades earned are also related positively and significantly to the attendance rate. However, we find no evidence that grades are related to the number of times the students who voluntarily attended the optional tutoring sessions conducted by the teaching assistants. We provide valuable insights for instructors of large introductory finance classes to improve education effectiveness, viz., assigning seats for students based on performance, and making attendance a requirement and strictly enforce it.

The reminder of the paper is structured as follows. In section 2, we propose the testable hypotheses. Section 3 discusses our methodology and data. Section 4 presents the empirical findings. Section 5 concludes.

Hypotheses

We developed three testable hypotheses all of which the dependent variable is *Grade* earned and the independent variables are *Euclidean distance d* from the front podium, *Attendance* and *Tutoring* sessions attended.

The first null hypothesis maintains that a student's performance, as captured by the final letter *Grade* earned, is independent of Euclidean distance, *d*, from the front podium. The alternative hypothesis posits that a student who sits nearer to the front podium is expected to earn a higher grade, while a student who sits farther away from the podium can expect to earn a lower grade. In

other words, *Grade* earned is inversely related to Euclidean distance, *d*, in the following ordinary-least-squares regression.

$$\text{Grade} = \beta_0 + \beta_1 d + \varepsilon$$

This null hypothesis implies β_1 to be statistically insignificant from zero while the alternative hypothesis implies β_1 to be negative and statistically significant from zero.

The second null hypothesis posits that the *Grade* earned is independent of the *Attendance* rate. The alternative hypothesis maintains that a student whose attendance rate is higher is expected to earn a higher grade. In other words, *Grade* is positively related to *Attendance* rate in the following ordinary-least-squares regression:

$$\text{Grade} = \alpha_0 + \alpha_1 \text{Attendance} + \varepsilon$$

The null hypothesis implies α_1 to be statistically insignificant from zero while the alternative hypothesis implies that α_1 to be positive and statistically significant from zero.

The third null hypothesis maintains that the *Grade* earned is independent of the frequency of the optional *Tutoring* sessions attended by the students. The alternative hypothesis posits that a student who sought help more frequently in the optional *Tutoring* sessions could expect to improve her/his *Grade* earned.

$$\text{Grade} = \tau_0 + \tau_1 \text{Tutoring} + \varepsilon$$

The null hypothesis implies τ_1 to be statistically insignificant from zero while the alternative hypothesis implies that τ_1 to be positive and statistically significant from zero.

We chose OLS regression over multinomial logit as the number of possible outcomes in our dependent variable grade is five (with 4 for A, 3 for B, 2 for C, 1 for D, and 0 for F), while the number of independent variables is only one on Euclidean distance. For multinomial logit to work, the number of independent variables has to be equal to or greater than the number of possible outcomes for the dependent variable.

To investigate the combined effect of the three explanatory variables on student performance, we posit that the three explanatory variables could affect *Grade* earned in an additive manner as:

$$\text{Grade} = \delta_0 + \delta_1 d + \delta_2 \text{Attendance} + \delta_3 \text{Tutoring} + \varepsilon$$

The null hypothesis implies δ_1, δ_2 and δ_3 to be statistically insignificant from zero while the alternative hypothesis implies them to be negative, positive and positive respectively.

Next, we investigate the interaction effect of Attendance and Tutoring as subsidiary explanatory variables on the primary explanatory variable, the Euclidean distance. To see if each of the two subsidiary explanatory variables is able to overwhelm the primary explanatory variable, we create dummy variables D_A and D_T. The D_A variable takes a value of 1 if the student's attendance is above the class's average; and 0 otherwise. The D_T dummy variable takes a value of 1 if the student had ever attended tutoring; and 0 otherwise. We interact each dummy with the Euclidean distance by creating two multiplicative variables D_A*d and D_T*d respectively. The full model follows:

$$\text{Grade} = \theta_0 + \theta_1 d + \theta_2 D_A{*}d + \theta_3 D_T{*}d + \varepsilon$$

The null hypothesis implies that θ_2 and θ_3 to be statistically insignificant from zero. The alternative hypothesis will allow us to infer if *Attendance*, *Tutoring* would be able to overwhelm the *Euclidean distance* in affecting *Grade* earned among the students.

Lastly, we investigate the students' innate academic ability in determining their Grade earned. We first thought of using their SAT or ACT scores. Unfortunately, they were not available to us. Moreover, a significant portion of the students transferred from community colleges, and therefore we would lose too many observations since these students were admitted without ACT or SAT score. We next think of using their cumulative GPA *before* entering the two Business Finance classes. Again, we ran into lack of data points because of their community college provenance, and the fact that this Business Finance course is part of the foundation curriculum at the junior level required of all majors. Many were there as first semester students. Faced with such challenges, we were able to cull only the *faute de mieux* end-of-semester cumulative GPA, *CGPA*, and we use that as a proxy of each student's innate academic ability. We then proceed to test our hypothesis as:

$$\text{Grade} = \gamma_0 + \gamma_1 d + \gamma_2 \text{CGPA} + \varepsilon$$

Methodology and Data

We obtain our data from two large classes in the Business Finance course taught in the Fall 2019 semester in a large midwestern public university. These two large classes of Business Finance, more than 150 and 50 initial enrollments respectively, were a required junior-level foundation course of all business students regardless of their declared sub-discipline major or the lack thereof. Each class met twice a week, each meeting lasted for 1 hour and 15 minutes, and they met for a total of 16 weeks in the Fall 2019 semester. Since the registrar's office required student attendance be reported to federal agency, the instructor followed the extant practice of the resident colleague who had taught those classes on a regular basis by registering the attendance of all students in both classes with the help of a teaching assistant who accompanied the instructor into the classrooms and stayed there during the entire meetings. To facilitate the process of registering each daily attendance for such high-enrollment classes, students are required to return to the same seat each sat on in the first meeting. An email was sent to all enrolled students one working day before the first meeting reminding them to remember their respective seats on the first meeting as they would be required to return to the same seat for the rest of the semester for this particular course. The same reminder was reiterated verbally in the first meeting. The verbal reminder was supplemented by circulating a blank seating chart (see seating charts in the Appendix) where students had to write down their names for the teaching assistant to code the seating positions into his Excel spreadsheet for subsequent roll calls in all future meetings throughout the semester. During the in-class announcement, students were encouraged and allowed to move to their desired seats, as long as the seats were not occupied, to accommodate those students who might not had read the pre-class email on fixed-seating requirement for the entire semester.

Diagrams 1 and 2 in the Appendix present the 2-dimensional plan views of the seats in the two lecture venues that accommodated the >150 and >50 enrolments respectively.

In Diagram 1, the imaginary y-axis is the central column that runs through seats A5, B9, C9, D9, …, L9, and M5. The x-axis is the front of the room. The z-axis (not shown in Diagrams 1 and 2 since both are plan views) arises from the slope the rows of seats are built on.

In Diagram 2, the y-axis is the middle aisle. The x-axis is the front of the room. The z-axis arises from the slope on which the five rows of seats are built on.

The Euclidean distance, d, is calculated as $d = \sqrt{x^2 + y^2 + z^2}$. For example, seat H7 in Diagram 1 has its Euclidean distance, d, calculated as $\sqrt{-2^2 + 8^2 + 8^2}$= 11.49. By symmetry, seat H11 will have the same Euclidean distance since it is located at the same level or row, and same

distance from the imaginary y-axis. This *Euclidean distance, d*, variable will be our main independent variable.

We culled the data on the *repeat status* of the students from the registrar's office disclosure which all instructors received sometime one-third into the fall semester as part of the federal-required attendance audit. The *repeat status* was not used as a variable; *repeat status* was used merely as a screen to exclude certain students from the regression analyses.

We culled the absenteeism rate and voluntary attendance of the tutoring sessions from the two teaching assistants who helped the instructor throughout the semester. There is a provision in the syllabus that granted 5% to attendance and in-class participation. Because of the sheer sizes of both classes, the 5% was eventually allocated purely based on attendance alone and not on in-class participation level which was unwieldly to track. After deleting the first 6 meetings when add or drop option was still available, a total of 26 meetings were required. The variable *Attendance* was derived from these 26 required meetings, and 3.846% of the 5% was deducted for each absence. Hence, a student who was absent twice from the 26 required meetings would have an *Attendance* score of 92.31% as an independent variable. To enable for interaction effect in regression, we also derived a dummy variable called D_A which takes on a value of 1 when the student's attendance is above the class's average, and 0 otherwise.

We culled the frequency (i.e., the number of times) certain students attended the optional tutoring sessions from the two teaching assistants, and labeled the data as *Tutoring* variable. To enable for interaction effect in regression, we also derived a dummy variable called D_T which takes on a value of 1 for the 45 students who had sought tutoring help, and 0 for the remaining 142 students who never sought tutoring help.

We manually collected the end-of-semester cumulative grade point average, CGPA, for all students who took the finals. We used CGPA as another explanatory variable.

We culled the final letter grades from the grade-derivation spreadsheets the instructor imported from the Sakai's Learning Management System. We assigned a 4.00 for "A", 3.00 for "B", 2.00 for "C", 1.00 for "D," and 0.00 for "F" grades. This variable is called *Grade* earned, and it is our dependent variable.

Empirical Results

Table 1 presents the empirical results for the first testable hypothesis. The big class started with slightly over 150 students while the small class started with nearly 60 students. By the end of the semester, 135 students and 52 students took the final exam in the big and small classes respectively. The OLS regression results are reported in columns (1) and (3). Among the overall test takers, 13 and 3 students from the big and small classes, respectively, were repeating students. As repeating students had taken the test before, their *Grades* earned might be subject to selection bias due to the fact that it was not the first attempt. In order to address this potential endogeneity concern, we exclude repeating students and report the results in column (2) and (4).

Table 1
OLS regressions of grade earned on the Euclidean distance of the seat from the podium

	Big class of >100 students		Small class of ≈ 50 students	
	(1)	(2)	(3)	(4)
N	135	122[+]	52	49[+]
Intercept	2,301	2.834	2.588	2.785
(t-stat)	(9.552)**	(12.256)**	(8.751)**	(9.221)**
Euclidean distance, d	-0.00929	-0.0262	-0.0907	-0.1125
(t-stat)	(-.855)	(-2.593)**	(-1.7690)*	(-2.1961)**
R^2	0.00547	0.05304	0.0589	0.09307
F	0.73	6.72**	3.13*	4.82**

*(**) statistically significant at 10% (5%) level.
[+]After 13 (3) repeating students were excluded from the big (small) class.

To exclude the repeating students so that the remaining students consisted only of those students who attempted the course for the first time, our observations decreased from 135 to 122 in the big class, and from 52 to 49 in the small class.

From the results in Table 1, we see that there was a negative relation between *Grade* earned and *Euclidean distance d* from the front podium to the student's seat for both classes of all students though only the small class showed statistical significance at the 10% level. When we excluded 13 repeating students from the big class, and 3 repeating students from the small class, the negative relation between *Grade* earned and *Euclidean distance d* became statistically significant at the 5% level for both classes.

Table 2
Results for the second testable hypothesis

	Big class of >100 students	Small class of ≈ 50 students
	(1)	(2)
N	135	52
Intercept	-0.18295	0.354347
(t-stat)	(-.57929)	-0.716487
Attendance	0.027984	0.022392
(t-stat)	(7.561447)***	(3.730163)***
R^2	0.3000646	0.214347
F	57.17548***	13.91***

*** Statistically significant at 1% level.

From the results in Table 2, we see that there was a positive relation between *Grade* earned and *Attendance* at the 1% for both classes. Students who attended more regularly earned better grade in both classes of Business Finance.

Table 3
OLS regression results of grade earned on optional tutoring sessions sought during the semester

	Total # of students who attended optional tutoring	From the big class	From the small class
	(1)	(2)	(3)
N	45	29	16
Intercept	2.0918	1.85124	1.852054
(t-stat)	(12.03)***	(7.57)***	(3.08)***
Tutoring	0.027285	0.161157	0.042166
(t-stat)	(0.99)	(1.76)*	(0.70)
R^2	0.02246	0.1035	0.03397
F	0.988	3.11**	0.4923

*(**)[***] statistically significant at 10%, (5%), and [1%] level.

From the results in Table 3, we see that the *grade* earned did not improve when the participating students attended more times of the optional *tutoring* sessions. When we divided all the 45 participating students based on their origins of big class and small class, we still did not find evidence from the 16 students who originated from the small class that attending more optional *tutoring* sessions indeed helped them to improve their grades. For the remaining 29 students who originated from the big class, we found evidence that attending more optional *tutoring* sessions helped them to improve their *grade* earned at the 10% significance level.

Table 4
OLS regressions of grade earned on the Euclidean distance, Attendance and Tutoring

	Big class of >100 students			Small class of ≈ 50 students	
	(1)	(2)		(3)	(4)
N	135	122[+]		52	49[+]
Intercept	1.94	2.83		2.59	2.79
(t-stat)	(6.55)**	(12.26)***		(8.75)**	(9.22)**
Euclidean distance, d	-0.0072	-0.0135		-0.0704	-0.0925
(t-stat)	(-.65)	(-1.59)		(-1.45)	(-1.61)
Attendance	.013	.016		.021	.026
(t-stat)	(.98)	(1.04)		(1.23)	(1.47)
Tutoring	.012	.013		.027	.031
(t-stat)	(1.18)	(1.24)		(1.07)	(1.28)
R^2	0.0127	0.1587		0.3598	0.3847
F	2.73***	4.54***		2.13**	3.45***

**(***) statistically significant at 5% (1%) level.
[+]After 13 (3) repeating students were excluded from the big (small) class.

The results in Table 4 are classical textbook manifestation of collinearity among the three explanatory variables which causes the coefficients to become insignificant, the coefficient of the intercept term and the R^2 value to increase in each regression. These results explain why we only ran regression using one explanatory variable at a time to begin with for the simplest remedy for collinearity is to not include collinear explanatory variables in the same regression.

Table 5
OLS regressions of grade earned on the Euclidean distance, dummy variable for Attendance and dummy variable for Tutoring to show interaction effect

	Big class of >100 students			Small class of ≈ 50 students	
	(1)	(2)		(3)	(4)
N	135	122[+]		52	49[+]
Intercept	2.08	2.97		2.48	2.81
(t-stat)	(6.12)**	(10.26)***		(6.75)**	(8.75)**
Euclidean distance, d	-.0081	-.0106		-.0172	-.0183
(t-stat)	-.812	(-2.76)**		(7.65)***	(7.98)***
D_A*d	-.0012	-0.0035		-.0087	-.0101
(t-stat)	-.96	(-1.25)		(-1.57)	(-1.48)
D_T*d	-.0096	-.0076		-.0152	-.0168
(t-stat)	(-2.34)**	(-3.85)***		(-1.99)**	(-2.65)***
R^2	0.0091	0.056		0.038	0.045
F	7.65***	8.91***		2.13*	3.45**

*(**)[***] statistically significant at 10% (5%)[1%] level.
[+]After 13(3) repeating students were excluded from the big (small) class.

From the coefficients of the two interaction terms, it is apparent that *Euclidean distance* could not overwhelm *Attendance* but *Euclidean distance* could overwhelm *Tutoring* in deciding the student's *grade* earned. This is evinced by the insignificant coefficient for the D_A*d explanatory variable but by the significant coefficient for the D_T*d explanatory variable. A caveat is in order: this could have been a sheer numerical outcome because the number of students who sought tutorial help was only a fraction of each class, 21% in the big class and 31% in the small class.

As expected by the plethora of literature, results in Table 6 show that *CGPA* consistently provides statistically significant explanation for the *Grade* earned by the students in the two big Business Finance classes. The CGPA effect was stronger than that of the Euclidean distance from the podium too since the t-values for the CGPA are higher than their corresponding t-values for the Euclidean distance variable.

Of the 16 repeating students in the two big BF classes, 10 of them passed, while the remaining 6 failed. Of the 6 who failed, their average seating distance was –.096σ less than the average Euclidean distance from the podium. Of the 10 who passed, their average seating distance is a –.005σ less than the average Euclidean distance from the podium. This means academically-poor students (as represented by the 6 repeating students who failed in their non-first attempts) would not be able to improve their grade to the passing level even if they choose to seat themselves closer to the podium. This leads us to believe that our result holds true only for students who attempt big Business Finance classes for the first time. *Caveat lector*!

Table 6
OLS regressions of grade earned on the Euclidean distance and cumulative GPA

	Big class of >100 students			Small class of ≈ 50 students	
	(1)	(2)		(3)	(4)
N	135	122[+]		52	49[+]
Intercept	2.75	2.81		2.66	2.79
(t-stat)	(3.99)***	(4.65)***		(5.28)***	(6.76)***
Euclidean distance, d	-.00982	-.0165		-.0178	-.0189
(t-stat)	(-.804)	(-1.98)**		(-1.74)**	(-2.08)**
CGPA	1.0087	1.0183		1.0234	1.0327
(t-stat)	(3.89)***	(4.56)***		(3.76)***	(4.01)***
R^2	.0476	.0674		.0389	.0598
F	6.87***	9.75***		8.66**	9.89***

*(**)[***] statistically significant at 10% (5%)[1%] level.
[+]After 13(3) repeating students were excluded from the big (small) class.

Conclusion

This study provides insights into two of the common parameters an instructor of finance discipline can deploy to improve student performance in large introductory finance classes. We use samples from big Business Finance classes and explore the key determinants of student performance, i.e., the relation between seating position, attendance, tutoring, and students' class grades, respectively. We find empirical evidence that supports the hypothesis that grades earned in big Business Finance classes are positively related to the students' seating proximity to the front podium, and class attendance. To shed light on improving student performance in future finance education for large business school students, instructors can try to relocate poor-performing students from back seats to one of the empty front seats, and by register attendance more diligently to increase attendance rate. Optional tutoring, unfortunately, provides little evidence for its efficacy in improving student learning outcome.

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Appendix

Diagram 1: Plan view of seats for the room that accommodated >150 students

Exit	Back of room, flat aisle																	Exit
Upward-sloping aisle	Space for wheel-chairs				M1	M2	M3	M4	M5	M6	M7	M8	M9	Space for wheel-chairs				Upward-sloping aisle
	L1	L2	L3	…					L9								L17	
	K1	K2	K3	…					K9								K17	
	J1	J2	J3	…					J9								J17	
	I1	I2	I3	…					I9								I17	
	H1	H2	H3	…					H9								H17	
	G1	G2	G3	…					G9								G17	
	F1	F2	F3	…					F9								F17	
	E1	E2	E3	…					E9								E17	
	D1	D2	D3	…					D9								D17	
	C1	C2	C3	…					C9								C17	
	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	
	Space for wheel-chairs				A1	A2	A3	A4	A5	A6	A7	A8	A9	Space for wheel-chairs				
Exit	Front of room																	Exit

Diagram 2

Plan view of seats for the room that accommodated >50 students

Upward-sloping side aisle	Back of room										Upward-sloping middle aisle	Back of room										Upward-sloping side aisle
	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10		E11	E12	E13	E14	E15	E16	E17	E18	E19	E20	
	D1	D2	D3	…						D10		D11	D12	D13	…						D20	
	C1	C2	C3	…						C10		C11	C12	C13	…						C20	
	B1	B2	B3	…						B10		B11	B12	B13	…						B20	
	A1	A2	A3	…						A10		A11	A12	A13	…						A20	
Exit	Front of room																					Exit

Student Performance Comparison of Online versus Face-to-Face Finance Courses

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This article analyzes student performance of online platform versus in-class setting through introductory finance courses at undergraduate and graduate levels with a diverse sample of students. Controlling for student characteristics that impact student learning, we find online students perform similarly to in-class counterparts at the undergraduate level. For more challenging MBA finance course, students in online platform do significantly worse than students in traditional class setting. These results are consistent with the different learning level hypothesis that difference in student performance between online and in-class setting could be due to varied student learning levels assessed by different courses. This study sheds light on prior literature that documented conflicting results in examining student performance via different delivery modes.
Keywords: Online learning, learning effectiveness, student performance, finance courses, instructional delivery methods

Introduction

The recent COVID-19 pandemic abruptly forced many schools around the globe to shift from face-to-face instruction to online teaching and learning. Given the uncertainty posed by the new virus, many schools made plans to employ a mix of course delivery methods for upcoming fall and spring semesters. In the end, more and more educators are adapting to online education. This rapid shift has re-triggered the concern on student learning outcome through online instruction versus traditional face-to-face setting among students, family, and faculty. Prior to the pandemic, one in three students enrolled in degree-granting postsecondary institutions had taken some distance education courses (The U.S. Department of Education, 2017). Online courses in distance education offer students flexibility and convenience to complete a course without leaving their place of dwelling. This course delivery method is especially attractive to many who want to earn a college degree without commuting to campus daily. According to Allen and Seaman (2016), an ever-increasing number of colleges and universities (63.3%) consider distance learning as part of their growth strategy and critical to their institution's long-term success. In the face of the pandemic, distance learning is also a particularly useful tool for schools to continue providing educational services to students when in-class instruction is not desirable.

With the rising and evolving of distance education, numerous studies examined student learning effectiveness of online versus in-class instruction and reached conflicting conclusions. Specifically, Coates, Humphreys, Kane, and Vachris (2004), Farinella (2007), Gratton-Lavoie and

Stanley (2009), and Trawick, Lile, and Howsen (2010) document that students in face-to-face class setting perform better than students in online learning. The authors compare student performance of two course delivery modes in the subjects of economics or finance. Meanwhile, many studies document insignificant difference on overall student performance between online versus in-class instruction. A seminal work by Russell (1999) examines over 350 studies over the period of 1928 to 1998 and finds no difference on student learning outcome for distance and in-class instruction. Consistent with Russell (1999), recent studies by Ary and Brune (2011), Crain and Ragan (2017), and Cox (2018), examining finance courses at undergraduate level, confirm insignificant performance difference between online and in-class students. On the other hand, Means, Toyama, Murphy, Bakia, and Jones (2010) analyze over 1,000 studies over the period of 1996 to July 2008 and conclude that students, on average, do slightly better in online classes than those who receive in-class instruction. Studies consistent with Means et. al (2010) include Bertus, Gropper, and Hinkelmann (2006), Hiltz (1997), and Shoemaker and Navarro (2000).

Given the mixed signals from empirical studies, Fendler, Ruff, and Shrikande (2011) introduce learning levels into the discussion of the efficacy of two delivery modes. Fendler et al. (2011) argue that the conflicting results from prior studies could be due to different learning levels based on Bloom's (1956) taxonomy, from low such as knowledge and understanding to high such as analysis and synthesis, tested in different courses. They find that online students perform poorly in synthesis questions compared to in-class students and similarly to in-class students in questions testing students' knowledge, understanding, application, and analysis of course materials. Fendler et al. (2011) suggest student performance between online and in-class setting could be similar for courses that emphasize lower learning levels, whereas online students could perform worse than in-class students in courses that emphasize higher learning levels such as synthesis.

With Fendler et al. (2011) in mind, we investigate student learning effectiveness between online versus in-class instruction in introductory finance courses at both undergraduate and graduate levels. Both courses introduce basic finance practice and principles to a diverse student body with the undergraduate course aimed for all business majors and the graduate course for all MBA students of diverse academic backgrounds. Additionally, the undergraduate level course tests student learning levels of knowledge, understanding, and application. Whereas the learning levels for MBA finance course are higher and significant components of the course require students to analyze cases and synthesize information from business cases using knowledge and materials covered in the course. Given these learning level differences, we expect that online students should perform similarly to if not better than in-class students at undergraduate level, of which significant part of student grades are determined by questions testing lower learning levels. On the contrary, we expect online students should perform worse than in-class students in graduate level course, of which significant part of student grades are determined by questions and/or business case studies testing higher learning levels.

We collected student survey data in spring, summer and fall semesters of 2019. Our sample consists of 224 students, with 171 undergraduate and 53 MBA students, respectively. We compare online student performance with their in-class counterparts and control for student characteristics such as GPA for either undergraduate or graduate program, student major, gender, cumulative credit hours earned, student working hours per week, and average study hours per week, which have been documented by prior studies to impact student learning. We find that there is no significant performance difference between online and in-class students when using the overall sample. However, examining undergraduate and graduate courses separately, we find different results for the two courses. Specifically, we find insignificant performance difference between

online and in-class students for undergraduate course, while online MBA students perform worse than their in-class counterparts. The findings are consistent with Fendler et al. (2011) that online students do worse than (similarly to) in-class students for courses in which student grades are mainly determined by questions testing high-level learning (low-level learning).

Most prior studies focus on finance courses at either undergraduate or graduate level when examining online versus in-class student learning effectiveness. We contribute to the literature by examining finance courses at both undergraduate and graduate levels, which is more comprehensive. The second contribution of this study is to test the different learning level hypothesis introduced by Fendler et al. (2011) using similar introductory finance courses with different learning levels. We argue that the learning levels for undergraduate and graduate level courses are naturally different. Therefore, student performance difference between online and in-class learning could be distinct for these two courses. Specifically, courses that focus on lower learning levels could result in similar performance between online and in-class students, while courses that focus on higher learning levels could result in poor performance of online students compared with in-class counterparts. The findings of this study could shed light on the conflicting conclusions reached by numerous prior studies. The final contribution of this study is the use of a sample with a more diverse student body. Most studies employ a sample from a single school which could lack diversity in student body. This study utilizes a sample from two regional universities, which represents a more diverse group of students.

In next sections, we discuss prior literatures related to this paper, followed by the descriptions of the courses used in this study. Then we summarize data and present regression models and empirical results. The last section concludes the study.

Related Literature

Empirical studies of student performance through different delivery methods are abundant with conflicting and mixed results. Russell (1999) examines over 350 studies on distance education and suggests that there is no significant difference in student learning outcome between distance and in-class platforms. Means et. al (2010) perform a meta-analysis of more than 1,000 empirical studies of online learning over the period of 1996 to July 2008 and find that, on average, students who take courses through online platform perform slightly better than students who receive in-class instruction. The studies included in both Russell (1999) and Means et. al (2010) examine student learning outcome in online versus face-to-face courses of various disciplines and are not limited to finance only. You may notice that Means et. al (2010) and Russell (1999) both analyze a large number of studies but for two different non-overlapping time periods. The conclusions from these two research change from no difference in student performance between two delivery modes to slightly better performance for online students than their in-class counterparts. This may be due to the increased and improved technology usage in online courses over the years. Tamim, Bernard, Borokhovski, Abrami, and Schmid (2011) conduct a meta-analysis of about 1000 studies that examine the technology usage in the classroom and conclude that technology usage enhances student learning.

As suggested by Arbaugh et al. (2009), finance courses may be less adaptable to online delivery method than courses of qualitative and amenable to self-study such as marketing and management. Finance courses are quantitative in nature and require students not only master finance concepts and theories, but also solve numerical problems. Farinella (2007) examines student performance of an introductory finance course via online versus in-class sections and finds that students of the

online sections significantly underperform students of in-class sections. Additionally, Farinella (2007) reports that student evaluations of the online sections were significantly lower than those of in-class sections. Similarly, Brau, Cardell, Holmes, and Wright (2017) examine learning effectiveness of students who take online versus face-to-face classes of five finance courses at undergraduate level and find that students of online classes either perform similarly to or worse than students of in-class sections. Moreover, Ary and Brune (2011) examine the impact of course delivery modes on student performance in Personal Finance course and find instructional delivery mode makes little difference on student performance. Similarly, Cox (2018) examines introductory finance courses and finds student performance in online learning is similar to face-to-face learning. Crain and Ragan (2017) examine student learning effectiveness of an intermediate finance course and find indifferent performance between online and in-class instruction. At the other end of spectrum, Bertus et al. (2006) find online students of MBA finance courses perform significantly better than students of in-class counterparts. Bertus et. al (2006) argue that the benefits of an online MBA finance course may exceed its costs, leading to better achievement of online students than in-class students. The benefits of an online finance course include viewing lectures multiple times and pausing videos in the middle of a lecture. The costs include the lack of interaction between students and instructors and peers.

Given the diverging conclusions regarding student learning effectiveness between the two delivery modes, Fendler et. al (2011) introduce the perspective of different learning levels based on Bloom's (1956) taxonomy into the debate of student performance comparison via online versus in-class instruction. They argue that, for lower-level learnings such as knowledge, understanding and application, it does not really matter which delivery method students choose and student performance could be similar between online and in-class learning. However, for higher-learning levels such as synthesis, online students tend to perform worse than in-class students. Fendler et. al (2011) provide a sound and legitimate theory to help explain the mixed signals derived from prior literature.

Prior studies document that student characteristics play an important role in impacting student performance. Borde, Byrd, and Modani (1998) examine the relationship between student success and factors that influence student performance in an introductory finance course. They report that student GPA and good performance in accounting prerequisites positively impact student performance. They also find that male students and students working fewer hours on a job do better than female students and students working more hours on a job. Doran, Bouillon, and Smith (1991) and Maksy and Zheng (2008) examine student performance in accounting courses and find significant and positive association between student GPA and course performance. Arbaugh, et al (2009) show that college GPA is a significant predictor of student success in courses regardless of instructional delivery modes.

Bredthauer and Fendler (2016) investigate the determinants of student success in an online introductory finance course with a sample of 309 students and find that student GPA, math and accounting pre-test, and major have significant positive effect on student performance, whereas total semester hours taken, gender, and outside distraction are negatively associated with student performance. Huh, Jin, Lee, and Yoo (2010) examine the effects of student characteristics on their performance of undergraduate accounting courses taught through online and in-class formats. They find both GPA and gender are contributing factors to impact student performance. Fendler, et. al (2011) report that GPA and major are strong predictors of student performance. Following prior studies, we control for student characteristics that affect student learning when examining student performance differences between online and in-class setting.

Course Description

The courses evaluated in this study are undergraduate-level introductory finance course and graduate-level finance course for MBA students at two regional public universities. We choose the introductory finance course because the course is open for all business majors rather than dominated by finance majors. Additionally, this course is very similar across the two universities in terms of topics, instruction and assessment. Furthermore, this course is closely comparable to graduate level finance course that is open to MBA students with diverse educational backgrounds and covers similar topics but at different learning levels. We collect data from two universities, one comprehensive public university in the Upper Midwest of US and one HBCU (Historically Black College and University) school in the Southwest of US. Hence, we had a diverse student body from various ethnic and social backgrounds. Student performance and characteristics data were collected during semesters of spring, summer, and fall 2019 via student surveys. Table 1 presents the summary of these two courses under study and Table 2 compares these two courses in face-to-face versus online setting.

Table 1
Course Description

	Undergraduate Introductory Finance Course	MBA Financial Management Course
Credit Hours	3	3
Prerequisites	Yes	Yes
Required	Yes for business majors	Yes for MBA students
Students	Various business majors	MBA students with diverse backgrounds
Topics covered	Financial Ratio analysis, time-value-of money, bond and stock valuation, investment criteria, capital asset pricing model, and cost of capital	Financial Statement analysis, Time-value-of money, bond and stock valuation, capital budgeting, capital asset pricing model, and cost of capital
Assessments	Exams and Quizzes: exams account for 80% of grade	Case study, article discussion and exams: exams account for 35% of grade
Learning objectives	knowledge, understanding, and application	Application, analysis, and synthesis

NOTE: This table displays general information about undergraduate introductory and graduate finance courses assessed in this study.

Table 2
Course Design of Face-to-face vs. Online Courses

Panel A: Undergraduate Introductory Finance Course

Course Design	Face to Face	Online
Lecture	Live lectures with PPT	Recorded PPT presentations
Class meeting	3 hours per week	No class meeting and student can watch PPT presentations at any time of the week
Office hours	3 hours per week in office	2 hours per week online
Assessments		
• Quizzes	In class	online
• Written Assignments	Financial ratios analysis	Same as face-to-face session
• Exams	Multiple choices exams in class	Multiple choices exams proctored online
Grading Policy	Quizzes account for 10% and exams account for 80% of grade	Same as face-to-face session
Interaction between students and faculty	Students ask questions mainly in class and during office hours	Students ask questions mainly through email, virtual office hours, and posting questions on the forum

Panel B: MBA Financial Management Course

Course Design	Face to Face	Online
Lecture	Live lectures with PPT	Recorded PPT presentations
Class meeting	3 hours per week	No class meeting and student can watch PPT presentations at any time of the week
Office hours	2 hours per week in office	1 hour per week online
Assessments		
• Quizzes	In class	online
• Written Assignments	Case study	Same case study as face-to-face session and article discussions online
• Exams	Multiple choices exam in class	Multiple choices exams proctored online
Grading Policy	Exam account for about 35% of grade	Close to face-to-face session
Interaction between students and faculty	Students ask questions mainly in class and during office hours	Students ask questions mainly through email, virtual office hours, and posting questions on the forum

Note: This table presents the course design of undergraduate Introductory Finance and MBA Financial Management courses taught online vs. in-class setting assessed in the study.

Introductory Finance Course

The introductory finance course at undergraduate level is required for all business majors, namely, accounting, entrepreneurship, finance, information systems, international business, marketing, management, and real estate, as a part of business core curriculum. Consequently, most students who take introductory finance course are non-finance majors. The topics covered, for both online and in-class settings, consist of financial statements and ratio analysis, time-value-of money, valuation of bond and stock, capital budgeting investment criteria, risk and return measures of an investment, capital asset pricing model, and cost of capital. Students have live lectures in face-to-face classes while students in online classes can watch/re-watch and pause pre-recorded lecture videos from the instructor at a time of their convenience. For both online and in-class versions of introductory finance course, student performance is assessed through multiple quizzes, financial ratio analysis project, and exams, which mostly involve lower-level learning such as knowledge, understanding, application and a bit of analysis. Additionally, exams with multiple-choice questions account for most of the student grade for both course delivery modes. Exams are taken in regular classrooms for face-to-face courses and are proctored by online testing centers for online courses.

MBA Financial Management Course

The MBA programs at the two universities offer students one core finance course in financial management. Students admitted to the MBA programs have various professional backgrounds and many possess bachelor's degrees in a broad spectrum of areas but not limited to business. Hence, students' skills, knowledge and backgrounds in finance can vary widely. Specifically, some students may not have any finance knowledge and background prior to taking the course. The topics covered in Finance Management consist of time-value-of money, bond and stock valuations, capital budgeting investment criteria, risk and return measures of an investment, capital asset pricing model, and cost of capital. Students in MBA program are required to not only grasp key financial concepts and solve financial problems but analyze multiple business cases and discuss articles on a regular basis throughout the semester. For MBA students, exams are not the primary components of their grades. Overall, the requirements of analytical, written, and communication skills are much more rigorous for students in the MBA program than in the undergraduate program.

To sum up, the MBA finance course requires a higher level of learning from students compared to the undergraduate introductory finance course. The key difference of the course via two delivery modes is the interaction between students and the instructor. For face-to-face classes, students interact with instructors and peers in a classroom setting and meet instructors during office hours. Whereas, for online classes, virtual office hours are held on a weekly basis and communication through emails and/or phone with students are common in this study. Students can use online forum to communicate with each other. However, the overall interaction between the instructor and students could be much less in an online class compared to a face-to-face class.

Data and Methods

We collect student characteristics data through surveys of volunteer students enrolled in undergraduate introductory finance course and MBA Financial Management course at two public universities and student performance data (the grade they earn) through the instructors who teach

those courses in spring, summer, and fall semesters of 2019. Introductory finance course in the undergraduate program is offered in multiple in-class sections and one online section each semester. As a result, more data/observations were collected from in-class sections than the online counterparts. Table 3 presents the descriptive statistics of the overall sample. As shown in the table, the dataset consists of 224 students, with 79 (or 35 percent) and 145 (65 percent) of students taking online and in-class courses, respectively. Of the overall sample of 224 students, the number of students (percent of students) who took introductory finance course and Financial Management are 171 (76%), and 53 (24%), respectively. You may notice that we have more observations from the undergraduate course than the MBA course due to the enrollment differences at these two programs. Nearly 51% of our sample are female students and 49% male students. Female students account for 53% (42 out of 79 students) in online classes compared with only 50% (73 out of 145 students) in face-to-face counterparts. In other words, female students have a slightly larger representation in online courses than face-to-face counterparts in our sample. Additionally, domestic students account for 84% (189 students) of sample and international students 15% (34 students). In terms of ethnic origin of students, the percent (number) of students with Asian, African American, Hispanic, White, and other origins are 17% (39), 36% (80), 2% (5), 42% (93), and 3% (7), respectively. Our sample represents a diverse group of students in the study.

Table 3
Descriptive Statistics of the Sample

	Number of Observations	Percent
Online vs. face to face		
Online	79	35%
Face-to-face	145	65%
Gender		
Female	115	51%
Male	109	49%
Courses		
Introductory Finance	171	76%
Financial Management	53	24%
Student status		
Domestic students	189	84%
International students	34	15%
Ethnic Origin		
Asian	39	17%
African American	80	36%
Hispanic	5	2%
White	93	42%
Other origins	7	3%
Total	224	100%

We analyzed the data using standard univariate and multivariate regression analysis to examine the relationship between student course performance and course delivery modes and other

explanatory variables. We use the following OLS regression model based on Brau et al. (2017) and Bredthauer and Fendler (2016):

$$Course\_Grade_{i,t} = \alpha + \beta_1 Online\_Face_{i,t} + \beta_2 Cummulative\_GPA_{i,t-1} + \beta_3 Major_{i,t} + \beta_4 Predictibility\_Schedule_{i,t} + \beta_5 Cumm\_CreditHr_{i,t-1} + \beta_6 Gender_i + \beta_7 Hours\_Working_{i,t} + \beta_8 Study\_Hr_{i.t} + \varepsilon_i$$

The dependent variable, *Course_Grade*$_i$, is the course final grade for student *i* and assigned numeric value of 4.0, 3.67, 3.33, 3, …, or 0 corresponding to a course letter grade of A, A-, B+, B, …, or F. The independent variable, *Online_Face*$_i$, is a dummy variable and our variable of interest. It is defined as 1 for online class and 0 for face-to-face class. Recall that we intend to examine the relationship between course delivery mode and student performance of finance courses of different learning levels. Following prior studies (Brau et al., 2017; Bredthauer and Fendler, 2016), we control variables that may impact student learning effectiveness, such as student Cumulative GPA (*Cumulative_GPA*), student major (*Major*), predictability of schedule (*Predictability_Schedule*), student cumulative credit hours earned (*Cum_creditHr*), student gender (*Gender*), student working hours per week (*Hours_Working*), and average weekly study hours on the respective subject matter (*Study_Hr*).

Specifically, Cumulative *GPA* reflects student previous academic achievements and student's general aptitude. Arbaugh et. al (2009) report that student GPA is the single most significant indicator of student success in a course. Following this and other studies (e.g. Bredthauer and Fendler, 2016; Doran et al., 1991; Maksy and Zheng, 2008), we expect a positive association between student cumulative GPA and the final grade a student can earn in a finance course regardless of course difficulty levels. *Major* is a dummy variable and defined as 1 for finance and accounting majors and 0 otherwise. Finance and accounting are closely related and both quantitative in nature, while other business disciplines such as management or marketing are less quantitative. Following Brau et al. (2017), students with finance or accounting major are expected to do better in finance courses. *Cum_creditHr* is the number of cumulative credit hours earned by students up to the semester of data collection. Prior studies (e.g., Anderson, Benjamin, and Fuss, 1994) identify more years of schooling leads to better course performance. Following this line of argument and Brau et al. (2017), we include the number of cumulative credit hours earned by students in some of the regression models as an explanatory variable of student performance. *Gender*, a dummy variable, is defined as 1 for male and 0 for female. Prior studies (Brau et al., 2017; Bredthauer and Fendler, 2016) find that male students tend to do better in math heavy subjects. We predict that *Gender* should be positively related to student performance.

Wooten (1998) asserts that outside distractions such as hours spent on work and extracurricular activities and family responsibilities can distract a student from study, hence, negatively impact a student's performance in class. Following Bredthauer and Fendler (2016), we use student self-reported predictability of schedule and number of hours spent on work and extracurriculum activities to proxy outside activities. Predictability of schedule (*Predictability_Schedule*) is given a value of 1 for highly unpredictable schedule, 2 for somewhat unpredictable schedule, and 3 for predictable schedule. A positive association is expected between the predictability of schedule and student performance. *Hours_Working* is the number of hours per week a student works at a job or participates in official school-related athletic programs in the semester of data collection. A negative association is expected between *Hours_Working* and student performance. Finally, we control for *Study_Hr*. *Study_Hr* is the number of hours per week a student spends studying this

course. Hypothetically, more study time and efforts spent on a course leads to better learning outcomes.

Table 4 presents summary statistics of variables used in the regression models. The mean and median course grade (*Course_Grade*) for students in our sample are 2.83 (a letter grade of C+) and 3 (a letter grade of B). The mean and median student Cumulative GPA (*Cumulative_GPA*) is both at 3.25. The average study time on the course of subject matter is around 7 hours per week. The average working and/or athletic program hours per week is 25. On average, our students work many hours while taking courses for their degree. The mean and median value of the predictability of schedule (*Predictability_Schedule*) are 2.21 and 2, which indicates students' schedule is somewhat unpredictable during the semester of study.

Table 4
Descriptive Statistics of Variables

Variables	N	Mean	Median	Std	Min	25%	75%	Max
Course_grade	224	2.83	3	1.04	0	2	4	4
Online_Face	224	0.35	0	0.48	0	0	1	1
Cumulative_GPA	211	3.25	3.24	0.44	2.18	2.9	3.54	4
Major	171	0.22	0	0.42	0	0	0	1
Predictability_Schedule	222	2.21	2	0.68	1	2	3	3
Cum_CreditHr	205	69.56	77	42.23	0	30	96	210
Gender	224	0.49	0	0.50	0	0	1	1
Hours_Working	219	24.75	20	16.62	0	12	40	65
Study_Hr	222	6.84	5	6.71	0	3	9	42

Note: This table reports the summary statistics of student characteristic variables for the overall sample. All the data, except for *Course Grade*, reported in the tables are based on the survey results collected from students in undergraduate Introductory Finance and MBA Financial Management courses in spring, summer, and fall semesters of 2019. *Course Grade* is collected by instructors who teach those courses at the end of respective semester.

Table 5 presents the univariate tests of student course grade and explanatory variables based on online versus in-class groups. For the overall sample, the differences in student cumulative GPA and gender between online and in-class groups are not significant. Online students perform slightly better than in-class students while they have less predictable schedule, more working and study hours. When examining the sub-groups, we find that students in the online introductory finance course perform better than their in-class counterparts, but students in online MBA course perform significantly worse than their in-class counterparts. Meanwhile, the average cumulative GPA for online MBA students is also significantly lower than that of in-class counterparts. In next section, we present the results of regression models controlling various explanatory variables that impact student learning.

Table 5
Online vs. Face-to-face Courses Univariate Test

Panel A: Overall Sample

Variables	Online Course Group	Face-to-face Course Group	Difference	*p*-value
Course_grade	3.0256	2.7311	0.2945**	0.0422
Cumulative_GPA	3.3068	3.211	0.0959	0.1293
Predictability_Schedule	2.1013	2.2727	-0.1715*	0.0704
Cum_CreditHr	59.3067	75.4692	-16.1626***	0.008
Gender	0.4684	0.4966	-0.0282	0.6882
Hours_Working	31.943	20.6964	11.2466***	<.0001
Study_Hr	9.6218	5.3299	4.2919***	<.0001

Panel B: Undergraduate Introductory Finance Course

Variables	Online Course Group	Face-to-face Course Group	Difference	*p*-value
Course_grade	2.9352	2.5681	0.3671**	0.0433
Cumulative_GPA	3.1949	3.1352	0.0597	0.3933
Major	0.1522	0.248	-0.0958	0.1834
Predictability_Schedule	2.1304	2.2683	-0.1379	0.2548
Cum_CreditHr	91.1395	85.4144	5.7251	0.3341
Gender	0.5652	0.48	0.0852	0.3259
Hours_Working	25.9022	18.6983	7.2038***	0.0065
Study_Hr	8.0435	4.5	3.5435***	<.0001

Panel C: MBA Financial Management Course

Variables	Online Course Group	Face-to-face Course Group	Difference	*p*-value
Course_grade	3.1515	3.75	-0.5985***	0.0047
Cumulative_GPA	3.4694	3.8173	-0.348***	0.007
Predictability_Schedule	2.0606	2.3	-0.2394	0.162
Cum_CreditHr	16.5313	17.3684	-0.8372	0.8382
Gender	0.3333	0.6	-0.2667*	0.0593
Hours_Working	40.3636	33.4211	6.9426*	0.073
Study_Hr	11.8906	10.475	1.4156	0.5828

Note: This table presents the mean of the variables for online vs. face-to-face groups and reports the *p-values* of mean difference for the two groups. Panel A/B/C presents the results for the overall sample/undergraduate introductory finance group/MBA group, respectively. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Empirical Results

Table 6 examines the relationship between course delivery mode and student performance using OLS regression model for the overall sample and sub-sample groups, controlling for explanatory variables. It is worth noting that *Cumulative_GPA* is strongly and positively associated

with *Course_Grade*, regardless of course delivery modes, in all six models. This is consistent with prior studies that student GPA is the most important single indicator of student performance. Our variable of interest, *Online_Face*, is only significant in models (5) and (6), for MBA course. Specifically, Models (1) and (2) show the regression results based on the overall sample, and *Online_Face* is insignificant in both models, which implies online students perform similarly to in-class students when we aggregate both courses. Interestingly, *Hours_Working* is positively associated with *Course_Grade* in Model (2).

Table 6
OLS Regression Results

Independent Variables	Dependent Variable: *Course_Grade*					
	Overall Sample		Undergraduate Introductory Finance		MBA Financial Management	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-1.8720***	-2.2794***	-2.0029***	-2.6401***	-0.1262	-0.0573
	(<0.001)	(<0.001)	(0.0002)	(<0.001)	(0.8852)	(0.9576)
Online_Face$_t$	0.12976	0.01082	0.2181	0.047	-0.3414*	-0.38575*
	(0.265)	(0.9267)	(0.1462)	(0.7516)	(0.0933)	(0.0636)
Cummulative_ GPA$_{t-1}$	1.4381***	1.4042***	1.47***	1.4711***	1.046***	1.05***
	(<0.001)	(<.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.0002)
Major				-0.1984		
				(0.2047)		
Predictibility_S chedule		0.12468		0.1797*		-0.18147
		(0.124)		(0.0547)		(0.2613)
Cumm_CreditH r		0.00165		0.00195		0.00631
		(0.2538)		(0.3309)		(0.3487)
Gender		0.06713		0.11697		-0.06049
		(0.5133)		(0.3511)		(0.749)
Hours_Working		0.0091***		0.00793*		0.00908
		(0.008)		(0.0634)		(0.1749)
Study_Hr		-0.00238		0.000973		-0.00351
		(0.7741)		(0.9379)		(0.7118)
N	211	191	165	147	46	44
Adjusted R-Sq	38.59%	42.98%	32.62%	37.81%	43.49%	43.21%

Note: This table examines the relationship between course delivery mode and student performance using OLS regression model for the overall sample and sub-sample groups. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Recall that the learning levels tested in each of the two courses are different. We next partition the overall sample into sub samples of courses. Models (3) and (4) present the results for undergraduate introductory finance course. Similar to the overall sample results, *Online_Face* is insignificant in both models, which indicates online students perform similarly to in-class students. This result is not surprising given that the learning levels in the introductory course are low and focus on knowledge, understanding and application. In addition to Cumulative GPA, significant variables in the model (4) include *Predictability Schedule* and *Hours_Working*. The significant

positive coefficient on *Predictability Schedule* suggests the more predictable is a student's schedule, the better is the student's course grade.

Models (5) and (6) show the results of MBA course. In both models, *Online_Face* is negative and significant at least at the 10% level. This negative association is strikingly different from undergraduate introductory finance course. MBA course involves higher-level learning, and the result is consistent with Fendler et. al (2011) that online students perform worse than their in-class counterparts in courses that test students in the higher learning levels such as synthesis.

Table 7
Robustness Check - Multinomial Logit Regression Results

Independent Variables	Dependent Variable: *Course_Grade*					
	Overall Sample		Undergraduate Introductory Finance		MBA Financial Management	
	(1)	(2)	(3)	(4)	(5)	(6)
$Online\_Face_t$	0.1427	-0.1465	0.3724	-0.0286	-1.9022**	-2.4575**
	(0.6018)	(0.6511)	(0.251)	(0.9388)	(0.0495)	(0.0329)
$Cummulative\_GPA_{t-1}$	3.4684***	3.8616***	3.2368***	3.8298***	3.6176***	4.7272***
	(<0.0001)	(<.0001)	(<0.0001)	(<.0001)	(0.0002)	(0.0009)
Major				-0.5183		
				(0.1894)		
Predictibility_Schedule		0.2875		0.4567*		-0.9951
		(0.1932)		(0.0546)		(0.1956)
Cumm_CreditHr		0.00503		0.00794		0.0129
		(0.2043)		(0.1167)		(0.6566)
Gender		0.3309		0.4549		-0.247
		(0.2442)		(0.1548)		(0.7905)
Hours_Working		0.0302***		0.0225**		0.0585*
		(0.0017)		(0.0366)		(0.085)
Study_Hr		0.00798		0.0237		-0.0403
		(0.7415)		(0.4601)		(0.3548)
N	211	191	165	147	46	44
Chi-square statistic (H_0: Beta = 0)	110.43	114.18	69.43	76.92	28.41	32.02
p-value for Chi-square statistic	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Pseudo-R2	42.20%	46.82%	35.35%	42.06%	52.94%	61.17%

Note: This table examines the relationship between course delivery mode and student performance using multinomial logit regression model for the overall sample and sub-groups. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

We next perform robustness check using multinomial logistic regression analysis for the overall sample and sub-sample groups and report the results in Table 7. The reason to use logit specification is that the dependent variable, *Course_grade*, is discrete in nature. The specifications in the multinomial logistic regression are similar to OLS regression. Table 7 shows that

Cumulative_GPA continues to be positive and significant in all models. *Online_Face* is insignificant in the overall sample and for undergraduate course group, but significantly negative in MBA course group. To sum up, the logistic regression results are strikingly similar to the OLS regression results.

Conclusion

Our analysis suggests student performance in different course delivery modes can be different for courses with different learning levels. Consistent with Fendler et. al (2011), online students perform similarly to in-class students for courses that focus on lower learning levels, as evidenced in the results of undergraduate introductory finance course. For higher learning level course, online students perform worse than in-class students, as evidenced in the results of MBA finance course. We also find that student cumulative GPA is a strong predictor of student success in courses regardless of course delivery modes. Overall, this article sheds light on the conflicting results documented in prior studies regarding student learning effectiveness in online versus in-class setting. Depending on course learning levels, faculty should think carefully about how to structure their courses to better help improve student performance when planning to move courses online.

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My Multinational Corporation: Risks and Opportunities of Doing Business Internationally

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There is a lack of active learning applications in the area of international financial management. Current research confirms this is an area of ongoing research with a high demand for practical applications. Moreover, incorporating active learning strategies in university courses significantly enhances student learning experiences. The purpose of this paper is to provide students with an active learning opportunity that allows them to apply the topics learned in international financial management to a real company with real time data. This experience allows students to achieve a deeper level of learning of the topics at hand.

Keywords: Active learning, international financial management, multinational corporation, currency risk and hedging, country risk

Introduction

There is a lack active learning applications in the area of international financial management. Especially active learning activities that use real time data. While there are many hands on projects in the finance college classroom using real time data (see for example: Athavale & Kemper, 2016; Coe, 2007; Holowczak, 2007; Lei & Li, 2012; Moreale & Zaynutdinova, 2018; Scott, 2010; and Tuluca & Zwick, 2016; among others), these application primarily focus on investments or corporate finance courses. Importantly, Breuer and Ruiz de Vargas (2021) talk about the importance of international financial management and bring to light the fact that this is an area of ongoing research with a high demand for practical applications. Moreover, Freeman et al. (2014) and Theobald et al. (2020) posit that incorporating active learning strategies in university courses significantly enhances student learning experiences. Thus, the above-mentioned work further supports the need for the development of active earning projects in the area of international financial management.

The purpose of this paper is to provide students with an active learning opportunity that allows them to apply the topics in international financial management to a real company with real time data. More importantly, this experience allows students to achieve a deeper level of learning of the topics at hand.

Related Literature

Bonwell and Eison (1991) define active learning as a method of learning in which students are actively or experientially involved in the learning process. The National Survey of Student Engagement (NSSE) and the Australian Survey of Student Engagement (AUSSE) define active learning as students' efforts to actively construct their knowledge. Brame (2016) defines active learning as activities that students do to construct knowledge and understanding, where these

activities require higher order thinking. Examples of active learning include student collaborative work, material discussion, work on case studies, and short written exercises. According to Cranton (2012), in an active learning environment learners are immersed in experiences within which they engage in meaning-making inquiry, action, imagination, invention, interaction, hypothesizing, and personal reflection.

The concept of active learning started to draw more attention in the late eighties and early nineties with the study of Bonwell and Eison (1991). It has however gained much more traction in recent years, as information is readily available to students and the role of teachers or professors in the classroom is becoming more and more of a facilitator and not a source of information. Ambrose, Bridges, DiPietro, Lovett, and Norman (2010), Bonwell and Eison (1991), and Chickering and Gamson (1987) find active learning approaches are effective across disciplines. More recently, Freeman et al. (2014) conducted a meta-analysis of 225 studies and found active learning as compared to traditional lecture improves student performance on various class assessments across multiple STEM disciplines**.** Importantly, according to Haak, HilleRisLambers, Pitre, and Freeman (2011) another added benefit of active learning approaches is that they are an effective tool in making classrooms more inclusive.

While there are many active learning projects in finance using live data in a college classroom (see for example: Athavale & Kemper, 2016; Coe, 2007; Lei & Li, 2012; Moreale & Zaynutdinova, 2018; Scott, 2010; and Tuluca & Zwick, 2016; among many others), these application mainly focus on investments or corporate finance courses. There are a limited number of applications using real world data in the realm of international financial markets. This work includes Arnold and Buchanan (2004), Holden (2012), Holowczak (2007), Marshall (2004), and McCarthy (2016) among others. Arnold and Buchanan (2004) discuss modeling interest rate parity conditions. In his book on financial modeling in Excel, Holden (2021) addresses modeling international parity condition such as interest rate parity, estimating future exchange rates and the valuation of foreign currency swaps. Marshall (2004) uses simulations to demonstrate triangular and covered interest arbitrage. Holowczak (2007) develops and explores effective cross rates, triangular arbitrage, covered interest arbitrage, and forward rate quote spread models using real time data. McCarthy (2016) develops a case study geared towards graduate students on operating currency exposure. However, with the exception of McCarthy's work on operating exposure, the previous work lacks connection between these topics and their use in the international financial management of a firm. For example, this work may describe the use and importance of currency forecasting to profit from an international investment but may not discuss the use and importance of exchange rate forecasting for a multinational firm.

Importantly, there are other critical areas of international financial management that are not addressed in existing pedagogical projects such as the impact of trade treaties or other types of international government controls on the firm's bottom line, impact of supply chains, and the measurement and hedging strategies of not only operating exposure but all types of currency risk (transaction, operating and translation) on a firm's bottom line. Moreover, there are other forms of country risk such as for example, the impact of a pandemic like Covid-19 or a war like the Russia-Ukraine war, that are typically not addressed in existing pedagogical projects for international financial management, especially in an integrated manner.

The current project works towards filling in this gap by analyzing multiple aspects of the international financial management of existing multinational firms in an integral manner and using live data.

FactSet Database

The source of live data used for this project is called FactSet. FactSet is a forty-year old company that creates user-friendly open data and software solutions that provide access to financial data and analytics to clients around the world. The FactSet data include information on global public and private companies, global financial markets, and economic data of countries around the world, among other types of information. Currently, FactSet works with over 200 colleges and universities globally.

FactSet also offers training certifications that students can obtain. There are five FactSet essentials certifications: Core Products, Derivative Products, Portfolio Analysis, Productivity Suite, and Universal Screening. The Core Products Certification, the most comprehensive of the certifications, includes four components: Navigating FactSet, Markets, Equities, and Fixed Income. Students self-study for each certification using FactSet provided videos and quizzes. Students must complete a comprehensive exam at the end of each FactSet essential set of videos and quizzes. Obtaining all five FactSet essentials certification takes about four hours.

Through the University's subscription to FactSet, students have remote access to the FactSet data from their own computers at any time. The accessibility of FactSet helps coax students into using it more often and thus becoming more familiar with it, reaping the benefits of using live data from this source for their financial analyses.

The use of the FactSet database in particular allows for the quick access and analysis of new and interesting features in current markets. For example, FactSet has easily accessible information on each company's supply chains, as well as Covid related impact comparison between companies in the same sector.

It is important to note that all students have had at least minimal exposure to the FactSet database in their introductory finance class. In this course, all students are required to take a one-session FactSet tutorial with a finance faculty member and complete a short assignment on the use of FactSet.

The Course: International Financial Management

International financial management is an upper level elective finance course. The course prerequisite is financial management, the sequel to the introductory finance course. Students taking international financial management are typically business students in their junior and senior years and majoring or minoring in finance, international business, or economics.

Nonetheless, this project can be integrated into a finance cases class or upper level financial management class where students have sufficient international business finance background. Moreover, if there is no access to FactSet, the project can be implemented using alternate information sources such as Bloomberg.

The Project: My Multinational Company

The objective of the project is for students to apply concepts learned in the international financial management course to a real company in real time. At the end of the project, students will evaluate their chosen multinational company's risks and opportunities of doing business internationally and suggest ways in which their chosen multinational corporation (MNC) can expand its international business opportunities and reduce its international risks.

Students work on this project in teams, which allows them to learn from each other. Students may have an unclear understanding of a topic, and in some cases this can be considerably improved when explained by a peer. In addition, course instructor guidance is also available to clarify questions.

To begin their project each team must select a multinational company they wish to work with. The students will then answer a series of questions regarding their chosen multinational company. These questions guide students through an analysis of their company's risks and opportunities of doing business abroad. They conclude their project by providing recommendations on potential areas to expand their company's international business and mitigate the international risks the company faces. The final product is a 10-15 page paper.

The project is divided into eleven sections. The first five sections encompass company specific questions related to company background and main lines of business, supply chains, industry performance, competitors, and sources of funding. Sections six through nine of the project represent the international focus of the company analysis. These include analyzing macroeconomic data, foreign currency, risk indicators, and the government of the country they plan to expand business in. Moreover, based on the country they plan to expand business in and their company's currency exposure, they must determine their company's currency risk and explain how they would hedge this risk.

The next section of the project addresses the Covid-19 impact on the MNC. Lastly, section eleven concludes by summarizing the analysis and explaining the company's risks and opportunities of doing business abroad. The full project is available from the author upon request.

Results and Discussion

The study sample consists of six groups of students: two groups in fall 2020, two groups in spring 2021, and two groups in spring 2022. In these six sections of the course, 65% of students enrolled were male and 35% female. Notably, the fall 2020 groups were taught primarily synchronously online via zoom. Nonetheless, survey results for this semester are in line with results from the next two semesters included in this study in which this course was taught primarily in a face-to-face format.

The number of students who answered the survey were 46 in fall of 2020, 45 in spring 2021, and 40 in spring 2022, for a total of 131 students out of 150 students enrolled in the course during the three semesters.

Students where asked the following four questions via an anonymous survey:

1. Did the final project contribute to your class learning? Please answer yes or no and why.
2. What part of the final project contributed most to your learning of this class? Why?
3. What part of the final project contributed least to your learning of this class? Why?
4. For future students, are there any changes you would recommend to the final project that would help you, as a student, learn more about international financial management?

It should be noted that the number of responses for most questions is higher than the number of students that answered the survey. This is because many students mentioned more than one reason why the project contributed to their learning as well as more than one part of the project that contributed most or least to their learning, and changes that they recommend to the final

project, if any. Moreover, total percentage of responses in the below tables may be slightly over or under 100% due to rounding.

Table 1
Survey Results

1. Did the final project contribute to your class learning? Please answer yes or no and why.

Response	**Response%**
Yes	100%
No	0%
Why did this project contribute to your class learning?	
Learned to apply course material and/or learned to analyze a multinational company	76%
Learned how to use FactSet	20%
Other	4%

Table 1 shows 100% of students answered the project had contributed to their learning. Out of 151 responses on why the project contributed to their learning, 76% mentioned that through this project they learned to apply course material to the real world and/or learned to analyze a multinational company. 20% indicated they had learned to use FactSet through this project.

Table 2
Survey Results

2. What part of the final project contributed most to your learning of this class?

Response	**Response%**
Use and/or analysis of information from FactSet	24%
Analysis of currencies and/or currency risk and hedging	23%
Country risk and country risk ratings analysis	11%
Applying topics learned about in class to an MNC analysis	7%
Learning about the macroeconomic and political aspects of a foreign country	5%
Detailed project instructions (written and video)	3%
Impact of Covid-19 on company performance	3%
Trade treaties analysis	3%
Chosen MNC's competitor analysis	3%
Supply chains	3%
Group work (peer clarifications, idea contributions)	3%
Learning about the international aspects of a company	2%
Sources of funding	2%
Everything	2%
Other topics	5%

In terms of the part of the final project that contributed most to their learning, Table 2 shows that taken together, the majority of responses refer to the application of topics in the international financial management course. These are topics that most student had not been exposed to in other finance courses. 23% of responses talk about learning how to analyze currencies and/or currency risk and hedging, 11% stated learning about country risk and country risk ratings, and 7% applying

topics they learned about in class to an MNC analysis. Other topics mentioned that contributed most to student learning are: the macroeconomic and political aspects of a foreign country (5%), the impact of coronavirus on company performance (3%), trade treaties analysis (3%), analysis of MNC's competitors (3%), supply chains (3%), sources of funding (2%), and the international aspects of a company (2%).

A few students also mentioned attributes of the project set up that helped them learn the most. For example, 3% mentioned the detailed project instructions along with video recording of a walk-through of the project instructions helped them learn the most. Moreover, 3% stated working in groups helped their learning most in this project because they learned from peer clarifications on certain class topics included in the project and they also learned from peer idea contributions to the project.

Importantly, 24% of responses mentioned that what contributed most to their learning about this project was learning how to use and/or how to analyze information from FactSet.

Table 3
Survey Results

3. What part of the final project contributed least to your learning of this class?

Response	Response%
Nothing, the entire project contributed to my learning in this class	48%
Company background	23%
Sources of revenue and/or sources of funding	4%
Finding FactSet data	4%
Working on the project in groups (challenging to work remotely)	3%
Competitor information	2%
Covid-19 impact on MNCs	2%
Various on project structure and delivery	9%
Various on lack of understanding of charts and data interpretation	2%
Various on topic does not contribute to learning because student had prior knowledge	2%

In terms of the part of the final project that contributed least to their learning, Table 3 shows 48% of student comments answered nothing, indicating the entire project contributed to their learning. 23% mention company background was what contributed least to their learning. A few of these responses acknowledge this information is necessary for the MNC analysis but do not see link between the project's company background information and risks and opportunities of doing business abroad. There are other topics with lower percentage of responses that students mention contributed least to their learning. These are sources of revenue and sources of funding (4%) and competitor information (2%).

Overall, it seems the theme of topics that contributed least to their learning are those in which the questions were asking students for information on their MNC without specifically asking them to reflect or analyze how this information would affect their company's risks and opportunities of doing business abroad.

Moreover, 3% of students' responses which came from students enrolled in fall 2020 and spring 2021, state it was challenging to work in a group project remotely. It is important to note that during this time, Covid-19 vaccines were not available to the general college-age public and gatherings outside of the classroom were for the most part discouraged due to possible contagion.

Interestingly, 2% reported analyzing the Covid impact on their chosen multinational was what contributed least to their learning. This is because towards the beginning of the pandemic, other business courses they were enrolled in also discussed the impact of Covid for businesses. Thus, some students felt they had already learned about the Covid-19 impact on businesses. The 2022 students saw the Covid impact on companies as a lesser issue, especially as compared to the impact it had on businesses at the beginning of the pandemic.

In addition, almost 4% of student responses mention what contributed least to their learning was finding FactSet data (not considering the analysis of the FactSet data). However 2/5 of these responses mention they were already familiar with using FactSet, and this is why finding the information did not contribute to their learning. Lastly, for completeness of the results, single stand-alone idiosyncratic comments were grouped into the three "various" categories at the end of the table.

Table 4
Survey Results

4. For future students, are there any changes you would recommend to the final project that would help you, as a student, learn more about international financial management?

Response	Response%
Do not recommend any changes to the final project	70%
Work on project in parts during the semester instead of at end of semester	7%
Longer FactSet review session/more time on FactSet	4%
Project Timing –do project earlier in semester/use class time to work on project	3%
Focus project on FX markets/currency exposure	3%
Make sure company you choose has a significant international presence	3%
Present project in class instead of turning in	2%
Have an example of project to look at	1%
Various -suggestions on changes in project content	4%
Various- FactSet	3%

In terms of changes they would recommend on this project that would help future students learn more about international financial management, 70% of responses said they do not recommend any changes to the final project. 7% recommended doing the project in parts throughout the semester. This is, after learning about each topic in class, learn how to find the relevant FactSet data and answer questions related to that class topic. One student suggested tracking different variables such as exchange rates or various countries macroeconomic variables from FactSet during the semester. Three other students recommended having small assignments on the different course topics

Other comments related to changes in project structure were: do project earlier in semester and use class time to work on project (3%), present the project in class instead of turning it in (2%), and have an example of the project to look at (1%). Changes they recommended with regard to the project content were: focus the project on currency markets and currency exposure (3%), make sure your chosen company for the project has a significant international presence (3%), and other individual comments. Lastly, with regard to changes for future semesters related to the use of FactSet, 4% recommend having a longer in class FactSet review session and/or spending more time on FactSet.

Let's Talk About FactSet

Almost one quarter of students' comments said that what contributed most to their learning in the project was learning how to use FactSet and/or how to analyze the information they get from FactSet. Therefore, in the last semester three questions related exclusively to FactSet were added to the survey:

1. What aspect did you like the most about using FactSet for this project?
2. What aspect did you like the least about using FactSet for this project?
3. Any additional comments on using FactSet to gather the information needed for your project.

For these added questions, the sample of students is 40 students, the students enrolled in the course in spring of 2022 that answered the survey. It is important to note students may provide more than one idea on aspects they liked most or least about FactSet as well as more than one additional comment.

Table 5
FactSet Survey

1. What aspect did you like the most about using FactSet for this project?

Response	Response %
Abundance of information	25%
Easy to read/easy to follow information	18%
Easy to interpret data and apply to analysis of MNC	10%
Having information all in one place	6%
How FactSet is organized	6%
Getting more familiar with FactSet	6%
Revenue breakdown	6%
Various on FactSet general features	6%
Various on FactSet specific features	8%
Various on learning how to use FactSet and how to analyze FactSet information	8%

When asked what they like most about FactSet, 25% of replies said the abundance of information; 18% said its easy to read and easy to follow the information; 10% mentioned understanding the data and being able to apply it to their analysis. 6% stated having the information all in one place was what they liked the most. Another 6% said how the information is organized. 6% mentioned getting more familiar with FactSet was a plus, and 6% that what they liked most was the revenue breakdown feature in FactSet. Moreover, there were also varied individual idiosyncratic comments that were grouped into one of three "Various" categories to present complete results.

Table 6
FactSet Survey

2. What aspect did you like the least about using FactSet for this project?

Response	Response%
Trouble logging on or getting on platform	25%
Finding information	23%
Nothing about FactSet contributed least to my learning/Like platform just as is	11%
Confusing since there is a lot of information to navigate through	9%
Various on overwhelming/hard to understand/interpret data	11%
Various on challenges with learning how to use FactSet/find data on FactSet	11%
Various on challenges with FactSet software	9%

In terms of what they liked least about FactSet, 25% of replies refer to trouble logging on or getting on the platform. 23% refer to having trouble navigating through FactSet or finding information. Along these lines, 9% address using the FactSet platform was confusing since there is a lot of information to navigate through. Importantly, 11 % of replies stated there was nothing about FactSet that contributed least to their learning. In other words, 11% of responses indicate they like FactSet just fine as it is. Once again, idiosyncratic comments on what aspects students liked the least about using FactSet for this project were grouped into the three various categories at the bottom of the table. Lastly, only three people provided additional comments on FactSet, which were: sometimes has a glitch, easy to use, and great experience.

Overall survey results for the My Multinational Company project are very positive. 100% of students surveyed indicated the project helped them learn more about international financial management. 48% of responses indicate the entirety of the project contributed to their learning in the course, and 70% of replies indicate they do not recommend any changes on the project.

Modifications and Challenges of Implementing the Project

Undeniably, this is a long project. It can be challenging for students working on it and also for faculty grading it. An easy solution is to select a few sections of the project as stand-alone mini projects. This also allows for the application of some aspects of international financial management to be addressed in other courses such as a financial management course or a finance cases course.

Another important challenge to address is class time needed to walk students through the project and address their questions. Although students have had exposure to the FactSet database in their introductory course, they may need more exposure before taking on the project. To address this, one class session can be used to walk students through the project using FactSet to show them where they may find the information they need.

Based on the above student comments, it may benefit student learning to implement small assignments that let students apply class topics as they are discussed in class, using FactSet data. This could help them become more proficient at both applying the topic just discussed and the use of FactSet. Nonetheless, this would require additional class time.

Furthermore, for some parts of the project such as company background and sources of funding, helping students make the connection between this information and its importance in addressing risks and opportunities of their chosen MNC's international business expansion may also be helpful.

Lastly, as students work through the project questions may arise. Many of these questions may be the same for many teams and, if time allows, addressing them in class is an opportunity for everyone to learn and discuss.

Conclusion

Overall students point out that through the My Multinational Company project they applied class topics in an integrated manner and learned how to analyze and evaluate the risks and opportunities of a firm that does business internationally. At the end of the project, students are able to provide a plan for the company to improve their international business in the future.

According to the revised version of Bloom's Taxonomy of educational objectives in Anderson et al. (2001), through active learning projects such as the one here described, students may achieve a considerably higher level of learning than through lecture alone. As educators, this is what we have set out to achieve: teach our students the knowledge and skills they need to be able to apply the course material we are so passionate about to the real world.

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Application of Experiential Learning Pedagogy in Higher Education

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Teaching reforms are driving the implementation of new learning methods. We employed a pre- and post-class survey to test the outcome of the new pedagogy-Experiential Classroom. The study wants to know whether the new pedagogy can inspire the students to change their learning attitudes and strategies and whether the adopted teaching methods meet the expectations of the students and improve their class performance. The result shows that the experiential learning pedagogy can change students' beliefs and attitudes. And such experience can be used in a broad context on the basis of the experiment.

Keywords: Experiential Learning Methods; Academic Performance; Gender; Work Experience; Higher Education

Introduction

The world is evolving rapidly in the 21st century, with new ideologies and technology generated every day. An evident trend shows that many educators are rethinking the content of educational programs and teaching pedagogies. When seeking the answers to the ultimate objective of business higher education, training students with expert academic performance is no longer sufficient. Educators should lead students to their career paths, emphasize the training of soft skills, and help students develop active learning beliefs and strategies.

In China, fierce labor market competition and pressure faced by students from their parents and societies intensify educational challenges. Before Chinese students enter universities, they are developed in a test-driven study environment. Students bear the "expectations" from their parents and peer pressure from other students of the same grade. Every year, millions of students participate in the college entrance examination in China, which provides the only chance for less privileged students to earn higher education. A Chinese student may still obtain excellent performance in the university by using past learning strategies. However, the examination techniques may become useless, and many students cannot apply theoretical knowledge into practice in the real business world. Students may feel disappointed because they have not met their career expectations in college, and employers may feel that the recruited graduates are partially prepared for their positions (Kolb, 2015).

Teaching methods and assessment criteria are crucial in shaping students' learning beliefs and strategies. A study in 2008 reported that adult teaching methods in China feature a teacher-centered, information-based, and test-driven instructional format (Wang & Farmer, 2008). Adding participative and experiential components in teaching methods will help students effectively understand the subject matter, enhance their learning attitudes and skills, and achieve excellent academic performance.

In the present study, we examined a group of postgraduate students from Hong Kong Baptist University who take the same course of Investment and Portfolio Management. We implemented the experiential learning pedagogy and changed the assessment criteria throughout the course. We designed a pre- and post-test survey to understand the differences in students' learning beliefs and attitudes and their expectations on the different teaching methods adopted. The study results should provide insights on design experiential coursework, teaching methods, and assessment criteria for business higher education in mainland China and Hong Kong.

Our experimental approach follows the method adopted by Adrian Madsen in the PhysPort Implementation Guide: Colorado Learning Attitudes about Science Survey (CLASS) (Madsen, 2019). We redesigned the survey questions and made them compatible with our context. The pre-test and post-test have the same wording and question orders, making the pre and post comparison meaningful. We examined the shifts in students' beliefs about the subject matter. Twenty-eight questions were then divided into seven categories, namely, real-world connection, personal interests and effort, conceptual connections and understanding, teamwork skills, self-learning skills, problem-solving skills, and expectations on the teaching methods. Each question has an "expert answer" to measure the shifts in students' beliefs, representing the manner by which an expert finance professional will choose an answer for a specific question. We did not measure the improvements in the students' academic performance but their learning beliefs and attitudes toward the subject matter and the real world. We also tested the relationship between students' changes in students' beliefs and their academic performance and working experience.

Our study has three research objectives: (1) understand whether the experiential learning pedagogy is effective in improving a student's learning attitudes and beliefs, (2) study the relationship between students' changed attitudes/beliefs and their academic performance/working experience, and (3) understand students' expectations and thoughts on the experiential learning methods used in class.

The rest of this article is structured as follows: Section 2 presents a literature review. Section 3 presents the methodology. Section 4 provides the results and discussions. Section 5 summarizes the conclusions.

Literature Review

We are living in a rapidly changing world with an enormous amount of new information and technologies. A marked trend to rethink the content of educational programs and teaching methods in business, spurred by hostile critics from students and employers, can be observed. Students may feel disappointed because they have not met their career expectations in college, and employers may feel that the recruited graduates are partially prepared for their positions (Kolb, 2015). Although many universities are developing new programs for emerging business and incorporate student presentations as general assessment criteria, something has gone wrong in the link between education and career development.

We aim to address the failure of the matching between university students and the career market by examining the role of university education. The purpose of higher education should be the creation of prepared minds. Higher education plays a transition role in imparting knowledge and skills to students through character and career development. Graduates are expected to be well prepared for their roles in society after graduation. However, students receiving pre-higher education experience systematic barriers from an exam-driven education system to achieve the optimal outcome of personal development in the university (Kogan, 2006).

The exam-driven education fever in China has been evidenced from the 7th century until today (Yu and Suen, 2005). Either the historical civil service (Keju) exam system or the current National College Entrance Exam (NCEE) system is maintained by state-orchestrated systems of high-stakes and extremely competitive exams. The NCEE systems have been regarded as the fair and only means for the upward mobility of a poor person. Although the NCEE performs the role of selecting students with excellent academic performance to the higher education rather than offering a job, successes in the NCEE system will lead to a college education in a crucial prestigious university, thereby leading to career success. Therefore, the glory of achieving excellent grades in exams is the dream of every high school student and family. Excellent examinees are marked with prestigious social recognition in China. Given that the entire NCEE system involves high-stakes exams, subject matters being tested will be taught and students will try to effectively learn them, whereas those not being examined will be de-emphasized (Yu & Suen, 2005). Students either skip the classes of untested subjects or review the materials for the tested subjects in the "less valuable" classes.

The exam-driven education system promotes peripheral counterproductive activities, such as "buke" (test coaching and extra hour tutoring) to improve test scores. The Ministry of Education of China has issued the strictest regulation on banning test coaching in 2018, but the problem of exam-driven education fever remains unsolved. Chinese students and parents are still secretly looking for test coaching services from experienced tutors under the fierce competition and heavy workload of school.

Students growing up under the exam-driven system are equipped with excellent exam techniques and merely soft skills that are necessary to cope with the rapidly changing environment and satisfy the demand of employers. Research about students' perceptions of the importance of soft skills for education and employment shows that most respondents feel that soft skills are useful tools for social interaction and career advancement. However, they fail to recognize that soft skills are useful for good academic performance (Majid, Liming, Tong & Raihana, 2012). The ultimate measure of success under the exam-driven system is for students to have excellent performance in the exam and obtain high marks, producing multiple side effects on students. Candidates experiencing repeated failures will become disillusioned and cynical because of the limited quotas of university entrance and the fact that students can take exams as many times as they wish. The education fever of society must have taken a severe psychological toll from the failed candidates, creating serious problems of self-doubt and low self-stem (Yu & Suen, 2005).

Another potential barrier for Chinese university students in acquiring excellent learning outcomes in the university is the pressure from parents. Study shows that mainland adolescents commonly experience high levels of pressure from their parents to perform well, which have adverse effects on their psychological functioning. The adverse effects of parents' stress will influence children's mental health and cause anxiety and depression symptoms (Quach, Epstein, Riley, Falconier & Fang, 2013). Even if Chinese students enter university, their parents still provide financial support to them until they find a job and earn a salary. The study also shows that the

suicide rate of Hong Kong youth full-time students aged 15–24 has increased by 76.1% from 2012 to 2016. Of the 75 youth suicides in 2016, 29 were presumed to be full-time students (HKJC Centre for Suicide Research and Prevention, HKU). Graduates are exposed to pressures due to traditional cultural values and the rapidly changing environment, which also intensify the challenges of business higher education.

To understand the Chinese exam-driven education fever and characteristics of students growing up under the education system, we then attempted to figure out the expectations on the "outputs" of higher education-graduates and the fierce competition of the career market. A study shows that the added value of employing a higher-level business-related qualification represents not only evidence of the acquisition and application of knowledge but also an individual's ability to think in a critical and applied manner. Employers also identified written and oral communication skills, team-working skills, and innovative mindset as important factors shaping graduate employability (Andrews & Higson, 2008). The hard knowledge of subject matters and examination techniques may become useless when students deal with the cases in the real world. In China, graduates face fierce competition in the labor market to find their dream jobs. At least 15 million people will enter the job market in 2019 as the number of new college graduates will reach a record high of 8.34 million, despite the economic downturn and the trade war between China and the US (Cheng, 2019).

Therefore, what can university educators do to inspire students to change from learning for better grades toward a comprehensive personal development in hard and soft skills to match the demand of the labor market? A teacher should amend the teaching pedagogy and assessment criteria. Traditional teaching methods, such as lectures, assignments, and examinations, tend to equip students with considerable theories and techniques to obtain high marks in homework and tests. However, the knowledge that students learn in class may become off the ground in the real business world. Students may tend to focus on acquiring excellent grades with useful exam techniques, instead of exploring and understanding the subject matter. An inappropriate design of the assessment criteria may create a "mark-driven" study environment. We acknowledge that society still recognizes excellent academic performance as a crucial measurement of candidates. However, marks can be allocated to encourage students to obtain insights on the different learning experiences. Embedding the training of soft skills into hard skills courses provides an attractive way of teaching content and an enhancement of soft skills (Tevdovska, 2015; Wang, 2008).

Experiential learning can help solve the existing educational challenges and offer several avenues to create an enhanced link between education and work. Kolb's experiential learning theory is one of the best-known educational theories in higher education. Experiential learning is the process of building meaning from direct experience. According to Kolb (1984), "Learning is the process whereby knowledge is created through experience transformation." While the experience can be gradual or left open, pedagogy is often termed a dynamic learning experience, focusing on the learning process for an individual. Experiential learning consists of activities in which "the learner is directly in touch with the realities being studied…rather than merely thinking about the encounter or only considering the possibility of doing something with it" (Beatrice, 2015). It is the acquisition of knowledge or skills through the direct experience of carting out a task. Learning by often doing happens under supervision, as part of a training or orientation process.

In the over-eager embrace of the rational, scientific, and technological aspects, our concept of the learning process itself is first distorted by rationalism and later behaviorism (Kolb, 2015).

Typically, people learn from their experiences, and we lose touch with our own experience. Thus, personal development is necessary.

Experiential learning is becoming increasingly widespread and accepted by colleges and universities. The results of experiential learning are also measurable with school credits. Internship, field trips, role plays, gaming simulations, and other experience-based education play significant roles in the curriculum. Although experiential learning has critics and skeptics for the content and substance of the technique and process, educators have been constructing and enhancing the experiential learning model since the 20th century. The experiential learning model pursues a framework for examining and strengthening the critical linkages among education, work, and personal development (Kolb, 2015). It emphasizes the vital ties that can be developed in the classroom and the real world. It also extends formal education to foster personal development from a general dimension, promoting career-development opportunities. Payne & Tanner (2011) use experiential learning and find that offering real-world data applications in class may help the students gain an advantage in career placement and future success. Hysmith (2020) shows that student-managed investment fund participation may increase the student's financial knowledge-based capacity. Bhattacharya & Kumar (2022) show that case teaching may improve students' analytical ability, self-efficacy, problem-solving, creativity, attitude building, and industry readiness. Field trips provide valuable learning experiences for many courses. It helps the student teachers construct subject instruction knowledge within informal settings (Subramaniam, Asim, Lee & Koo, 2018).

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However, adopting experiential learning pedagogy in the current higher education classes exhibits barriers. First, not all subjects are compatible with pedagogy if the subject matter is theoretical or involves profound concepts. Second, students may not react to the pedagogy actively if the instructor does not link the experiential activities to grades. Students must pay great effort to complete the additional experiential tasks aside from attending lectures, doing homework, and taking exams. Therefore, the design of specific teaching methods and the allocation of marks play significant roles in the pedagogy's success.

Methodology

Description for Experiential Pedagogy Implemented

During the designing of the experiential learning pedagogy, we implemented five participative teaching methods and allocated marks to the related outcome of each method. We run the experiment on a group of master students from Hong Kong Baptist University who took the same class of Investment and Portfolio Management.

The five teaching methods include simulation trading games, study group assignment, integrative projects, guest speakers, and field trips. We aimed to relieve students from messing up

with complicated finance formulas and numbers by adopting the above-mentioned methods. Meanwhile, they can apply the knowledge they have learned from the course into practice.

At the beginning of the course, students were asked to form into teams of six and work together for the trading game, group assignments, and integrative projects. Simulation trading games involved in-class stock trading game and a portfolio management game that lasted for one month. Considering that students had the chance to compete with one another in class, the simulation game is expected to further strengthen teamwork and self-learning skills while facilitating them with an enhanced understanding of the subject matter. Group assignments were designed to be essay questions with calculations. Each homework was assigned to students after imparting a significant block of knowledge in the lecture, with a one-week time limit to finish. A detailed elaboration on the questions and solutions was posted after the submission deadline. Integrative projects asked students to conduct a case study on one of the finance-related topics that they were interested in. We also invited industry practitioners to be our guest speakers and introduce quantitative investments in China. Finally, we arranged field trips for interested students to visit the office of a local investment company. Students participating in the guest speaker talk sessions and field trips were asked to complete a 400-word reflection. The guest speakers and field tours could bring the students the first-hand experience of the investment industry, arousing their interests and improving their connection to the real business world.

Only 40% of marks were allocated to examinations in the performance assessment criteria, and the rest of the scores were for trading games, group assignments, and integrative projects. We gave bonus marks for students who participated in and submitted written reflections for the guest speaker talk and field trip.

Design of Survey

We employed a pre- and post-test survey to examine the outcome of implementing the experiential learning pedagogy, following the PhysPort Implementation Guide: CLASS developed by Adrian Madsen. Experiential learning pedagogy is expected to contribute to the development of the soft skills and growth mindsets of students. Thus, we did not measure the improvements in the students' academic performance but their beliefs and attitudes toward the subject matter and the real world. We want to understand the relationship of finance to students' everyday lives and the manner by which they think about and study the discipline of finance. A session is added in the survey to ask students for comments on the teaching methods adopted in the class as a subjective measure of students' favorable teaching methods (Madsen, 2019).

We redesigned the survey questions and made them compatible with the coursework as compared with CLASS. The pre-test and post-test have the same wording and question orders, making the pre and post comparisons meaningful. We then examined the shifts in students' beliefs about the subject matter and expectations on the teaching approaches.

The survey was conducted online, with 28 questions in total. Each respondent was asked to fill in their name, gender, and student ID to ensure that each response was identical to a respondent. We categorized the 28 questions into seven categories: Real-World Connection, Personal Interests and Effort, Conceptual Connections and Understanding, Teamwork Skills, Self-learning Skills, Problem-solving Skills, and Expectations on the Teaching Methods. For the first six categories, each question has an "expert answer" to measure the shifts in students' beliefs, representing the manner by which an expert finance professional would choose the answer for a specific question. We summarize the question numbers by category in Table 1. Expectations on Teaching Methods

was not used to measure students' beliefs but a separate measurement on students' attitudes toward the teaching methods. Questions 3 and 5 were not scored because the content did not have an expert answer. Statement 17 was used to discard unqualified data. We also provide our complete version of the 28 survey questions in the Appendix.

Table 1
Survey Questions by Category

Categories	Statements comprising category
Real-World Connection	16 and 20
Personal Interests and Effort	7, 15, 16, and 18
Conceptual Connections and Understanding	2, 20, 21, and 22
Teamwork Skills	1, 4, 13, and 23
Self-learning Skills	6, 7, 8,14, 11, and 12
Problem-Solving Skills	9, 10, 19, and 22
Expectations on the Teaching Methods	24, 25, 26, 27, and 28
Not Scored	3, 5, and 17

Sampling and Data Processing

After conducting the pre- and post-survey in class, we discarded the responses of students who did not take the study seriously and those that include only students who took the pre- and post-survey within the same day. We used statement 17 to eliminate randomly selected answers: "We use this statement to discard the survey of people who are not reading the questions. Please select agree-option 4 (not strongly agree) for this question to preserve your answers." After we randomly discarded selected answers, we identified any student who answered the questions by choosing the same option in the pre- and post-survey and abandoned their responses. Lastly, we matched the pre- and post-course responses to ensure that the shifts in the pre- and post-test results were the differences in the way that the students were thinking rather than a difference in a student who took the survey.

Among the 70 students taking the course, we collected 67 responses (95.7% response rate) for the pre-test survey and 65 responses (92.9% response rate) for the post-test survey. We matched the pre- and post-test results and excluded students who did not carefully read the questions, leaving a total of 41 responses. Lastly, we abandoned the responses that are the same among the 41 responses. In the end, we had 39 qualified responses. Each entry is coded with the student's name, student ID, gender, academic performance, and working experience.

We then attempted to calculate the class average percent favorable and unfavorable scores. In the survey, a typical answer contains five options, namely, "strongly agree," "agree," "neutral," "disagree," and "strongly disagree." All "strongly agree" and "agree" and "strongly disagree" and "disagree" responses were collapsed. This task was initiated because different students have inconsistent interpretations of agreeing versus strongly agreeing or disagreeing versus strongly disagreeing. The same conviction of belief may not result in the same selection such that one student may respond "strongly agree" and the other may respond "agree." We calculated the average percent favorable out of the number of questions that each student answered. We then averaged these individual average percent favorable scores to determine the class average percent favorable. We repeated the same process to find the class average percent unfavorable score. Lastly, we calculated the "shift" in percent favorable responses by subtracting the pre-test class

average percent favorable from the post-test class average percent favorable. Accordingly, we can learn about the manner by which students' favorable beliefs about finance changed from the new pedagogy implemented.

Table 2 summarizes the descriptive statistics for the shift in the percent favorable score. The table illustrates that the students' learning attitudes and beliefs are changing in a positive direction through the experiential learning pedagogy. However, great differences were observed among the students. For example, the average favorable score of Overall is 6.316, and the standard deviation is 13.969. The average favorable score of All Categories is 5.395, and the standard deviation is 12.648. Specific to each category, students have a positive performance in addition to Teamwork Skills.

Table 2
Descriptive Statistics of the Favorable Score

	N	Mean	S.D.	Min	Med	Max	Kurt	Skew
Overall	39	6.316	13.969	-20.000	8.000	52.000	1.960	0.855
All Categories	39	5.395	12.648	-15.000	5.000	40.000	1.996	1.133
Personal Interest and Effort	39	4.211	19.261	-60.000	0.000	40.000	2.346	-0.640
Real-World Connection	39	1.316	31.808	-50.000	0.000	50.000	-0.356	-0.020
Conceptual Connections and Understanding	39	14.474	26.401	-25.000	25.000	75.000	-0.087	0.362
Teamwork Skills	39	-1.579	18.237	-40.000	0.000	40.000	0.673	-0.515
Self-learning Skills	39	5.263	23.604	-50.000	0.000	66.667	1.555	0.668
Problem Solving Skills	39	5.789	17.954	-20.000	0.000	40.000	-0.505	0.323
Expectations on Course Methodologies	39	10.000	44.296	-100.000	0.000	100.000	0.387	0.079

Note: 1. Overall is the summary variable of the other variables, including Expectations on Course Methodologies. 2. All Categories is the summary variable for the other variables, excluding Expectations on Course Methodologies.

Results and Discussions

Table 3 is a comparative analysis of the average percentage favorable scores. Overall and All Categories increased by 6.052 and 5.256 and were significant at the 1% and 5% levels, respectively, after the experiential learning pedagogy is implemented. This result shows that experiential learning pedagogy can effectively improve students' learning attitudes and beliefs. In terms of Conceptual Connections and Understanding and Problem-Solving Skills, experiential learning pedagogy can significantly improve students' skills.

This work classifies and compares students in accordance with their gender and work experience. This task is initiated to further analyze the impact of experiential learning pedagogy on students' learning attitudes and beliefs.

Table 3
Significance Test for the "Shifts" in Average Percent Favorable Answers

Variables	Pre-test (1)	Post-test (2)	Diff (2)-(1)
Overall	68.410***	74.462***	6.052***
	(35.519)	(40.492)	(2.722)
All Categories	69.103***	74.359***	5.256**
	(35.411)	(47.004)	(2.624)
Personal Interest and Effort	85.128***	89.231***	4.103
	(35.391)	(30.509)	(1.347)
Real-World Connection	75.641***	76.923***	1.282
	(18.657)	(17.321)	(0.255)
Conceptual Connections and Understanding	57.051***	71.795***	14.744***
	(13.260)	(21.533)	(3.527)
Teamwork Skills	81.026***	79.487***	-1.539
	(34.964)	(29.459)	(-0.534)
Self-learning Skills	71.795***	76.496***	4.701
	(21.009)	(30.558)	(1.246)
Problem-Solving Skills	57.949***	64.103***	6.154**
	(19.246)	(22.394)	(2.152)
Expectations on Course Methodologies	65.641***	74.872***	9.231
	(11.351)	(14.600)	(1.311)

Note: ***and ** indicate the significance levels at 1% and 5%, respectively. The data in the parentheses are t-values (the same below).

Table 4 compares the average percentage of favorable answers between female and male students. The result shows that male students actively change their learning beliefs and attitudes through the experiential learning pedagogy compared with female students, but it is not statistically significant. The score of male students is significantly higher than female students by 5.6126 in Teamwork Skills only. This result indicates that male students will pay great attention to teamwork to solve problems.

Table 4
Correlation of Shifts in Average Percent Favorable Answers and Gender

Variables	Female (1)	Male (2)	Diff (2)-(1)
Overall	6.8148***	4.3333	-2.4815
	(2.880)	(0.861)	(-0.573)
All Categories	5.1852**	5.4167	0.2315
	(2.207)	(1.367)	(0.6029)
Personal Interest and Effort	3.7037	5.0000	1.2963
	(0.926)	(1.149)	(0.1940)
Real-World Connection	1.8519	0.0000	-1.8519
	(0.296)	(0.000)	(-0.3783)
Conceptual Connections and Understanding	12.0370**	19.2308**	7.1938
	(2.565)	(2.379)	(0.6339)
Teamwork Skills	-4.0741	1.5385	5.6126*
	(-1.147)	(0.249)	(1.9687)

Self-learning Skills	6.6667 (1.653)	2.7778 (0.378)	-3.8889 (-0.1491)
Problem-Solving Skills	4.6154 (1.296)	8.3333 (1.603)	3.7179 (0.6525)
Expectations on Course Methodologies	14.6154 (1.652)	0.0000 (0.000)	-14.6154 (-0.2277)

Note: ***, ** and * indicate the significance levels at 1%, 5%, and 10%, respectively.

Table 5 presents a comparison of the average percentage of favorable answers based on whether students have work experience. The result shows that students with work experience will actively learn. Students with work experience scored significantly higher than those without work experience by 9.4805 in Personal Interest and Effort only. This finding indicates that students with work experience will try to adapt to new teaching methods and be active in learning for achieving optimal results.

Table 5
Correlation of Shifts in Average Percent Favorable Answers and Working Experience

Variables	Without working experience (1)	With working experience (2)	Diff (2)-(1)
Overall	4.7143*	9.4545**	4.7402
	(1.800)	(2.239)	(0.9585)
All categories	4.2857**	7.7273	3.4416
	(2.175)	(1.500)	(0.7689)
Personal Interest and Effort	1.4286	10.9091**	9.4805*
	(0.372)	(2.631)	(1.4195)
Real-World Connection	3.5714	-4.5455	-8.1169
	(0.626)	(-0.430)	(-0.7222)
Conceptual Connections and Understanding	15.1786***	13.6364	-1.5422
	(3.117)	(1.604)	(-0.1639)
Teamwork Skills	-1.4286	-1.8182	-0.3896
	(-0.420)	(-0.319)	(-0.0600)
Self-learning Skills	4.1667	6.0606	1.8939
	(1.000)	(0.714)	(0.2231)
Problem-Solving Skills	4.2857	10.9091*	6.6234
	(1.236)	(2.206)	(1.0433)
Expectations on Course Methodologies	6.4286	16.3636*	9.9350
	(0.694)	(1.936)	(0.6299)

Note: ***, ** and * indicate the significance levels at 1%, 5%, and 10%, respectively.

We further examined the relationship between students' belief changes and academic performance, as shown in Table 6. The impact of different categories on students' performance is shown in Models (1) – (6). When considering Personal Interest and Effort, work experience has a significant positive impact on students' performance in Model (1), which is consistent with the findings in Table 5. The intersection of gender and Real-World Connection has a significant positive impact on students' performance in Model (2) only. This finding may be attributed to male

students preferring the experiential learning pedagogy to bring about certain practical improvement.

Models (7) and (8) are regressions from the perspective of whether or not to consider the intersection term. The intersection of Personal Interest and Effort and Work Experience in Model (7) has a significant negative impact on student achievement compared with Model (8). Students with work experience can hardly change their study beliefs and attitudes from experiential learning pedagogy. Consequently, such students will not have a positive effect on the performance improvement. However, the intersection of Real-World Connection and Gender has a positive and significant impact on students' performance. Male students pay great attention to the improvement of practical application ability brought about by the experiential learning pedagogy. Changes in the perception of the real world in turn led them to pursue excellent academic performance. This finding is consistent with previous research conclusions.

Table 7 presents the shifts in students' expectations of different teaching methods adopted in class. "Agree" describes the net shift in favorable expectations on different teaching methods. By contrast, "disagree" describes the net shift in unfavorable expectations. We recognize a significant net shift if the difference between "agree" and "disagree" is large. A significant net positive shift in student's belief is indicated as "EXPERT."

As shown in panel A, all students have a significant net positive shift in Study Group Assignments, Field Trips, and Integrative Projects through the experiential learning method. From a gender perspective, women are experts in Study Group Assignments, whereas men are more advantageous in Integrative Projects. This notion reflects that gender affects the results of experiential teaching methods.

Table 6
Regression Results

Variables	Performance							
	1	2	3	4	5	6	7	8
Personal Interest and Effort (1)	-0.019						-0.032*	-0.031*
	(-1.07)						(-1.78)	(-1.78)
Real-World Connection (2)		-0.017					-0.027	-0.004
		(-1.43)					(-1.64)	(-0.38)
Conceptual Connections and Understanding (3)			-0.014				0.011	0.005
			(-0.83)				(0.60)	(0.37)
Teamwork Skills (4)				0.017			0.019	0.008
				(0.74)			(0.75)	(0.39)
Self-learning Skills (5)					0.027		0.01	0.021
					(1.33)		(0.47)	(1.35)
Problem-Solving Skills (6)						-0.028	-0.042*	-0.026
						(-1.32)	(-2.02)	(-1.53)
Gender (7)	0.071	0.455	-0.125	0.367	0.303	0.41	0.376	0.566
	(0.11)	(0.79)	(-0.17)	(0.60)	(0.47)	(0.59)	(0.48)	(0.92)
Work experience (8)	1.599**	0.869	0.801	0.572	0.789	0.982	2.820*	1.072
	(2.16)	(1.45)	(1.10)	(0.91)	(1.18)	(1.29)	(2.09)	(1.68)
(1)*(7)	0.047						0.020	
	(1.26)						(0.31)	
(1)*(8)	-0.068						-0.098*	
	(-1.59)						(-1.79)	
(2)*(7)		0.051**					0.074**	
		(2.58)					(2.69)	
(2)*(8)		0.003					0.007	
		(0.19)					(0.28)	
(3)*(7)			0.036				-0.006	
			(1.51)				(-0.17)	
(3)*(8)			0.007				-0.006	
			(0.30)				(-0.17)	
(4)*(7)				-0.007			-0.014	

				(-0.21)			(-0.35)	
(4)*(8)				-0.053			0.011	
				(-1.52)			(0.16)	
(5)*(7)					-0.004		0.013	
					(-0.15)		(0.32)	
(5)*(8)					-0.031		0.022	
					(-1.12)		(0.55)	
(6)*(7)						0.015	-0.009	
						(0.41)	(-0.19)	
(6)*(8)						-0.01	-0.02	
						(-0.25)	(-0.41)	
Constant	3.868***	3.769***	3.892***	3.853***	3.743***	3.889***	3.838***	3.781***
	(10.83)	(10.64)	(9.39)	(10.15)	(9.90)	(10.31)	(10.16)	(9.62)
Observations	39	39	39	39	39	39	39	39
R^2	0.200	0.214	0.114	0.118	0.122	0.124	0.639	0.249

Note: ***, ** and * indicate significance levels at 1%, 5%, and 10%, respectively.

Table 7
Shifts in Expectations on Different Teaching Methods

Panel A	All students		
	Agree	Disagree	Shift
Simulation Trading Games	0%	3%	
Study Group Assignments	15%	-3%	EXPERT
Guest Speakers	0%	0%	
Field Trips	18%	0%	EXPERT
Integrative Projects	13%	-8%	EXPERT
Panel B	Women		
	Agree	Disagree	Shift
Simulation Trading Games	-4%	4%	
Study Group Assignments	19%	-4%	EXPERT
Guest Speakers	-4%	4%	
Field Trips	22%	4%	EXPERT
Integrative Projects	7%	0%	
Panel C	Men		
	Agree	Disagree	Shift
Simulation Trading Games	8%	0%	
Study Group Assignments	8%	0%	
Guest Speakers	8%	-8%	EXPERT
Field Trips	8%	-8%	EXPERT
Integrative Projects	25%	-25%	EXPERT

Conclusions

In this study, we examined a group of postgraduate students from Hong Kong Baptist University who take the same course of Investment and Portfolio Management as our research subjects. We implemented the experiential learning pedagogy and made changes to the assessment criteria throughout the course. We designed a pre- and post-test survey to understand the differences in students' learning beliefs and attitudes and their expectations on the different teaching methods adopted. The study has the following findings: (1) Experiential learning pedagogy can positively change students' learning beliefs and attitudes and exhibits no significant impact on their academic performance. (2) In general, gender and work experience of students can have an impact on learning beliefs and attitudes. Male students and students with work experience are more likely to change their learning beliefs and attitudes through the experiential learning pedagogy than female students and those without working experience. (3) The regression analysis shows that students with work experience will positively promote academic performance. However, male students will be highly connected with real world and improve their academic performance.

The research finds that experiential learning pedagogy can positively change students' learning beliefs and attitudes from the research process and results. Such pedagogy is an innovation in teaching methods for traditional teaching methods. At present, the traditional teaching methods make students feel great pressure, especially in China. Experiential learning pedagogy changes attitudes of students from passive acceptance to active learning, which is a positive trend. Reforming teaching methods and realizing the innovation of curriculum teaching are of great significance. Improving students' academic performance is an important issue that should be given attention by the experiential learning pedagogy.

The limitations of this work are as follows: First, only one class of students was examined, and the research sample is small. Second, the sample period is only one year and thus no

significant time comparison was observed. Finally, the questionnaire design is imperfect. Future research can design a complete questionnaire, extend the number of research samples during the study sample period, and enhance the credibility of the conclusion.

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Appendix
Survey Questionnaire

1. I take responsibility for ensuring to complete the tasks.
2. Knowledge in finance consists of many disconnected topics.
3. As finance professionals learn more, more finance ideas we use today are likely to be proven wrong.
4. I carefully listen and give positive feedback to other members of the group.
5. I find that reading the text in detail is the right way for me to learn finance.
6. Only one correct approach is usually available to solve a finance problem.
7. I am unsatisfied until I understand why something works the way it does.
8. I cannot learn finance if the teacher does not effectively explain things in class.
9. Almost everyone is capable of understanding finance if they work at it.
10. Understanding finance means being able to recall something you've read or been shown.
11. I discuss finance with friends and other students to understand it.
12. I do not spend more than 5 min stuck on a finance problem before giving up or seeking help from someone else.
13. I often compromise to other team members when they raise different opinions.
14. In doing a finance problem, if my calculation gives a result that is different from the outcome I would expect, then I would trust the calculation rather than going back to the problem.
15. Learning finance changes my ideas about how the world works.
16. Reasoning and critical thinking skills used to understand finance can be helpful to me in my everyday life.
17. We use this statement to discard the survey of people who are not reading the questions. Please select agree-option 4 (not strongly agree) for this question to preserve your answers.
18. Spending a substantial amount of time understanding the underlying theories is a waste of time.
19. I can usually figure out a way to solve financial problems.
20. I sometimes think about my personal experiences and relate them to the topic being analyzed to understand finance.
21. It is possible to explain finance ideas without mathematical formulas.
22. If I get stuck on a finance problem, then figure it out on my own is impossible.
23. I inspire other team members to do their best.
24. What are your expectations on the teaching approaches adopted in the class? — Simulation trading games.
25. What are your expectations on the teaching approaches adopted in the class? — Study group assignments
26. What are your expectations on the teaching approaches adopted in the class? — Guest speakers.
27. What are your expectations on the teaching approaches adopted in the class? — Field trips.
28. What are your expectations on the teaching approaches adopted in the class? — Integrative projects.

A Selection Pedagogy for SMIFs Investing in Actively Managed Equity Investment Companies

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Business schools are continuously looking for ways to make their curricula more relevant, current, and useful beyond the classroom. One way to provide this type of experience is to create a Student-Managed Investment Fund (SMIF). However, the literature suggests almost all current SMIFs are primarily dedicated to teaching the fundamentals of managing equity securities. The problem is, SMIFs that are dedicated to equity securities omit many other mainstream investment alternatives that individuals use in everyday retirement planning. The literature lacks a detailed, and comprehensive examination of screening variables that include specific security selection proficiency and identification procedures.

Our manuscript fills this void by providing a selection process for actively managing a full spectrum of Managed Investment Companies. This process identifies three funds that are suitable candidates for inclusion in our SMIF portfolio. The pedagogy in this study is also designed to follow an academically sound approach that would be useful for SMIF students, and individual investors alike.

Keywords: Student Managed Investment Fund, Equity, Investment companies, Portfolio, Actively Managed Mutual Funds.

Introduction

Schools of business are continuously looking for ways to make their curricula more relevant, current, and useful beyond the classroom. One way to provide this type of experience is to create a Student-Managed Investment Fund (SMIF). However, almost all current SMIFs are primarily dedicated to teaching the fundamentals of managing equity securities. These SMIFs, focusing on individual securities, provide an excellent way to gain an understanding of the stock portfolio management methodology. The problem is, SMIFs that are dedicated to equity securities omit many other mainstream investment alternatives that individuals use in everyday retirement planning. Specifically, learning how to select and manage a full spectrum of Managed Investment Companies is glaringly absent from current SMIF pedagogies.

Clearly, the literature lacks a detailed, and comprehensive examination of screening variables that include specific security selection proficiency and identification procedures. As such, it is the purpose of this manuscript to fill this void by proposing a selection process for

actively managed equity funds. This manuscript provides a set of guidelines, processes, and replicable solutions for actively managed equity mutual fund selection for a SMIF (at a regional university) whose entire portfolio invests exclusively in managed investment companies.

At Austin Peay State University in Clarksville, TN, we have two distinct Student Managed Investment Funds. One is structured as a course and invests exclusively in individual equities. The other is structured as a club and invests exclusively in Investment Companies. Each fund provides students with very different skill sets for managing investment capital, and also gives them the opportunity to strengthen their resumes in a robust manner. Structuring a Student Managed Investment Fund focusing exclusively on Investment Companies is important and necessary in that it offers a unique learning opportunity over traditionally structured Student Managed Funds given the magnitude and importance of mutual funds for household investing and retirement planning. Our pedagogy in this manuscript follows the SMIF club approach.

According to Investment Company Institute's (ICI) 2020 Annual Mutual Fund Shareholder Tracking Survey, households use mutual funds primarily for retirement savings[2]. Furthermore, the survey results indicate mutual fund holdings represent the largest part of U.S. households' financial assets, with equity mutual funds being the most common type of mutual funds held. The survey also reports that 63 % of households owning mutual funds owned funds outside of employer sponsored retirement plans.

Given the volume and ubiquitous nature of mutual fund ownership at the household level, along with the substantial focus on equity funds in particular, a fund selection approach based on sound academic research should be developed and followed to increase the probability of achieving consistent risk adjusted returns that beat the relevant benchmarks. The fact is, in any given year, between one-half and two-thirds of actively managed funds do not outperform their passive benchmarks (Malkiel and Saha, 2020). In support of this fact, the Financial Industry Regulatory Authority (FINRA) reports that a few actively managed funds outperform their benchmark over a long period of time[3]. As such, establishing a robust and consistent selection process is imperative for the best chance at long-term investment success.

The rest of the paper is organized as follows. Section 2 looks at previous studies on SMIF, and section 3 discusses the evolution and current pedagogy of our GOVs Fund, the one that invests exclusively in mutual funds. Section 4 lays out the proposed fund selection pedagogy for the current paper. Section 5 presents an example of our selection process, and section 6 concludes the study.

Literature Review

It is rare to find Student Managed Investment Funds (SMIFs) that invest primarily in investment companies. The extant literature reports only one SMIF that invests exclusively in investment companies (Dolan, Stevens, and Zucker, 2018). More notably, that SMIF invests exclusively in Exchange Traded Funds (ETF's), with no individual mutual funds included in the portfolio (Dolan et al., 2018). Only a handful of other SMIFs in the extant literature report using investment companies. The use of investment companies mainly consists of ETFs and typically represents a relatively small portion of their total portfolios. For example, Ascioglu, and Maloney (2020) report that The Archway Investment Fund at Bryant University recently evolved their portfolio to include multiple asset classes. Equity ETFs represent 25% of the portfolio in December 2018. However, no individual actively managed funds are represented. Other SMIFs report that their exposure to investment companies is minimal (See for example, Oldford (2020), and Horstmeyer (2020)).

[2] https://www.ici.org/system/files/attachments/20_rpt_profiles.pdf

[3] https://www.finra.org/investors/learn-to-invest/types-investments/investment-funds/mutual-funds/active-passive

ETFs have some key differences from traditional mutual funds: ETFs represent a portfolio of sector-specific companies; they are a type of mutual fund designed to mimic the performance of a specific sector within a larger index; and they typically have low expense ratios because of their passive-management strategy. However, when a SMIF is tasked with an objective of outperforming respective benchmarks, investing in ETFs is not appropriate. As such, a strategy of picking individual actively managed traditional open-end mutual funds require a unique selection approach to account for these differences. We mostly consider actively managed mutual fund portfolios that seek to diversify holdings within specific investment objectives (i.e., large cap growth). While these portfolios can over- or under- weigh in a specific sector, they differ from ETFs in that they are not designed to track a larger index, and they offer the opportunity to accommodate various investment goals. Unlike ETFs, a traditional open-end mutual fund provides students with the opportunity to take stronger and more specific positions when making investment decisions. Dolan et al. (2018) initiate a conversation of introducing portfolio investing to students, yet the paper limits the student experience by investing in one type of mutual fund: ETFs.

The extant literature on mutual funds provides a foundation of a fund screening process that identifies high risk-adjusted returns for actively managed equity mutual funds on variables such as: (1) fund age, (2) manger tenure, (3) size, (4) expense ratios, (5) turnover ratios, (6) net flow of assets, and (7) Sharpe ratios. In their recent article focusing on how to select better performing actively managed mutual funds, Malkiel and Saha (2020) provide a data driven framework of screening variables to find funds that have a higher probability of producing higher average future returns as well as higher risk-adjusted future returns for actively managed equity funds. The authors suggest these returns can be achieved by screening on the lowest quartile expense and turnover ratios, combined with the highest quartile Sharpe ratios. The combination of these variables produces a multiplier effect on fund returns. Interestingly, fund size, age, and net flows were not important explanatory variables for future returns. Also worth mentioning is a Morningstar study that documents a monotone increase in average fund performance as costs shifts from highest to lowest costs quartiles (Kinnel 2016).

Other researchers caution about managers that practice closet diversification. According to Light (2013), Professor. Amihud of New York University's Stern School of Business, notes that most fund managers are "closet indexers." In other words, they say they are active managers, but closely mimic the index. The author suggests mutual fund investors need to find funds that are actually trying to beat their respective benchmark indexes. The paper further notes that most mutual fund managers do not properly diversify out of fear of losing their jobs. To circumvent that, mutual fund investors can screen out the so-called "closet indexers" by using a metric called R-Squared, which is commonly reported in Morningstar.com (Light, 2013).

This metric (R-Squared) measures how much of the fund's returns can be explained by the benchmark index. Considering the median fund has an R-Squared of 93%, it is recommended that screens should be set below the universe median R-squared of 93%. This is due to the fact that the findings by professor Amihud suggest a 0.8% improvement in return for every 10% reduction in R-Squared (Light, 2013).

Another line of mutual fund research explores the stock picking ability of fund managers. However, the research in this area typically focuses on the general stock selection ability of fund managers or whether investors can use fund holdings to earn superior returns. For instance, Weigand, Belden, and Zwirlein (2004) investigate whether individual investors should consider the weights mutual fund managers place on stocks held in their portfolios when making stock selection decisions. Specifically, the study examines whether the most heavily weighted stocks outperform the most lightly weighted stocks. The paper finds that the heavily weighted stocks perform no better than the most lightly

weighted stocks. These results contradict the idea that individual investors can earn excess returns by following the implicit stock selection picks of mutual fund managers.

Chen, Narasimhan, and Wermers (2000) examine the extent to which winning funds are able to pick future winning stocks. The study reports that stocks that are most widely held by mutual funds do not outperform stocks that are least widely held. Furthermore, a significant amount of the observed persistence in fund performance is due to the momentum effect in stock returns. Specifically, the holdings of winning funds significantly outperform the holdings of losing funds. The authors attribute this performance differential to the observation that losing funds generally hold stocks that are past losers, which tend to earn low future returns.

Lacking in the literature is a detailed, and comprehensive examination of screening variables that include specific security selection proficiency and identification procedures. Therefore, this manuscript addresses the void by offering a set of guidelines, processes, and replicable solutions for actively managed equity mutual fund selections for a SMIF at an undergraduate program at a small regional institution. The proposed process is designed to reach a wide range of students with limited or no prior investment knowledge, and without requiring a large initial investment or burdensome time commitments. This process is also designed to follow an academically sound approach that would be useful for SMIF students and individual investors alike. Having a sound, replicable, straightforward, and simple process is important for their personal investments as well.

Genesis of the GOVs Fund and Current Pedagogy

In summer 2018, the dean of the college of business at Austin Peay State University (APSU) informed faculty that the CEO and Chief Wealth Strategist of Carroll Financial, Mr. Larry Carroll, promised to donate $250,000 for college of business students to invest in a student managed fund with the following constraints:

- Portfolio is restricted to mutual fund investments—no investment in individual stocks, bonds, or derivative securities,
- APSU College of Business (COB) students manage the fund without faculty involvement in investment decisions,
- Interdisciplinary COB faculty advisory team assembled by the dean.

Based on that directive, at the beginning of fall 2018, the dean assembled a five-member faculty advisory team comprising of two finance faculty and one each in accounting, economics, and management. The faculty team's task was to develop an investment policy statement incorporating the donor's constraints, to select student managers to manage the fund, and to serve in an advisory role without making buy and sell recommendations.

Once the faculty team was assembled, it developed a policy statement, advertised this great experiential learning opportunity to students, and asked COB students to apply. Next, the team selected about the same number of seniors and juniors on the pioneering group of student fund managers. The rationale for having seniors and juniors on the team was to allow for smooth year-to-year transitioning. The student managers selected their leadership team with a senior as president, and a junior as vice president. With this structure, the vice president succeeds the president once he/she graduates, and a junior member is selected as vice president.

Although the Govs fund is structured as an investment club, to ensure student managers have the requisite knowledge, the faculty advisory team developed an eight-week special studies course syllabus for students to take for credit or without credit. As part of the course, students were to document evidence of completion of Bloomberg Market Concepts (BMC), go through the basics of mutual funds on Morning Star Library Edition, and undertake macroeconomic and sector analysis.

At the end of fall 2018, the student managers were ready to invest in mutual funds identified from promising sectors as a result of the macroeconomic analyses. However, due to the winter break, trading did not start until Jan/Feb. of 2019. The donor funds were fully invested until the students were ready to take over from the donor.

By the end of fall 2020, the GOVs fund portfolio performed exceptionally well. This great performance earned the admiration of the donor, who rewarded the student managers at the time by liquidating the fund and giving them $500,000 from the university's Foundation funds to manage from scratch.

The current pedagogy follows the process described above with the establishment of the initial $250,000 portfolio. The difference is that we no longer require students to take the class. What is required of them is to acquaint themselves with the investment policy statement, study the 'basics of mutual funds' from the Desire to Learn (D2L) course shell and MorningStar Library edition, take a quiz on mutual funds, create a Bloomberg account toward Bloomberg certification, and analyze the 11 sectors of the S&P 500 to identify promising sectors and weigh them accordingly. We believe the current fund selection process lacks a sound, replicable approach. An academically sound structure for fund selection would provide the students with a skill set that they could use beyond the classroom. As such, we propose a structure for fund selection that is designed to produce a higher probability to achieve more consistent, and higher risk-adjusted returns.

The Proposed Selection Pedagogy

Our proposed fund selection procedure is based on four main criteria: i. Screening based on low net expense ratios, low turnover ratios, low R-Squares, and high Sharpe ratios, ii. Value Line Timeliness recommendations, iii. Environmental, Social, and Governance (ESG) investing, and iv. Diversification and sector allocation strategies.

Screening Based on Expense, Turnover, and Sharpe Ratios

In their study of mutual fund characteristics and returns, Malkiel and Saha (2020) show that portfolio of funds with the highest Sharpe ratio, and lowest expense and turnover ratios tend to have better future performance prospects than the average fund that is actively managed. In addition, the paper documents a statistically significant difference in returns between funds with those attributes and the average actively managed fund. We follow the approach of Malkiel et al. (2020), which is based on a study by Bogle Financial Center, and formulate our screening methodology using TD Ameritrade, on expense ratios, turnover ratios, R-Squares, and Sharpe ratios.

Value Line

The above screening strategies are consistent with superior fundamental stock selection, and a relatively longer holding period for individual fund holdings. Value line timeliness rank measures the probable performance of the stock relative to the market in the coming year. Stocks that are ranked 1 (highest) and 2 (above average) are likely to outperform the market in the year ahead[4]. As such, we calculate the "degree of timeliness" for each fund. That is, we sum the weights of the individual holdings of the fund that are ranked 1 &2, and divide it by the difference between the total sum of weights and sum of weights of the unreported. In

[4] For more information see: https://www-valueline-com.ezproxy.lib.apsu.edu/investment-education/glossary/t

comparing multiple funds for portfolio revision, highest degree of timeliness scores are given preference.

Environment, Social, and Governance (ESG) Investing

The U. S. Sustainable and Impact Investing Foundation's (US SIF) 2020 report on U. S. sustainable, responsible, and impact investing trends, reports that almost 33% of all U. S. assets under management (an amount of about $17.1 trillion), was invested taking ESG criteria into consideration[5]. In addition, research shows that companies with better ESG scores tend to have lower share price swings, and perform better in turbulent times (Ascioglu et al., 2020). We apply this trend of research to our fund selection process. We acknowledge that these scores are relatively new, and therefore, are not available for all funds.

Diversification and Sector Allocation Strategies

Next, we address fund diversification and sector allocation strategies. Hughen, Strauss, and Tremblay (2018) document that the Enterprise Value (EV) to Earnings Before Interest, Taxes, Depreciation, & Amortization (EBITDA) ratio is superior to the popular Price Earnings (P/E) ratio in identifying over- and under-valued sectors. Building on the methodology of Hughen et al. (2018), we obtained EV/EBITDA ratios for the 11 sectors of the S&P 500 index[6]. For easier comparison, we normalize the sector EV/EBITDA ratios by the S&P 500 EV/EBITDA ratio to obtain a 'relative' EV/EBITDA ratio. Sectors with relative EV/EBITDA ratios greater than one are expected to outperform the market, and so should be over-weighted in the funds allocation strategy. Those sectors with relative EV/EBITDA ratios of less than one are expected to underperform the market, and so should be under-weighted. Lastly, those sectors with relative EV/EBITDA ratios of one or close to one are just performing as well as the market, and so should be market-weighted.

In addition, the students are tasked with researching and preparing sector forecasts. As such, funds that have sector weightings consistent with the forecasts are given preference in the selection process. We also propose comparing on R squared with the benchmark to select funds that are in the lowest 20% for competing funds[7].

Selection Process Summary

The fund universe is screened for a specific category (e.g., large cap growth) using the lowest 20% net expense percentage, the lowest 20% turnover percentage, the lowest 20% R-Squared, and the highest 20% Sharpe ratio. The resulting universe is evaluated for Value Line Timeliness, ESG scores, and relative sector EV/EBITDA ratios. Funds with the highest degree of Value Line timeliness ranks are given preference. Funds with similar timeliness ranks are then valuated according to ESG scores. The fund with the lowest ESG score on Morningstar is given preference in the selection process. If there are no ESG scores, or the scores are similar, the selection process then considers relative EV/EBITDA sector ranks. Funds that allocate with the highest level of over, under, and market sector weighting consistent with the relative EV/EBITDA ranks are given preference. This summarized selection process is illustrated below in section 5.

[5] www.ussif.org/currentandpast
[6] This ratio is obtained from Bloomberg
[7] In our example, we relaxed this criterion by using the 'average 20% R-Squared.

An Example

We construct the fund selection process to be academically sound, but straightforward and easy to apply. The free TD Ameritrade screener is designed to screen on our variables quickly and easily. After screening for the lowest 20% turnover ratio, net expense ratio, R-Squared, and highest 20% Sharpe ratio, three finds survived the screening criteria: American Century Investments Focused Dynamic Growth Fund G Class (ACFGX), T. Rowe Price Large Cap Growth Fund Investor Class (TRGOX), and Vanguard Mega Cap Growth Index Fund Institutional Shares (VMGAX).

Table 1 (panels A, B, and C) in the appendix shows the individual portfolio holdings and their weights, the Value Line Timeliness rank for each individual holding, and the degrees of timeliness for the three funds in our example. As mentioned above, the degree of timeliness is computed as the sum of weights of all holdings ranked 1 & 2, divided by the difference between the total sum of weights of all holdings, and the sum of weights of the unreported (i.e. those holdings without timeliness ranks). The degrees of timeliness (i.e. the percentage of holdings expected to outperform the market) for ACFGX, TRGOX, and VMGAX are, respectively, 75.65%, 89%, and 87.37%.

Table 2 (in the appendix) outlines the actual portfolio allocations relative to the S&P 500 benchmark. Additionally, it shows the recommended allocation according to the relative EV/EBITDA rankings. A relative sector EV/EBITDA ratio of greater (less) than one means that sector is overweight (underweight), and market weight if the ratio is one or within +/- .05 of 1. The table also reports the 'actual statistics' and ESG pillars. These three funds have significant percentage of holdings with strong individual fundamental characteristics as shown by the actual statistics, ESG scores, and the Value Line Timeliness ranks. As seen on the Table, the ESG scores are similar, and fall within the less risky category. Therefore, based on Value Line timeliness ranks, the actual statistics, and ESG scores, all three funds would be acceptable for purchase in the SMIF portfolio.

However, a closer look at the relative EV/EBITDA ratios on Table 2 reveals that VMGAX stands out since 70% of sector weights agree with the relative EV/EBITDA ratio criterion. 50% of TRGOX sector weights are consistent with the relative EV/EBITDA ratio, while 30% of ACFGX sector weights are consistent with the ratio. Therefore, VMGAX would be more desirable than the other two funds.

Conclusion and Recommendations

We combine existing knowledge into a process and add to the selection literature, ESG, Value Line, and scaled EV/EBITDA criteria. By doing so, this manuscript fills a void within the extant literature, as it provides a selection process for actively managing a full spectrum of Managed Investment Companies. The pedagogy screens funds based on i. low net expense ratios, low turnover ratios, low R-Squared, and high Sharpe ratios. ii. Value Line Timeliness recommendations, iii. Environmental, Social, and Governance (ESG) scores, and iv. Diversification and sector allocation strategies.

Our screening criteria on the universe of funds in our sample results in three funds. If a larger universe is desired, then the Sharpe and R-Squared criteria can be relaxed without a significant impact on the risk-return result. We find that all selected funds are expected to outperform the market as measured by the Value Line Timeliness ranks 1 &2. Therefore, they would be selected according to our pedagogy. However, if we have to select one over the other, the relative EV/EBITDA criterion is employed. With this criterion, the order of preference is VMGAX, TRGOX, and ACFGX. This is so because the sector allocation strategy at VMGAX

is more consistent with the relative EV/EBITDA ratio than the other two funds (see Table 2, panels A, B, and C).

Our process only gets us to the point where there is high probability to achieve higher risk adjusted returns. Specific selection or combination depends on other factors such as overall strategy and the need for a specific type of fund. Also, our identified weaknesses that mangers of low portfolio turnover funds (like ACFGX, and maybe TRGOX) miss market turning points, does not mean that the fund should not be selected. Since the managers pick strong long-term high performing stocks as identified by value line, we recommend dollar cost averaging to overcome the short-term impact of market and sector rotations.

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Appendix

Table 1
Individual Holdings and Value Line Timelines Ranks

This table reports the holdings, weights, and Value Line Timeliness ranks for the three funds ACFGX, TRGOX, and VMGAX in our example. A Timeliness rank of 0 means a value was not available. To arrive at the degree of timeliness, we add the weights of all holdings with timeliness ranks of 1 & 2. We then divide it by the difference between the sum of all weights, and the sum of the weights of the 'unreported' (i.e. those with a timeliness rank of 0).

Panel A

American Century Investments Focused Dynamic Growth Fund G Class (ACFGX)

Holdings as of 12/31/21	**Weight**	**Timeliness**
Amazon	8.63	1
Alphabet Inc Class C	7.58	0
Okta Inc A	6.95	2
Meta Platforms Inc Class A	5.01	1
Constellation Brands Inc Class A	4.54	2
Salesforce.com Inc	4.12	1
Visa Inc Class A	3.88	1
Monolithic Power Systems Inc	3.76	3
Bill.com Holdings Inc Ordinary Shares	3.72	0
Intuitive Surgical Inc	3.49	3
Mastercard Inc Class A	3.45	1
Netflix Inc	3.34	1
S&P Global Inc	3.34	1
Paylocity Holding Corp	3.1	4
DocuSign Inc	3.04	2
BlockInc Class A	2.94	1
Westinghouse Air Brake Technologies Corp	2.73	2
Regeneron Pharmaceuticals Inc	2.12	3
Roblox Corp Ordinary Shares - Class A	1.81	0
Intercontinental Exchange Inc	1.7	3
Fanuc Corp	1.69	0
Cognex Corp	1.67	3
Nike Inc Class B	1.66	2
Chipotle Mexican Grill Inc	1.59	2
Alnylam Pharmaceuticals Inc	1.48	2
Boston Beer Co Inc Class A	1.38	3
Blueprint Medicines Corp	1.35	2
Cactus Inc Class A	1.2	3
argenx SE ADR	1.1	0
RocketLab USA Inc	0.8	0
Ascendis Pharma A/S ADR	0.72	0
Nextdoor Holdings Inc Class A	0.66	0
Silk Road Medical Inc	0.41	0
Biogen Inc	0.37	2
Chegg Inc	0.22	2
TOTAL SUM	**95.98**	

Table 1, Panel A Continued	
Rank 1	34.71
Rank 2	23.93
SUM of Ranks 1&2	58.64
Sum of those that do not report	18.49
Total Sum - Unreported	77.49
58.64% out of 77.49%	**0.756743 (Degree of Timeliness)**

Panel B:

T. Rowe Price Large Cap Growth Fund Investor Class (TRGOX)

Holdings as of 12/31/21	Weight	Timeliness
Microsoft Corp	10.38	1
Amazon.com Inc	7.82	1
Alphabet Inc Class A	7.59	0
Rivian Automotive Inc Class A	5.51	0
Apple Inc	5.43	1
Meta Platforms Inc Class A	5.24	1
Intuit Inc	3.5	2
Alphabet Inc Class C	2.92	0
UnitedHealth Group Inc	2.52	1
Salesforce.com Inc	1.97	1
ntuitive Surgical Inc	1.92	3
Cigna Corp	1.88	2
Stryker Corp	1.74	3
Netflix Inc	1.72	1
Visa Inc Class A	1.67	1
ASML Holding NV ADR	1.66	2
Fortinet Inc	1.5	3
NVIDIA Corp	1.49	1
ServiceNow Inc	1.47	1
Ross Stores Inc	1.44	2
Global Payments Inc	1.37	1
Snap Inc Class A	1.29	1
Fiserv Inc	1.25	1
Spotify Technology SA	1.18	2
Amphenol Corp Class A	1.14	3
Mastercard Inc Class A	1.13	1
Dollar General Corp	1.12	2
HCA Healthcare Inc	1.02	1
Synopsys Inc	0.97	1
Ingersoll Rand Inc	0.95	0
Avantor Inc	0.94	1
Booking Holdings Inc	0.91	1
MongoDB Inc Class A	0.81	2
Advanced Micro Devices Inc	0.77	1
Humana Inc	0.75	2
Match Group Inc	0.74	2
PayPal Holdings Inc	0.68	1
Lululemon Athletica Inc	0.67	3

Table 1, Panel B Continued		
Vertex Pharmaceuticals Inc	0.66	2
S&P Global Inc	0.64	1
Nike Inc Class B	0.63	2
Live Nation Entertainment Inc	0.59	2
Chipotle Mexican Grill Inc	0.59	2
Becton, Dickinson and Co	0.58	3
Carvana Co Class A	0.57	1
Splunk Inc	0.52	2
Aptiv PLC	0.51	3
Anthem Inc	0.5	2
IAC/InterActiveCorp Ordinary Shares - New	0.44	0
UiPath Inc Class A	0.43	0
SentinelOne Inc Class A	0.41	0
Charles Schwab Corp	0.4	1
Coupang Inc Ordinary Shares - Class A	0.38	0
Zoom Video Communications Inc	0.32	2
Shopify Inc Registered Shs -A- Subord Vtg	0.29	1
Workday Inc Class A	0.27	1
Farfetch Ltd Class A	0.25	4
Block Inc Class A	0.23	3
DraftKings Inc Ordinary Shares - Class A	0.22	0
Warner Music Group Corp Ordinary Shares - A	0.2	0
TOTAL SUM	**96.69**	
Rank 1	52.21	
Rank 2	16.89	
SUM of Ranks 1&2	69.1	
Sum of those that do not report	19.05	
Total Sum - Unreported	**77.64**	
69.1% out of 77.64%	**0.890005 (Degree of Timeliness)**	

Panel C:

Vanguard Mega Cap Growth Index Fund Institutional Shares (VMGAX)

Holdings as of 12/31/21	Weight	Timeliness
Apple Inc	15.19	1
Microsoft Corp	13.02	1
Amazon.com Inc	7.19	1
Alphabet Inc Class A	4.53	0
Tesla Inc	4.2	2
Meta Platforms Inc Class A	4.13	1
Alphabet Inc Class C	4.1	1
NVIDIA Corp	3.24	1
The Home Depot Inc	2.14	2
Visa Inc Class A	2.11	1
Mastercard Inc Class A	1.89	1
The Walt Disney Co	1.45	1
Adobe Inc	1.42	1
Accenture PLC Class A	1.29	3
Thermo Fisher Scientific Inc	1.28	2

Table 1, Panel C Continued		
Costco Wholesale Corp	1.24	2
Salesforce.com Inc	1.21	1
PayPal Holdings Inc	1.13	1
McDonald's Corp	1.08	3
Netflix Inc	1.06	1
Nike Inc Class B	1.06	2
Texas Instruments Inc	0.92	1
Linde PLC	0.91	3
Lowe's Companies Inc	0.89	1
Intuit Inc	0.88	2
Advanced Micro Devices Inc	0.77	1
Applied Materials Inc	0.7	2
Boeing Co	0.66	3
ServiceNow Inc	0.65	1
Starbucks Corp	0.64	2
American Tower Corp	0.64	2
Intuitive Surgical Inc	0.57	3
Booking Holdings Inc	0.56	1
S&P Global Inc	0.56	1
Zoetis Inc Class A	0.53	3
Danaher Corp	0.51	2
Lam Research Corp	0.46	1
TJX Companies Inc	0.46	3
Crown Castle International Corp	0.44	4
Snowflake Inc Ordinary Shares - Class A	0.42	0
United Parcel Service Inc Class B	0.41	3
Charter Communications Inc Class A	0.39	1
The Estee Lauder Companies Inc Class A	0.38	3
Edwards Lifesciences Corp	0.38	2
Sherwin-Williams Co	0.38	4
Equinix Inc	0.36	3
Fiserv Inc	0.35	1
Vertex Pharmaceuticals Inc	0.34	2
Regeneron Pharmaceuticals Inc	0.34	3
Boston Scientific Corp	0.34	2
KLA Corp	0.33	2
Moderna Inc	0.33	2
Aon PLC Class A	0.32	2
Autodesk Inc	0.31	2
Illumina Inc	0.3	4
Uber Technologies Inc	0.3	1
Moody's Corporation	0.3	1
Public Storage	0.3	3
Airbnb Inc Ordinary Shares - Class A	0.28	0
Ecolab Inc	0.27	3
Workday Inc Class A	0.27	1
Block Inc Class A	0.27	3
Dollar General Corp	0.27	2
Micron Technology Inc	0.26	1

Table 1, Panel C Continued		
Marriott International Inc Class A	0.25	2
O'Reilly Automotive Inc	0.25	3
Global Payments Inc	0.24	1
Automatic Data Processing Inc	0.24	3
Stryker Corp	0.24	3
Agilent Technologies Inc	0.23	4
Snap Inc Class A	0.22	1
Lululemon Athletica Inc	0.22	3
Paychex Inc	0.21	4
Electronic Arts Inc	0.21	3
Align Technology Inc	0.21	3
Yum Brands Inc	0.2	4
CrowdStrike Holdings Inc Class A	0.2	1
Colgate-Palmolive Co	0.19	5
Ross Stores Inc	0.19	2
Twilio Inc Class A	0.19	1
Monster Beverage Corp	0.18	2
Zoom Video Communications Inc	0.18	2
Activision Blizzard Inc	0.17	0
Marvell Technology Inc	0.16	1
The Hershey Co	0.16	3
Coinbase Global Inc Ordinary Shares - Class A	0.14	0
Roper Technologies Inc	0.13	2
DoorDash Inc Ordinary Shares - Class A	0.13	0
IDEXX Laboratories Inc	0.12	3
AutoZone Inc	0.12	4
Hilton Worldwide Holdings Inc	0.11	2
Chipotle Mexican Grill Inc	0.11	3
Brown-Forman Corp Registered Sh -B- Non Vtg	0.11	5
Roblox Corp Ordinary Shares - Class A	0.11	0
Rockwell Automation Inc	0.09	4
Twitter Inc	0.08	1
Carvana Co Class A	0.08	1
DocuSign Inc	0.07	2
Palantir Technologies Inc Ordinary Shares - A	0.07	0
TOTAL SUM	**99.72**	
Rank 1	64.99	
Rank 2	17.02	
SUM of Ranks 1&2	**82.01**	
Sum of those that do not report	5.85	
Total Sum - Unreported	**93.87**	
82.01 out of 93.87	**87.36551 (Degree of Timeliness)**	

TABLE 2
Relative EV/EDITDA Ratios

This table depicts the S&P 500 sector weights and the corresponding sector weights for the investment. We obtain the Estimated EV/EBITDA values for the sectors (except for Financials), and that for the S&P 500, from Bloomberg. We compute the Relative EV/EBITDA ratios by dividing the estimated sector ratios by the estimated S&P 500 ratio. If this ratio is greater (less) than 1, the sector is overweight (underweight), and so the fund manager is expected to over weigh (underweight) that sector. So, for example, in panel A, the relative EV/EBITDA indicates Information Technology sector is overweight, and so ACFGX should have more than 28.7% in Information Technology, but that is not the case, and so there is NO agreement. The Table also reports the 'actual statistics' and the ESG pillars.

Panel A
American Century Investments Focused Dynamic Growth Fund G Class (ACFGX)

S&P 500 Sectors	**SW**	**Inv.**	**C**	**E**	**R***	**A**
Information Technology	28.7	27.21	21.26	18.36	1.343087052	NO
Health Care	13.1	11.03	17.56	15.34	1.122165326	NO
Consumer Discretionary	12	19.48	19.52	16.1	1.177761522	YES
Financials	11.3	12.38	7.75	NA	NA	NA
Communication Services	10	17.32	12.96	16.53	1.209217264	YES
Industrials	7.8	5.65	15.16	13.27	0.970738844	NO
Consumer Staples	6.1	5.72	16.53	15.34	1.122165326	NO
Energy	3.4	1.21	10.79	3.4	0.474030724	YES
Real Estate	2.7	0	25.72	22.11	1.617410388	NO
Utilities	2.5	0	14.49	12.59	0.920994879	NO
Materials	2.4	0	11.06	9.79	0.716166789	NO
Total	100	100				
Current S&P 500 EV/EBITDA	15.68					
Est S&P 500 EV/EBITDA	13.67					

*(Est EV/EBITDA)/(Est S&P500 EV/EBITDA)

Legend for Table Headings:
SW – Sector Weight (%)
Inv. – Investment (%)
C – Current EV/EBITDA
E – Estimated EV/EBITDA
R – Relative EV/EBITDA
A - Agreement

Actual Statistics

Turnover	12%
Expense ratio	0
R-Squared	70.11%
Sharpe (category 1.08)	1.05

ESG Pillars:

Environmental (E)	2.69
Social (S)	10.94
Governance (G)	7.81
TOTAL SCORE	**21.44**

Panel B:

T. Rowe Price Large Cap Growth Fund Investor Class (TRGOX)

S&P 500 Sectors	SW	Inv.	C	E	R*	A
Information Technology	28.7	36.16	21.26	18.36	1.343087052	YES
Health Care	13.1	11.91	17.56	15.34	1.122165326	NO
Consumer Discretionary	12	20	19.52	16.1	1.177761522	YES
Financials	11.3	4.79	7.75	NA	NA	NA
Communication Services	10	22.63	12.96	16.53	1.209217264	YES
Industrials	7.8	2.38	15.16	13.27	0.970738844	NO
Consumer Staples	6.1	1.15	16.53	15.34	1.122165326	NO
Energy	3.4	0	10.79	6.48	0.474030724	YES
Real Estate	2.7	0.01	25.72	22.11	1.617410388	NO
Utilities	2.5	0	14.49	12.59	0.920994879	NO
Materials	2.4	0.97	11.06	9.79	0.716166789	YES
Total	100	100				
Current S&P 500 EV/EBITDA	15.68					
Est S&P 500 EV/EBITDA	13.67					

*(Est EV/EBITDA)/(Est S&P500 EV/EBITDA)

Legend for Table Headings:

SW – Sector Weight (%)
Inv. – Investment (%)
C – Current EV/EBITDA
E – Estimated EV/EBITDA
R – Relative EV/EBITDA
A - Agreement

Actual Statistics

Turnover	19%
Expense ratio	0.70%
R-Squared	86.96%
Sharpe (category 1.08)	1.07

ESG Pillars:

Environmental (E)	1.87
Social (S)	10.66
Governance (G)	7.78
TOTAL SCORE	**20.31**

Panel C:

Vanguard Mega Cap Growth Index Fund Institutional Shares (VMGAX)

S&P 500 Sectors	SW	Inv.	C	E	R*	A
Information Technology	28.7	43.13	21.26	18.36	1.343087052	YES
Health Care	13.1	5.73	17.56	15.34	1.122165326	NO
Consumer Discretionary	12	20.15	19.52	16.1	1.177761522	YES
Financials	11.3	6.32	7.75	NA	NA	NA
Communication Services	10	16.79	12.96	16.53	1.209217264	YES
Industrials	7.8	1.99	15.16	13.27	0.970738844	YES
Consumer Staples	6.1	2.56	16.53	15.34	1.122165326	NO
Energy	3.4	0	10.79	6.48	0.474030724	YES
Real Estate	2.7	1.74	25.72	22.11	1.617410388	NO
Utilities	2.5	0	14.49	12.59	0.920994879	YES
Materials	2.4	1.56	11.06	9.79	9.79	0.716166789
Total	100	99.97				
Current S&P 500 EV/EBITDA	15.68					
Est S&P 500 EV/EBITDA	13.67					

*(Est EV/EBITDA)/(Est S&P500 EV/EBITDA)

Legend for Table Headings:

SW – Sector Weight (%)
Inv. – Investment (%)
C – Current EV/EBITDA
E – Estimated EV/EBITDA
R – Relative EV/EBITDA
A - Agreement

Actual Statistics

Turnover	8%
Expense ratio	0.06%
R-Squared	88.58%
Sharpe (category 1.08)	1.34

ESG Pillars:

Environmental (E)	2.09
Social (S)	9.43
Governance (G)	7.48
TOTAL SCORE	**19**

What is a High Quality Article in Finance and Which Schools Produce Them?

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College of Business Deans often use the appearance of articles in a set of top journals as the sole measure of research quality. We examine the error rates in finance of the decision rule that only articles in the top three journals (JF, JFE and RFS) qualify as high quality articles. Using the median citation count for articles in the JFQA as our measure of quality we find that about 25% of the articles in the JFE and RFS are misidentified as high quality and more than 30% of the articles in JCF, JBF, JFinMark and JFI are misidentified as not being of high quality. We also show that the top 41 finance departments dominate the slots available in the JF, JFE and RFS, but not in the other journals. Our results suggest that the decision rule likely leads to sub-optimal tenure, promotion, and endowment decisions in lower ranked finance departments creating un-necessary turnover.

Key words: Finance journals, error rates, citations, tenure, promotion decisions

Introduction

Smith (2004) was written in response to a colleague being told by a Dean that only papers in the top three finance journals qualify as high quality publications. Fifteen years later, we recently heard the same thing from another Dean. And, while it is understandable for Deans to measure quality using the number of publications in top journals outside their expertise, using only journal rankings to measure quality may ignore a substantial amount of high quality research. We examine the error rates from using only journal rankings to measure quality and the degree to which the top finance departments dominate this measure of high quality.

Smith (2004) uses SSCI citations as a measure of quality and examines Type 1 and Type 2 errors with the sample median as the quality hurdle. Smith defines a Type 1 error as a high quality paper, as measured by the number of citations, being rejected as a high quality article because it does not appear in one of the top three journals. Smith defines a Type 2 error as a non-high quality paper, similarly measured, being accepted as high quality simply because it does appear in a top three journal. The author reports a Type 1 error rate of 44% and a Type 2 error rate of 33%. These results suggest an error rate that most finance academics would find unacceptable in research, yet the decision rule persists. We re-visit Smith's analysis to determine if the high error rates continue.

We collect Google Scholar citations for all of the papers published in 10 high profile finance journals in 2011. Using 2011 allows the profession time to find the papers and determine which are important to our body of knowledge as measured by the number of citations (collected in November and December of 2017). As in Smith (2004), the top three finance journals are: *Journal of Finance* (JF), *Journal of Financial Economics* (JFE) and *Review of Financial Studies* (RFS). The other seven journals used in our analysis are: *Journal of Financial and Quantitative Analysis* (JFQA), *Financial Management* (FM), *Journal of Banking and Finance*

(JBF), *Journal of Corporate Finance* (JCF), *Journal of Financial Markets* (JFinMark), *Journal of Financial Intermediation* (JFI), and *Journal of Futures Markets* (JFutures). JFQA is generally ranked as the number four journal, so we use the median number of citations for the 2011 JFQA articles as our hurdle rate. This is different from that used in Smith and, while arbitrary, is a higher bar than in Smith.

Using the median number of citations (59) from the JFQA, we find the Type 2 error rates in our sample are: 8.33% for the JF, 23.53% for the JFE and 23.15% for the RFS. The Type 1 error rates for the other journals are: FM = 10.81%, JBF = 32.44%, JCF = 46.32%, JFinMark = 39.13%, JFI = 35.71%, and JFutures = 4.44%. For robustness, we re-examine this analysis using field specific citation hurdles which changes the error rates somewhat, but it does not change our overall conclusions. Our results suggest that even with a higher bar than Smith (2004), there continues to be substantial Type 1 and Type 2 error rates.

Next, we examine the schools that produced the publications. Griffiths and Winters (2005) show that the top finance departments dominate the top finance journals. We re-visit who publishes in the top three finance journals because such a hurdle qualifying as high quality publications may be a difficult hurdle for the average finance academic if the top departments earn all the slots in the top journals.

Arizona State University (ASU) maintains a searchable database of the top four finance journal publications by departments. The data are available from 1990 through 2017 and rank finance departments by the number of publications. Since our sample is from 2011, we use the ASU data from 1990 through 2010 to rank the departments.

We find that the top three journals continue to be dominated by the top finance departments. Approximately 45% of all authors in the JF are from the top 19 finance departments, while about 25% of all authors in the JFE and roughly 35% of all authors in the RFS come from the same top 19 finance departments. The dominance of these departments is more dramatic when viewed on a percentage of published articles basis. In 2011, representatives from the top 41 finance departments accounted for approximately 82% of the 60 articles published in the JF, more than 65% of the 136 articles published in the JFE, more than 74% of the 108 papers published in the RFS, but only about 50% of the 64 articles published in the JFQA. That these departments continue to dominate the top three journals is not surprising since they generally have greater resources to spend on research and often offer their tenured/tenure track faculty lower teaching loads. However, the dominance suggests that using the top three hurdle counting toward tenure, promotion and endowed positions is a high bar for lower ranked finance departments.

The dominance of the top departments does not continue to the other finance journals. Only 15% of the authors' slots in the JFQA are filled by faculty from the top 19 finance departments. After the JFQA, the top 19 finance departments publish in 11% of the slots in JFI and 10% of the slots in JFinMark with the remainder of the journals having less than 10% of authors from these departments. Faculty in lower ranked finance departments publish more extensively in journal outlets just below the top three journals. Detailed data available upon request.

Finally, the most highly cited finance articles are generally published in the top three finance journals. However, the high rate of Type 1 errors in the other finance journals suggests high quality publications exist in these journals. We find that the top finance departments do not dominate the highly cited papers in these other finance journals supporting the argument that authors in lower ranked departments can and do produce high quality research. It also provides prima facie evidence that the sole hurdle of top three journal articles not only misses high quality research, but may also result in substandard tenure, promotion and endowed position decisions and unnecessary faculty turnover.

Data

Why Only Finance Journals?

The simple answer to this question is that we are finance professors and we are following the work of Smith (2004), another finance professor. However, starting with only finance journals opens our analysis to concerns of cherry picking the data. Here, we cast a wider net and demonstrate that finance journals is the appropriate dataset for analysis. Our wider net is cast to include economics and 'general' purpose business journals. Table 1 lists the set we examine and reports the statistics on all the articles published in 2011.

Table 1
Distribution of Finance Articles in Major Non-Finance Journals 2011

Journal Name	Acronym	Total # of Papers	Total Finance Papers	Percent of Finance Papers
American Economic Review	AER	245	13	5%
Journal of Political Economy	JPE	20	1	3%
Quarterly Journal of Economics	QJE	46	2	4%
Academy of Management Journal	AMJ	54	3	6%
Academy of Management Review	AMR	30	1	3%
Administrative Science Quarterly	ASQ	17	1	6%
Management Science	MS	138	25	18%

The results suggest that we are not excluding a large number of finance papers by not analyzing economics and management journals. Having said that we need to take a closer look at MS. The mean citation count is 84 and the median citation count is 66. Both numbers are similar to JFQA, but slightly higher. However, the citation counts for the finance papers in MS do not approach the citation counts for the top three finance journals. Accordingly, the remainder of our analysis focuses solely on finance journals.

Description of Data

It is generally accepted in academic finance that the top three journals are: *Journal of Finance* (JF), *Journal of Financial Economics* (JFE), and *Review of Financial Studies* (RFS). This choice is supported by two recent surveys: the Association of Business Schools (ABS) Academic Journal Guide (2015), and Templeton and Lewis (2015). Templeton and Lewis and the ABS journal guide support the *Journal of Financial and Quantitative Analysis* (JFQA) as the fourth ranked journal.

Our set of other high quality journals are the journals that we believe fit the idea of top field/niche journals in finance: *Financial Management* (FM), *Journal of Banking and Finance* (JBF), *Journal of Corporate Finance* (JCF), *Journal of Financial Markets* (JFinMark), *Journal of Futures Markets* (JFutures) and *Journal of Financial Intermediation* (JFI). Our opinion is supported by a variety of college journal lists and lists from previous research, such as Smith (2004). The list is not intended to be all inclusive, but rather is a set where one might expect

to find a large number of high quality papers that did not find a home in one of the top three journals. We note that Templeton and Lewis (2015) list 19 finance journals and their list includes: FM, JBF, JFI, JCF, JFutures. They do not include JFinMark, which we view as the top niche journal in market microstructure. Borokhovich, Lee and Simkins (2011) examine the influence of the JBF across 12 other finance journals. All the journals in our sample are among the 12 journals used in that study. There are three journals in their sample that are not in ours: *Financial Analysts Journal* (FAJ), *Journal of International Money and Finance* (JIMF) and *Journal of Risk and Insurance* (JRI). We did not include these journals because we do not anticipate a comparably high citation count for papers in these journals.

We then collect the list of papers and authors from these journals in 2011. For these papers, we collect the total count of Google Scholar citations during November/December of 2017. Using the year 2011 allows the profession 6 years (roughly the period the average academic has from Ph.D. graduation to the tenure decision) to find the quality papers and include them in the reference lists as citations.

We also collect all authors for each paper along with their primary job affiliation to determine the degree to which the top finance departments dominate the journals. To determine 'top' departments we use the rankings provided by the Finance Department at Arizona State University (ASU). ASU has a database of appearances in the JF, JFE, RFS, and JFQA for 1990 through 2017 by departments. We collected data from 1990 through 2010 to avoid overlap with our sample year of 2011. Using the total number of top four appearances from 1990 through 2010, we rank order finance departments. The ranked list of the top 100 (plus ties) is available upon request from the authors.

We score departments from 5 (best) to 1 (other) based on the number of publications in the top four journals. We started with the idea of 20 departments per group. However, rather than a rigid group size, we look for breaks in the count. Group 5 are departments #1 (NYU) through #19 (UNC). Group 4 starts at #20 (Cal. Berkeley) and ends at #41 (Carnegie Mellon). Group 3 starts at #42 (a tie among Arizona, Dartmouth, Princeton, Toronto, Wisconsin-Madison) and ends at #64 (a tie between Georgia State and Missouri). Group 2 starts at #66 (Pittsburgh) and ends at #100 (a tie among American, Erasmus, George Mason, and South Florida). Group 1 comprises all other job affiliations, which includes industry and government affiliations. There are 482 different entries in this last group. We are now able to determine the error rate from the decision rule and the degree to which the top finance departments dominate this measure.

Citations and Decision Rule Error Rates

Table 2 provides the summary statistics in our sample. The first column presents the number of papers each journal published in 2011. The JF published 60 papers, which is down from previous years as the JF eliminated its proceedings issue. Three journals published substantially more papers than expected: JFE (136), RFS (108) and JBF (262). We verified that the number of papers in these journals is about double their numbers from 2000. This could increase the Type 2 error rate where all papers are assumed to be high quality. This could also open these journals to more papers from lower ranked departments and therefore reduce the dominance of the top departments in these journals.

Table 2
Journal Descriptive Statistics for Articles Published in 2011

Journal Name	# of articles	Total # of citations	Average # of citations	10th percentile	25th percentile	Median count	75th percentile	90th percentile
JF	60	16,493	275	62	89	193	335	658
JFE	136	22,930	169	30	61	118	212	327
RFS	108	18,964	176	30	60	122	253	416
JFQA	64	5,081	79	13	25	59	106	217
FM	37	1,244	34	7	12	23	44	64
JBF	262	15,081	58	10	17	35	69	119
JCF	95	6,756	71	16	27	57	88	142
JFinMark	23	1,345	58	5	14	39	66	179
JFI	28	1,698	61	9	16	31	88	135
JFutures	45	889	20	3	6	14	26	52

The third column provides the average number of citations. The average citation count is greater than the median number for all of the journals suggesting a skewed distribution. We use the median citation count as our measure of central tendency. The JFQA is our fourth ranked journal and its median citation count for papers published in 2011 is 59. The median number for each of the top three journals is at least double that of the JFQA suggesting these journals publish papers that the profession cites frequently. The median number of citations for the other journals in our sample are generally well below the median for the JFQA reinforcing the choice of the JFQA as our number four journal and its median as our measure of a high quality publication.

We now calculate the error rates resulting from the top three decision rule using citations. The journal itself is an ex ante measure of quality before the profession sees a paper, while citations are an ex post measure of quality from the profession. Using a measure of actual impact (citations) is better than expected impact (journal) when such information is available. We recognize that tenure and promotion decisions to the Associate level may not have sufficient time to use citations so relying on journals maybe required, but promotion to Full Professor and endowed positions will always have access to citations. We use Google Scholar citation counts because it is more inclusive than alternative measures, such as SSCI citations (Smith, 2004).

The basic statistics in Table 2 also allow us to comment on using the JFQA median. First, if a paper published outside the top three journals has more than 59 citations during our sample period, it would be at or above the 25th percentile of papers in both the JFE and RFS suggesting that the profession is paying attention to such papers. The JF has a much higher hurdle as exceeding the JFQA median only ensures inclusion in the JF's 10th percentile. Second, papers in the other journals in our sample having citation counts in excess of the JFQA median are substantially different from other articles in those same journals.

The first column of Table 3 shows the Type 2 error rates for the top three finance journals using the JFQA median. The Type 2 error rate for the JF is less than one paper out of 10 suggesting that the decision rule works well for the JF. However, the Type 2 error rate for the JFE and RFS is almost one paper out of four. This seems to be an unacceptably high error rate for decisions on tenure, promotion and endowed positions.

The Type 1 error rate for the JCF is 46.32%. That is, almost half of the papers published in the JCF in 2011 qualify as high quality based on citations. Three other journals in Table 3 have Type 1 error rates in excess of 30%: JFinMark, JFI, and JBF. About one in three articles in these journals is high quality based upon the citation counts. Finally, the Type 1 error rate

for FM is 10.81% and is 4.44% for JFutures suggesting that articles in these journals are not highly cited.

Table 3
Type 1 and Type 2 Errors for Articles Published in 2011

Journal	Citations rate below JFQA median (Type 2 errors)	Citations rate above JFQA median (Type 1 errors)
JF	8.33%	
JFE	23.53%	
RFS	23.15%	
FM		10.81%
JBF		32.44%
JCF		46.32%
JFinMark		39.13%
JFI		35.71%
JFutures		4.44%

Thus, measuring article quality by journal ranking leads to significant errors, and mostly in one direction. If one uses a single publication in a top three finance journal as a measure of quality, then the error rate is at worst one in four. However, if an author publishes multiple papers in the top three journals then this author is likely doing high quality research. The more important error is assuming articles in other journals are not high quality. There are four finance journals (JCF, JFinMark, JFI, JBF) where at least one out of every three papers can be considered to be of high quality. Ignoring this work unfairly penalizes authors and may lead to suboptimal tenure, promotion, and endowed position decisions.

Type 1 errors here are the misidentification of high quality papers because they do not appear in the top three journals. Misidentification is always unfortunate but is only an issue if the mis-identified articles are authored by faculty at lower ranked departments and the top journals are the domain of the top ranked departments.

Citation Analysis Robustness

The citation analysis in Table 3 is at the journal level. However, citations may vary systematically by field: such as corporate finance, investments or market microstructure. We re-visit the citation counts of papers in the top three journal plus JFQA to determine if citation counts vary by field. We do not conduct this analysis for the other journals because they are field/niche journals focused a specific area. Table 4 reports the results of this analysis.

Table 3 contains six high profile finance journals outside the top four finance journals that we view as top field journals. Our analysis leads us to conclude that four are narrowly focused field journals, while two (FM and JBF) are more broad-based. The JFQA overall median is problematic for field journals given the difference in citation counts across fields in JFQA. The JCF is a corporate finance journal and JFinMark is a microstructure journal. The JFI is a banking and intermediation journal while JFutures is a derivative journal. Accordingly, next we re-examine the Type 1 errors for these journals with field specific hurdles from JFQA.

Table 4
Median Citation Counts by Field in the Top Three Finance Journals and JFQA

Journal	Total articles	Citations	Corporate count	Corporate cites	Investment count	Investment cites	Banking count	Banking cites
JF	60	193	20	202	29	141	6	191
JFE	136	118	55	108	58	114	11	240
RFS	108	122	29	123	46	122	20	165
JFQA	64	59	30	71	28	44	4	103
Journal	Total articles	Citations	Corporate count	Corporate cites	Investment count	Investment cites	Banking count	Banking cites
JF	60	193	20	202	29	141	6	191
JFE	136	118	55	108	58	114	11	240
RFS	108	122	29	123	46	122	20	165
JFQA	64	59	30	71	28	44	4	103

The Type 1 error for the JCF should be calculated relative to the corporate median citation count (71) from JFQA. Using this higher citation count lowers the Type 1 error for JCF to 37%. The Type 1 error for JFinMark should be calculated relative the citation count for microstructure papers in the JFQA. However, JFQA did not publish any microstructure papers in 2011, so we retain the use of the overall journal median and the Type 1 error remains at 39%. The Type 1 error for JFI should be calculated relative to the citation count for banking papers (103) in the JFQA. Using this higher citation count lowers the Type 1 error for JFI to 16%. The Type 1 error for JFutures should be calculated relative to the citation count for the one derivative papers in the JFQA with 23 citations. Using this citation count increases the Type 1 error rate for JFutures to 35%.

The conclusion from this analysis is that Type 1 errors remain a substantial concern even after adjusting for field specific citation counts. A conservative conclusion from our overall results suggests that about one out three papers in the field specific journals qualify as high quality papers based on citation counts. The change in the error rate for JFutures strongly supports field specific adjustments. The JFI appears to suffer with the field adjustment, but we note this may not be a good comparison. The banking papers in the JFQA and the top three journals are the first wave of post crisis papers, which should receive abnormally high attention and should be a time specific anomaly. The 2011 papers in JFI are not crisis papers and therefore should receive average attention for banking papers.

We did not do a field based an analysis on FM and JBF. FM describes its scope as financial management suggesting a broad based journal instead of a field journal. JBF describes its scope as all major fields of finance and banking again suggesting a broad based journal instead of a field journal. Accordingly, we believe that the overall median citation count for JFQA is the most appropriate benchmark.

To complete the field specific error analysis we re-calculate the Type 2 errors for papers in the top three journals using the JFQA field median for papers in corporate, investments and banking. For papers not in these three fields we use the JFQA overall median. The field specific Type 2 error rates are: JF = 6.67%, JFE = 25.00%, and RFS = 22.22%. These Type 2 error rates are similar to the Type 2 error rates reported in Table 3 and suggest that field specific comparisons are less important for Type 2 errors in the top three journals than for Type 1 errors in the top field journals.

Which Departments Dominate the Top Three Journals

Our goal in this section is to determine the level of dominance of the top departments in the top journals. If the top departments have only a small share of the total number of articles in the top three journals then a decision rule based on publishing in the top journals is not an

issue for lower ranked departments. However, if the frequent appearances of the top departments in the top three journals limit publishing opportunities for other departments then the decision rule could be problematic for the lower ranked departments. We use the ASU department rankings which are based on appearances in the top four finance journals with the top departments appearing the most.

We begin our analysis of top departments by reporting the percentage of articles in the top three journals by the highest ranked department on each paper. In 2011, the top 41 finance departments accounted for approximately 82% of the 60 articles published in the JF, more than 65% of the 136 articles published in the JFE, more than 74% of the 108 papers published in the RFS. These department account for only about 50% of the 64 articles published in the JFQA.

To put it more dramatically, there were approximately 11 articles published in the JF, 48 articles in the JFE and 28 articles in the RFS contributed by authors from lower ranked departments. That is, 87 of the total of 304 (29%) articles were accepted for publication by the editors and referees of the top three journals that do not have an author from a top 41 finance department.

Journal Department Rankings by Author

We extend the analysis to the author level and report the frequencies of departments by author in Table 5. Table 5 reports author count and the distribution of authors across department ranks.

Table 5
Frequency of Department Appearances by Journal by Department Ranking

Journal	Total authors	% ranked 1-19	% ranked 20-41	% ranked 42-64	% ranked 66-100	% ranked >100
JF	149	44.97	14.77	8.05	11.41	20.81
JFE	325	26.46	16.62	13.85	14.46	28.62
RFS	258	38.37	12.40	10.47	11.63	27.13
JFQA	160	15.00	15.00	11.25	15.00	43.75
FM	93	5.38	9.68	5.38	11.83	67.74
JBF	584	2.23	1.20	2.40	5.48	88.70
JCF	222	5.86	7.66	2.70	10.81	72.97
JFinMark	50	10.00	16.00	8.00	6.00	60.00
JFI	62	11.29	3.23	6.45	14.52	64.52
JFutures	104	1.92	4.81	2.88	6.73	83.65

Table 5 starts with the JF, which has 149 authors in 2011. Since the JF published 60 papers in 2011, articles average roughly 2.5 authors. The analysis shows that of the 149 authors, 45% are members of a top ranked (ranks 1-19) department. It has been suggested that academics who visit at top ranked departments and those employed at central banks should be included with the top ranked institutions because of their access to proprietary data and the sole concentration on research. This secondary adjustment would increase the JF to 47%. Another 15% came from the next 22 finance departments. Thus, almost 60% of the all of the authors in the JF came from the top 41 departments suggesting that requiring a JF in a lower ranked department may be an unreasonable hurdle.

The JFE has 325 authors across 136 papers or approximately 2.4 authors per article. Twenty-six percent of these authors are from top ranked (ranks 1-19) departments and another

17% are from second set of departments. Thus, approximately 43% of the authors in the JFE are in the top 41 finance departments.

The RFS published 258 authors across 108 articles or again, about 2.4 authors per paper. The RFS has 38% of its authors from top ranked departments and another 12% from departments in the second set. Hence, about 50% of the authors in the RFS are from the top 41 finance departments. Clearly, the JFE and RFS are dominated by the top 41 departments, but there are more potential slots for authors outside of these departments than in the JF.

While the largest group of authors in the JF, JFE, and RFS are from the top ranked departments, this changes when we move down to the JFQA where the largest group are from finance departments ranked below the top 100, plus government and industry. This group comprises 44% of the authors in the JFQA, while the top ranked (ranks 1-19) departments only account for 15% of the authors. This is another clear signal that the top three journals are different from the rest of the finance journals.

As with the JFQA, all the other journals have the majority of their authors from Group #1. The percentage of authors in this group ranges from 60% (JFinMark) to 89% (JBF). Only JFinMark and JFI have 10% or more of their authors from the top ranked (ranks 1-19) departments.

Table 6 provides the percentage of papers in each journal with at least one author from a top ranked (ranks 1-19) department. The results shows that about two-thirds (68%) of the papers in the JF have at least one author from a top ranked department with the JFE at 46% and RFS at 58%. The percentage of papers with at least one author from a top ranked department falls to 28% for the JFQA. That is, slightly more than one out of four articles in the JFQA has an author from a top ranked department. Following the JFQA is the JFinMark at 17% with the remainder of the journals in our sample below 15%. The JBF has the lowest percentage of papers with an author from a top department at 4%.

Table 6
Percentage of Papers with at least 1 Author at a Department Ranked 1-19

Name	# of papers	% of papers with at least 1 author from a Department ranked 1-19
JF	60	68.33%
JFE	136	45.59%
RFS	108	58.33%
JFQA	64	28.13%
FM	37	13.51%
JBF	262	4.20%
JCF	95	10.53%
JFinMark	23	17.39%
JFI	28	14.29%
JFutures	45	4.44%

Do Authors at Lower Ranked Schools Co-author in the Top Three Journals?

The overarching result from departments is that both articles and authorship in the top three finance journals are generally associated with highly ranked finance departments. This would make it very difficult for authors working in lower ranked departments to succeed under the philosophy of "only the top three finance journals count." However, one potential way for authors in lower ranked schools to break into the top three finance journals is by co-authoring with faculty in the top ranked departments.

To examine co-authorship of faculty from lower ranked departments with faculty in the top ranked (ranks 1-19) departments; we ask how often does an article in a top journal with an author from a top ranked department also have a co-author from a lower ranked department? We examine each paper in the top three journals to find the papers with an author from a department ranked in the top 19 and then count the number of co-authors with department ranks greater than 41. With multiple co-authors common in the top three journals, it is possible for all ranks to appear on a single paper. The results appear in Table 7.

Table 7
Co-authors with Top Ranked Departments in the Top Three Finance Journals

Journal	# of Papers	# of Authors	% of paper with an author from Dept. ranked 1-19	Rank > 100	Rank = 66-100	Rank = 42-64
JF	60	149	68.33%	13	7	2
JFE	136	325	45.59%	15	13	12
RFS	108	258	58.33%	16	12	9

The JF has a rank 1-19 author on 68% of its papers, so with 60 papers this provides 41 opportunities to co-author with an author from a top ranked department. Table 7 shows that 13 times (32% of the opportunities) an author from a lowest ranked institution co-authored with someone from a top ranked department. This would appear to suggest that faculty outside of the top 100 finance departments frequently co-author with faculty in the top ranked department. However, recall that group of lowest ranked departments includes government and industry based authors. The 13 low rank authors appearing with top rank authors includes seven non-academics. These seven authors work at FRB-NY (2), IMF, World Bank, Vanguard, Duke Energy, and Bartlit Beck Herman Palenchar & Scott LLP. Accordingly, only six academics from lowest ranked departments co-authored with authors from top ranked departments in the JF.

The JFE has top rank authors on 46% of its papers, which represents 61 opportunities to co-author with such authors. Lowest rank authors did this 15 times (about 25% of the opportunities) and 13 of these 15 authors are academics. The RFS has top rank authors on 58% of its papers, which represents 63 opportunities to co-author with highest department ranked authors. Lowest rank authors did this 16 times (about 25% of the opportunities). At the RFS, seven of the 16 co-authors are non-academics that work at: FRB-NY (5), FRB-Cleveland, and IMF.

These results suggest that faculty at lower ranked schools can gain access to the top three finance journals through co-authorships with faculty at top ranked departments. This appears to suggest that the top three hurdle may not be as challenging as suggested by the dominance of the top three journals by the top ranked departments. However, this raises the questions of whether academics in the lowest ranked department are independent of the top departments or have an association with these departments.

We collect the CVs of lowest ranked academic authors that coauthor with faculty from top ranked departments to determine if there is a direct link to a top ranked finance department. There are six academics in the lowest ranked finance departments that published in the JF with a co-author from a top ranked department. Two of the six have a direct link to the top ranked department while another two have a direct link a Group #4 department. We are unable to locate CVs for the other two. The JFE has 13 academic authors from lowest ranked departments on papers with top ranked co-authors. Seven of the 13 have a direct link to a top ranked department while two have a direct link to a Group #4 ranked department. One author

from the lowest ranked departments appears twice in the JFE (and also appears in the JF), but we cannot find the CV. The RFS has nine academic authors from lowest ranked departments with co-authors from highest ranked departments. Eight of these nine have a direct link to a top ranked department while the ninth has a direct link to a Group #4 department. The vast majority of the direct links are through a degree at the top ranked finance department.

The results of our analysis of links between lowest ranked academics and top ranked co-authors suggest a prior association and suggests the dominance of the top ranked departments in the top three finance journals is stronger than our earlier results had suggested.

Who Authors the Highly Cited Papers in the other Journals?

Netter, Poulsen and Kieser (2018) examine highly ranked finance departments and find that author citation rates increase with increases in department rank. We find that about one out of three papers in JCF, JBF, JFinMark, and JFI have citation counts in excess of the median citation count in the JFQA, but these journals are not dominated by the top ranked departments. Accordingly, we ask who is authoring the highly cited papers in these other journals.

To answer this question, we identify all the papers in the lower profile journals with a citation count in excess of the JFQA median citation count of 59. We assign each author on these papers a group score for department rank as follows: Group 5: departments ranked 1-19, Group 4: departments 20-41, Group 3: departments 42-64, Group 2: departments 66-100, and Group 1: departments >100. Using the average and maximum department group ranks for each of these highly cited papers, we calculate the group rank for each of the other journals and report the results in Table 8.

Table 8
Ranks of Highly Cited Papers

Journal	Highly cited: Average Rank	Highly Cited: Max Rank	Journal Average Rank	Journal Max Rank
JFQA	2.7	3.6	2.2	2.6
FM	1.9	2.5	1.7	2.2
JBF	1.3	1.6	1.2	1.4
JCF	1.6	2.2	1.6	2.1
JFinMark	2.4	3.1	2.1	2.7
JFI	1.6	1.7	1.8	2.2
JFutures	2.0	2.0	1.3	1.5

Table 8 reports the average group rank of the highly cited papers in column 1 and the maximum group rank of the highly cited papers in column 2. Table 8 begins with JFQA to provide a benchmark. The average group rank (2.7 department rank) and maximum group rank (3.6) of the highly cited papers is above the JFQA means. The highly cited papers in the JFQA come from above average (for the journal) department ranks, but not substantially above average. Also, the JFQA maximum rank for highly cited papers is not dominated by Group 5 (top tanked) departments

The other journals show that the average rank of the highly cited papers in a journal is similar to the average rank for that journal. The maximum rank from these journals shows that the highly cited papers are not from top rank (group 5) departments suggesting that the highly cited papers in the lower profile journals are from authors in lower ranked departments.

Conclusion

The analyses in this paper occurred because College of Business Deans continue to use a quality hurdle for research based solely on the journal in which the article appears. Specifically, in finance, a paper is deemed of high quality only if it appears in the *Journal of Finance*, the *Journal of Financial Economics*, or the *Review of Financial Studies*. We analyze Type 1 and Type 2 errors from this decision rule. In addition, we analyze how much journal space in the top journals is taken by the top finance departments to determine if this decision rule represents a feasible hurdle at lower ranked departments.

Using the median citation count for the JFQA as the quality hurdle, we find that, in general, one paper out of 10 published in the JF does not clear our quality hurdle while about one out of four papers in JFE and RFS do not. An error rate of one out of four should be concerning. More concerning is the error rate of assuming papers in other journals are not high quality simply based on where the papers are published. Our quality hurdle suggests an error rates in excess of 30% for JCF, JFinMark, JFI, and JBF. Specifically, more than 30% of the papers in these journals have citation counts above the JFQA median citation count.

Next, we find that the top three journals are dominated by the top ranked departments, which publish infrequently in the other journals. These results with the heuristic of only papers in the top three journals are high quality lead to two important insights here. First, the heuristic makes tenure, promotion and the awarding of endowed positions at the lower ranked schools unnecessarily difficult. Second, the high quality papers published in the second set of journals come from authors in lower ranked schools. Thus, the heuristic leads these schools to deny tenure, promotion and endowed positions to faculty producing high quality work.

We conclude with the note that we are not the only authors concerned about the Type 1 and Type 2 errors discussed in this paper. Kaplan (2018) discusses the issue using journal impact factors and reaches the same conclusions that we do. Kaplan makes an additional point on what he calls a Type 3 error. A Type 3 error arises from the top journal decision rule discouraging faculty from pursuing innovative research because it is unlikely to receive a favorable reception from the top journals.

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A Survey of Faculty Views on the Case Method of Teaching Finance

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This paper reports the results of a survey of current and former members of the Financial Education Association regarding their views of the case method of teaching. The faculty respondents to our survey tend to prefer lectures in introductory courses and cases in advanced upper-level courses. They agree that cases are an effective way to provide students with an organizational context that enhances their understanding of the subject matter and how it is applied in the "real world." They were neutral regarding several issues related to grading classroom participation. The perceptions of the case method were generally consistent with previously-surveyed views of students.

Introduction

It is a challenge to teach business and finance in ways that link theories and analytical models to the practice of finance. Students, especially undergraduate students, often lack the organization framework needed to understand and appreciate the relevance and application of the topics covered.

As discussed by Springate (1974), Merry (1976), Singhvi and Desal (1977), Viscione and Aragon (1978), Trahan (1993), Moore (1999), Bruner, Gup, Nunnally and Pettit (1999), Banning (2003), Kester (2011), and numerous others, the case method of teaching is often used to overcome the tendency of textbooks to treat finance in an overly mechanical manner. Cases place the subject matter in its organization context and can foster the development of situational analytical and evaluative skills rather than simply memorizing solutions to textbook problems in which the input variables are provided.

To assess the views of students on the benefits of cases versus lectures, Kester, Hoover and McGoun (2004) surveyed 251 senior accounting and management majors at Bucknell University and Washington and Lee University. With an overall response rate of 53 percent, they found that students tend to prefer lectures in introductory courses and cases when used to supplement lectures or used in advanced upper-level courses. The responding students strongly agreed that cases are an effective way to provide them with an organizational context that enhances their understanding of the subject matter and how it relates to and is applied in the real world.

Kester, McGoun and Hoover's (2004) research was extended by Kester, Anderson, Dean, Ding, Du Plessis, Hoover and Skully (2008) to examine the perspectives of students outside the United States (U.S.) at seven universities in Africa, Asia, Australia, Europe and Oceania. They reported the results from 381 responding students. Using the same closed-end statements and seven-point scale as used in Kester, Hoover and McGoun's (2004) questionnaire, they also found that students outside the United States prefer lectures in introductory courses and cases

when used to supplement lectures or used in upper-level (advanced) courses. They agreed that cases provide an organizational context that enhances their understanding of the subject matter and how it is applied to real world decision-making. They were neutral regarding issues related to grading classroom participation. The language of instruction in all seven universities is English, yet English was the native language of only 36 percent of the respondents who were from 34 different countries speaking 31 different languages. Students whose native language was not English did not have a stronger preference for lectures over cases.

Faculty Survey

In this research study, we are interested in the views of faculty regarding cases versus lectures, the benefits and limitations of each, and issues related to classroom participation and grading.

Our survey questionnaire had various informational questions, closed-ended statements, and open-ended questions. Other than a few minor wording changes to ask the question from the perspective of faculty instead of students, the 17 closed-ended statements are the same as used in the previously cited surveys of students, so the results can be directly compared. The questionnaire asks respondents to indicate their level of agreement with each of the 17 statements based on the same seven-point scale used in the student surveys: -3 = strongly disagree, -2 = moderately disagree, -1 = slightly disagree, 0 = no opinion, +1 = slightly agree, +2 = moderately agree, and +3 = strongly agree.

In our survey, conducted in June 2022, we used email and SurveyMonkey to survey 649 past and current members of the Financial Education Association (FEA). The survey questionnaire did not ask respondents to identify themselves or their universities. A complete second emailing was conducted in July to improve the response rate.

The Results

A total of 85 questionnaires were completed and returned, resulting in an overall response rate of 13.1 percent.

Part I – Information Questions

The distribution of responses according to experience teaching cases was as follows:

Case teaching experience:	
Undergraduate level	23
Graduate level	12
Both undergraduate and graduate	40
None	10
Total	85

Regarding the types of courses in which cases are used, the distribution of responses was as follows:

Type of course:	
Introductory courses	7
Upper-level elective courses	44
Both introductory and elective	24
None	10
Total	85

Slightly more than half (51.76 percent) of the respondents indicated that they taught cases in upper-level elective courses. Only 8.24 percent indicated that their experience teaching cases was in introductory courses.

Given that the survey questionnaire was sent to former and current members of the FEA, the primary discipline of the majority of respondents was finance:

Primary discipline:	
Accounting	2
Management	2
Finance	76
Marketing	0
Other	5
Total	85

Part II – Closed-Ended Statements

Table 1 contains summary statistics on the responses (faculty) to the closed-ended statements (identified later by "S") of our survey. For comparative purposes, the views of the previous surveyed students in the United States by Kester, Hoover and McGoun (2004) and outside the United States by Kester, Anderson, Dean, Ding, Du Plessis, Hoover and Skully (2008) are also shown in Table 1.

The strongest level of agreement among the faculty respondents to our survey along with the student respondents in the previous surveys was that cases provide a more "real world" understanding of the subject matter (S5). There was stronger agreement among the students than the faculty respondents that cases provide an organizational context that enhances understanding of the subject matter (S1). Both faculty and students agreed that cases provide a better approach for learning advanced material (S15). However, both groups also agreed that lectures provide a better approach for learning introductory material (S13).

Although both faculty and students agreed that it takes more time to prepare for case discussions than lectures (S8), the responding faculty had less agreement with this statement. Although the students strongly agreed that case preparation can be frustrating for students because it is difficult to know how to get started (S6), the responding faculty only mildly agreed with this statement. Both faculty and students were neutral regarding the statement that case discussions are frustrating for students because they never seem to end with the "right" answer (S7). Both groups mildly disagreed that case discussions are a disorganized and inefficient way to learn the subject matter (S3).

According to Kalogeras (1976), cases can be quite inefficient in terms of transmitting factual information. A typical 90-minute discussion of a case may cover only one or two finance topics. The ability to cover the same breadth of topics encompassed by typical textbooks would not be possible in a single term case-only course. Therefore, if one of the course objectives is to provide a broad survey of the course subject matter, he argues that it is more efficient to present lectures in the course. The responding faculty to our survey were neutral regarding whether lectures are a more efficient way than cases to learn the subject matter of the course (S2) as were the students. Both groups were generally neutral regarding whether courses based on lectures (S14) help students learn a broader set of material. Their agreement regarding whether courses based on cases help students learn a broader set of material (S12) was mixed, with faculty being neutral. Both faculty and students only mildly agreed that introductory courses based upon lectures provide better preparation for upper-level courses (S16).

Table 1: Faculty and Student Responses to *Part II – Closed-Ended Statements*

Statement		Level of Agreement (%) Disagreement (-3,-2)	(-1,0,+1)	Agreement (+2,+3)	Mean	Respondents
1.	Cases provide an organizational context that enhances understanding of the subject matter of the courses.	**11.77%**	**23.53%**	**64.71%**	**1.46**	**Faculty**
		0.00%	13.74%	86.26%	2.12	Students in U.S
		2.91%	22.22%	74.87%	1.89	Students outside U.S.
2.	Lectures are a more efficient way than cases to learn the subject matter of the course.	**15.29%**	**50.58%**	**34.11%**	**0.54**	**Faculty**
		13.08%	75.38%	11.54%	-0.20	Students in U.S.
		17.89%	54.47%	27.63%	0.21	Students outside U.S.
3.	Case discussions are a disorganized and an inefficient way to learn the subject matter of the course.	**50.59%**	**41.17%**	**8.23%**	**-1.15**	**Faculty**
		58.78%	38.17%	3.05%	-1.47	Students in U.S.
		55.15%	39.05%	5.80%	-1.32	Students outside U.S
4.	Lectures are usually more enjoyable than case discussions.	**38.82%**	**51.77%**	**9.41%**	**-0.84**	**Faculty**
		48.09%	48.85%	3.05%	-1.29	Students in U.S.
		37.11%	51.58%	11.32%	-0.84	Students outside U.S.
5.	Cases provide a more "real world" understanding of the subject matter of the course.	**3.53%**	**24.71%**	**71.76%**	**1.85**	**Faculty**
		0.00%	16.79%	83.21%	2.30	Students in U.S.
		0.53%	16.84%	82.63%	2.21	Students outside U.S.
6.	Case preparation can be frustrating for students; It is difficult to know how to get started.	**8.24%**	**38.83%**	**52.94%**	**1.21**	**Faculty**
		4.58%	68.70%	26.72%	0.83	Students in U.S.
		13.95%	52.63%	33.42%	0.62	Students outside U.S.
7.	Case discussions are frustrating for students; They never seem to end with "right" answer.	**17.65%**	**58.82%**	**23.53%**	**0.25**	**Faculty**
		19.08%	70.99%	9.92%	-0.19	Students in U.S.
		26.91%	52.51%	20.58%	-0.09	Students outside U.S.
8.	It takes more time to prepare for case discussions than lectures	**7.06%**	**34.13%**	**58.82%**	**1.39**	**Faculty**
		0.00%	29.01%	70.99%	1.89	Students in U.S.
		3.45%	28.65%	67.90%	1.77	Students outside U.S.
9.	I am uncomfortable grading classroom participation in case courses.	**34.11%**	**41.18%**	**24.71%**	**-0.12**	**Faculty**
	I am uncomfortable with classroom participation being graded in case courses.	30.95%	50.79%	18.25%	-0.23	Students in U.S.
		26.38%	52.44%	21.17%	-0.10	Students outside U.S.
	a. It is too subjective.	**28.58%**	**48.80%**	**22.62%**	**-0.05**	**Faculty**
		12.98%	70.23%	16.79%	0.19	Students in U.S.
		12.50%	62.77%	24.73%	0.40	Students outside U.S.
	b. Some students are not comfortable participating in class.	**14.28%**	**48.80%**	**36.91%**	**0.81**	**Faculty**
	I am not comfortable participating in class.	45.80%	42.75%	11.45%	-0.84	Students in U.S.
		39.34%	47.81%	12.84%	-0.69	Students outside U.S.

Table 1 (continued)

	Statement	Level of Agreement (%) Disagreement (-3,-2)	(-1,0,+1)	Agreement (+2,+3)	Mean	Respondents
	c. Classroom participation grades do not accurately measure students' knowledge of the subject matter.	**20.48%**	**54.22%**	**25.30%**	**0.25**	**Faculty**
	Classroom participation grades do not accurately measure my knowledge of the subject matter.	10.77%	51.54%	37.69%	0.80	Students in U.S.
		14.56%	46.90%	38.54%	0.78	Students outside U.S.
	d. Some students dominate classroom discussions.	**9.52%**	**46.42%**	**44.05%**	**1.13**	**Faculty**
		0.00%	33.59%	66.41%	1.92	Students in U.S.
		6.34%	28.65%	65.01%	1.60	Students outside U.S.
10.	Students learn more from cases than lectures.	**17.65%**	**62.36%**	**20.00%**	**0.05**	**Faculty**
	I learn more from cases than lectures.	1.53%	70.99%	27.48%	0.71	Students in U.S.
		6.65%	56.12%	37.23%	0.83	Students outside U.S.
11.	Courses based primarily on lectures are easier for students than courses based primarily on cases.	**7.06%**	**58.82%**	**34.12%**	**0.84**	**Faculty**
	Courses based primarily on lectures are easier than courses based primarily on cases.	2.31%	78.46%	19.23%	0.44	Students in U.S.
		11.67%	56.23%	32.10%	0.56	Students outside U.S.
12.	Courses based upon cases help students to learn a broader set of material.	**9.42%**	**55.29%**	**35.29%**	**0.66**	**Faculty**
		1.53%	64.12%	34.35%	1.07	Students in U.S.
		1.86%	34.75%	63.40%	1.68	Students outside U.S.
13.	Lectures provide a better approach for learning introductory material.	**4.71%**	**32.94%**	**62.35%**	**1.60**	**Faculty**
		0.76%	49.62%	49.62%	1.37	Students in U.S.
		1.60%	36.44%	61.97%	1.70	Students outside U.S.
14.	Courses based upon lectures help students learn a broader set of material.	**7.06%**	**65.88%**	**27.06%**	**0.60**	**Faculty**
		16.03%	74.81%	9.16%	-0.23	Students in U.S.
		10.93%	60.53%	28.53%	0.39	Students outside U.S.
15.	Cases provide a better approach for learning advanced material.	**8.24%**	**30.59%**	**61.17%**	**1.48**	**Faculty**
		0.76%	34.35%	64.89%	1.62	Students in U.S.
		2.12%	35.01%	62.86%	1.68	Students outside U.S.
16.	Introductory courses based upon lectures provide better preparation for upper-level courses.	**3.53%**	**45.88%**	**50.59%**	**1.18**	**Faculty**
		3.05%	57.25%	39.69%	1.05	Students in U.S.
		2.13%	47.07%	50.80%	1.42	Students outside U.S.
17.	All things considered, I prefer lectures to cases.	**14.12%**	**60.01%**	**25.88%**	**0.42**	**Faculty**
		29.77%	60.31%	9.92%	-0.58	Students in U.S.
		25.60%	57.60%	16.80%	-0.24	Students outside U.S.

Both responding faculty and students were neutral regarding whether courses based on lectures are easier for students (S11), whether students learn more from cases than lectures (S10), and whether they prefer lectures to cases (S17). Both groups were also neutral regarding whether, all things considered, they preferred lectures to cases (S17).

One of the challenges in teaching cases is grading classroom participation. Many professors are simply uncomfortable grading participation, which is inherently subjective. Others point out that there are students who have an excellent understanding of the subject matter, but are not comfortable participating in class. Nonetheless, as Hensen, Kennett, and Kennedy (2003, p. 251) point out, "it is only through active student participation that learning will occur using the case method." Statement 9 and its subparts in the questionnaire address these issues. Interestingly, both the responding faculty and students were neutral regarding being uncomfortable with classroom participation being graded in case courses (S9). They were also neutral about participation grades being too subjective (S9a) and students being uncomfortable participating in class (S9b). Similarly, no strong views were reflected in response to the statement that classroom participation grades do not measure their knowledge of the subject (9c). However, both faculty and students agreed that some students dominate classroom discussions (S10d), with students expressing a stronger level of agreement with this statement than faculty.

Lastly, are lectures more enjoyable than case discussions (S4)? Whereas students in the U.S. mildly disagree with this statement, faculty and students outside the U.S. were neutral.

Part III – Open-Ended Questions

Our survey questionnaire concluded with various questions related to teaching cases and course design.

One of the challenges in teaching cases is to acclimate students to the case method of learning. One approach suggested by Bruner, Gup, Nunnally and Pettit (1999) to help students make this transition is an "orientation" session to introduce them to the case method. More than half (54.43%) of the faculty respondents to our survey indicated that they provide such a session to their students.

As previously discussed, classroom participation is considered to be an essential of a successful case course and, as such, is a component of the course grade. Most faculty respondents to our survey indicated that they include classroom participation as a component of the course; others do not. The percentage of the course grade based on class participation ranged from 0 percent to 50 percent. The distribution of the 63 respondents who answered this question was as follows:

Classroom Participation (Percent of Course Grade):	
0 %	17
1-5 %	3
6-10 %	21
11-15 %	3
16-20 %	11
21-25 %	2
26-30 %	3
Over 30%	3
Total	63

The remaining questions solicited open-ended responses pertaining to case selection, dealing with student reluctance to talk in class, dealing with students who seem to dominate the class, the biggest challenges in teaching a case course, and other comments respondents

would like to share. The widely-varied, interesting, and informative responses to these questions by those who chose to respond are listed in the Appendix.

Limitations

The same limitations that applied to Kester, Hoover and McGoun's (2004) survey of undergraduate students in the U.S. and Kester, Anderson, Dean, Ding, Du Plessis, Hoover and Skully's (2008) survey of students outside the U.S. applies to the survey reported in this paper. We believe that the question of whether cases or lectures are best for learning often depends on the professor as well as the nature and goals of the course. Some professors are more comfortable delivering well planned and controlled lectures than leading unpredictable and sometimes chaotic interactive case discussions. Moreover, some courses are better suited to lectures than case discussions, such as theory versus applied finance. The opinions expressed by the faculty in our survey reflect the respondents' experience and comfort levels with lectures and cases as well as the particular courses they teach.

Another limitation of our survey is that there may be response bias in our results. The vast majority of the respondents had experience teaching cases, with 88.2 percent reporting that they had taught cases at the undergraduate or graduate level or both. Only 11.8 percent of the respondents indicated that they had no experience teaching cases. Therefore, the perceptions of cases versus lectures reported in this paper may not be representative of the 649 former and current FEA members, many of whom may not have responded simply because they had no experience teaching cases or have had negative experiences teaching cases,

Another limitation relates to what is meant by the word "learning." How should different teaching methods be evaluated and what frame of reference did the respondents to our survey have for answering the various questions? For example, statement S13 in Part II asserts that "Lectures provided a better approach for learning introductory material" and statement S15 asserts that "Cases provide a better approach for learning advanced material." The previously surveyed student respondents may have interpreted "a better approach for learning" in terms of facts and technical skills acquired in a course, whereas the faculty respondents to our survey may interpret "a better approach for learning" in terms of improved conceptual understanding and critical thinking skills.

What is meant by the word "learning" and how to assess whether it occurs in our courses are especially important and relevant questions in today's world of AACSB Assurance of Learning (AOL) objectives. For example, among the "Learning Goals and Objectives" of Loyola University Maryland's Sellinger School of Business and Management is "utilization of problem-solving skills within the finance setting." If the material and teaching method used in any finance course cannot help students become better problem-solvers and decision makers, what is the point? We believe that case courses by their very nature help foster problem-solving and decision-making skills as the student moves from assessment of case facts to analysis and evaluation of alternatives to a decision.

Concluding Comments

A variety of teaching methods can be used to teach courses in business and finance, some successfully, some not so successfully. There is no such thing as a perfect teaching method. Each has its own strengths and weaknesses. Moreover, not all students respond in the same way to different teaching methods.

Although the faculty perceptions of the case method of learning depends on what is meant by "a better approach for learning," it would appear from the results of our survey that the responding faculty tend to prefer lectures in introductory courses and cases in advanced upper-

level courses. They agree that cases are an effective way to provide students with an organizational context that enhances their understanding of the subject matter and how it relates to and is applied in the "real world."

The respondents to our survey were neutral regarding several issues related to grading classroom participation. However, they agreed that some students dominate classroom discussions. Professors should guard against allowing a few students to dominate case discussions at the learning (and perhaps participation grade) expense of other students.

Overall, the results of the survey are similar to the results of surveys in the U.S. conducted by Kester, Hoover and McGoun's (2004) and outside the U.S. by Kester, Anderson, Dean, Ding, Du Plessis, Hoover and Skully (2008). There were only a few notable differences.

Combining cases and lectures into a single course may combine the best of both worlds. The integration of cases with lectures is advocated by Trahan (1993) and Kester (1999). Trahan (1993, p. 19) argues that "an integrated approach that draws upon the strengths of each method may be superior to either of the methods individually." He suggests an approach in which a case is typically covered during the same lecture when the material is covered or during the one immediately following. He argues that a benefit of keeping the case very close to the lecture allows students to apply the new theory and see its relevance immediately.

The foregoing may imply that lectures and cases are somehow on opposite poles, which is not necessarily true. Cases can be used to present theories and techniques and lectures can be used to illustrate applications. Cases can also be placed before related lectures in order to provide students with a context in which theories and models can be placed. This reversal of the typical sequence of lectures and cases is advocated by Springate (1974) and Kester and Shay (2019).

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APPENDIX
Responses to Open-Ended Questions

How do you select cases for your case course?

- On-line sources, case books, I have written some, and I have published some.
- Based on relevance to the topics covered.
- I have looked for and compared 1) end-of chapter exercises, 2) mini-cases, 3) stand-alone/specific issue cases, and 4) course-length cases. The longer the case, the harder to integrate it into lectures.
- Topic and key learning objectives. Also, I prefer cases that are not too long.
- I look for cases that address concepts and techniques that "fall between the cracks" of our finance coursework. All cases used in the case course should require mastery of new techniques or concepts not covered elsewhere in our program of study.
- Go through individual cases, trying to find the ones that encompass all of what I'd like to convey, and when that isn't possible, then the key points.
- Keywords — what do I want to cover? 2. Date of case — newer is preferable to old classics (and less chance for answers to be on the internet. 3. Does it have a teaching note?
- I select a case textbook. I also write some of the cases.
- When considering cases for my classes, I only look for current cases from the last couple of years and of course relevant to the topic I am teaching.
- Personal experiences.
- I use the ones in the textbook.
- From the material connected with the textbook.
- I choose a case which has the potential to address as many aspects, concepts, or phenomena that I am teaching as possible. This is in order to maximize the outcome (i.e. achieve a certain learning goal) that I can get in the shortest time possible.
- I have written several of my own cases. Plus, I use Darden and Harvard cases, and cases from journals.
- I do not do cases in intro finance.
- Based on subjects and type of industries.
- Text provides cases.
- I do not teach a case-based course.
- Some "case book" use and some current event mini-cases I create.
- Content fit from HBS.
- I choose cases that focus more on one topic (e.g., leverage).
- Relevance to key points I am trying to teach.
- I review dozens of cases each year as they become available. I have a large number of cases that I have taught in the past but do not repeat them less than three years apart and then change the focus and preparation prompts whenever possible.
- I regularly review new offerings from Harvard Business Publishing, because I have found that textbook cases are ineffectual for the most part.
- Subject matter.
- Working capital, capital budgeting, capital structure, & equity or firm valuation.

- Topical cases.
- I write them myself.
- Based upon the finance topic(s) in the course, the complexity/difficulty of the case, and past experience using the case in the classroom.
- Case books or recommendations from colleagues.
- Research or develop myself.
- I write my own cases.
- I go through available cases that match the topics I intend to cover. I then try to read through the cases and their solutions to see if they are well written and give the students enough information. I always found the Darden cases to be better written than Harvard cases.
- Online, case book, Harvard.
- According to how well they approach the principles involved, and how well the teaching note provides ideas.
- Create custom casebook online (Brigham cases).
- Subject and interest of the situation.
- Harvard Business School, MIT (prestigious schools).
- I am a case writer and use many of my own cases. Others come from Darden/Harvard/NACRA.
- Decide on topics to be covered, then read cases to find best (and interesting) fit.
- Relevance to curricular contents.
- I write my own.
- Use HBR or Ivey.
- Based on the need of course content and level of difficulty.
- Based on topics and learning objectives.
- No set approach. Sometimes view things such as Ivey case catalogs.
- From the textbook I am using.
- Harvard Business Publishing, then by topic.
- Case books from publishers supplemented with individual cases from other sources when possible.
- Harvard case website - target cases with teaching notes, read cases and teaching notes
- My choice.
- I use Harvard Business Review cases that align with chapter content from the RWJ text (McGraw Hill). Rather than using either cases or lectures, I use cases to illustrate concepts from the chapters.
- I create my own cases using individualized current company situations (where the students select their separate company).
- Subject content.
- Using HBR library, case summaries.
- Harvard and Ivey publishing or textbook.
- Attempt to find cases which are relevant to students, e.g., Apple, Chipotle, etc. Often students have experience with products/services offered by these companies which can be used to launch case discussions.

- Normally through Harvard or Ivey cases.
- Recommendations from professional associations.
- Based on the course objects and needs of the employers.
- Primarily Deloitte Trueblood; however, use other sources, too.
- Subject matter or a particular point I want to emphasize.
- I write them or select them from JFCR or other free sources.

How do you deal with student concerns about the "subjective" nature of grading class participation?

- I refer to content and context => demonstrate understanding of the issue with both oral and written participation.
- I explain that on the job they will also be "subjectively" evaluated by their boss. Their job in the class, just as in real life, is to impress me. Get used to it.
- More like free-riding issues with students. If in groups, this is frequent and other students are uncomfortable saying anything. If individual projects, they work together even when they're not supposed to. So I never really know how much participation a student engaged in beyond speaking in class.
- I tell them what I am looking for.
- Not generally.
- I tell them that I do my best and that many things in life are subjective.
- Individual meeting in the office.
- This is a real challenge. Some students just dislike talking in class. I explain that it is a business skill, and competition is a way of life. I try to make class participation a competition. That seems to help. Plus, I assign most case work in groups - all members of a group get the same score, even if only one person in group is vocal.
- Keeping a record about quantity and quality of participation.
- Some of the evaluation is based on "assigned" presentation of an initial analysis....my comments provided after class. Not all class participation is voluntary.
- Isn’t a problem.
- If students ask about their class participation grade, I explain why/how they got the grade.
- I start with the idea that every student deserves full marks for participation and then reduce their participation grade if they disrupt the class or indicate they have not done any preparation.
- When they get to work, their job performance will not be judged on a test based on their remembering stuff their boss told them. We talk about this.
- I provide very specific feedback on the many items involved in class participation (level of preparation, or content mastery; responsiveness, etc.
- Provide outline of definition of participation.
- Peer evaluation.
- Not an issue as currently not using them.
- I am honest with them regarding how participation grades are determined: A if they come to class prepared and their participation stands out, B if they participate regularly and C (or lower) if they are occasionally unprepared and rarely participate unless specifically called upon.

- Quantitative results are not "subjective' although their interpretation could be.
- Ignore.
- By being transparent with what "counts" and what "doesn't count."
- Explain that it is part of the process and invite them to be a part of creating the process.
- Capstone class so not an issue.
- Keeping a record of their participation.
- Creating a rubric, having instant feedback (especially with highlighting best answers and why) so that they could learn from the good students and try next time.
- A very clear rubric which outlines what will be graded on an objective scale, examples refer to relevant questions and points.
- Tell them how they're doing at midsemester and what they can do to improve.
- Participation rubric.
- Let the students grade the presentation part by first teaching them the prisoners' dilemma if they collude.
- I post grading rubrics in advance. they understand that the "subjective" portion of the grading is limited.
- Combine it with peer evaluation.
- Syllabus includes "long" description of things that are considered in assigning participation grades.
- Pre-defined participation rubric.
- Explain the "subjective" grading criteria carefully and then handle complaints on a case-by-case basis.
- Point out I look for quality AND quantity and primarily engagement & effort. Argue it is almost "free" points if you try.
- I use a grading rubric and provide feedback for each dimension.
- None.
- Using a rubric.
- It is not subjective if you provide a grading rubric to students and post on Canvas prior to the course. Important to have clear criteria so students understand the metrics that are used to calculate their grade.
- I make it as objective as possible with a specific rubric.
- Generous grading.
- I set expectations at the beginning of class.
- I developed my own method to quantify participation grading; students self-report their participation as well as perform peer-based evaluations in addition to me grading their participation. Happy to share more and would like to learn what others are doing.
- I use a standardized rubric.
- It's life.

Once the course is underway, how do you deal with, if at all, student reluctance to talk in class?

- This is an issue regardless of the mode used by an instructor.
- Cold call.

- Ask pointed questions. If they don't have answers or explanations for what they did -- they are downgraded.
- Both Socratic method and I have an alternative "participation" option if it's really a problem.
- Remind students that to get the participation points, they must participate. Also, I sometimes call on the "quiet ones" to begin the discussion.
- Remind them of the participation part of their grade and also try to find ways to interest them in participating. I also offer an alternative if no one wants to participate, then we can make it a written response.
- I require everybody to participate.
- The performance of the cases only counts part of the grade. The grade will be affected if student reluctance to talk in case.
- Small class size makes this less of an issue.
- I speak with them about the issue.
- Again, some of the evaluation is based on assigned presentations and discussion. A scale of substance is provided to guide students on the quality of contributions to a discussion.
- Cold call.
- I group students and require all members of a group to participate on specific days. Other students can also still participate.
- Speak to them individually.
- I call on students, pretty much every person every day.
- I sometimes break them into small groups or I have them each write out answers to specific questions, using the case and then call on students.
- The student's decision.
- Assign questions.
- Not an issue as currently not using them.
- I call on them and, if necessary, speak to them one-on-one to encourage more involvement in the class.
- I keep asking them questions and reminding them that part of their final grade depends on participation.
- Encourage a positive environment. Ask each student questions.
- I will poll students one by one at inflection points.
- The 3 P's are covered and agreed during the first class: Stay positive, pay attention, & participate.
- Call students randomly in class.
- I inform them about their situation.
- Anything optional, students will opt out. Anything under the public eyes, some students will be stunned. So, some combination of required activity but gently graded (10% not more), allowing for either preparation (questions given ahead of time, a few minutes to prepare, answer guide) or not showing the names (online discussion board - live or not).
- Talk to class dominators and ask them to step back. Warm call (tell ahead of time) on students who don't participate as much. Have lots of small groups where someone in the group reports out to the class.

- Call on students
- Make sure each student has a chance to talk; call on them personally.
- Encourage them to participate in discussions.
- Utilize cold-calling.
- "Gentle prodding" is probably the best description.
- Encouragement, targeted questions, supportive environment, expectation that all participate in a mutually respectful manner.
- I assign students to write a list of questions they could ask that they will turn in after class (which gets them some participation points). Then I know that every student has thought about possible questions and I can safely call on anyone, which I do.
- Call on students. If a student is distracted by something (phone), I will call on the student repeatedly for the next few minutes. The rest of the class often gets the message without having to make a deal about it.
- The case study grade is dependent on student presenting. They must talk if they want a grade.
- Class room activities.
- Very difficult, but ask pointed questions.
- Attempt to develop a relationship with students and learn about their experience with the company. For example, in discussing supply chain shortages related to Chipotle, I'll ask students if they have ever experienced a problem with their order. Important to connect concept with their experience.
- I show them their participation grade twice during the semester and explain how much of the course is remaining for participation, and emphasize that they need to participate actively to improve their grade.
- I actively use QFT (question formation technique).
- I explain the importance of speaking up for their career and deduct points for lack of participation.
- Cold calling; assigning tasks in advance and letting "quiet" students know that they will be sharing their responses in class.
- I don't. They know they need to.
- Gentle encouragement.

How do you deal with, if at all, students who seem to dominate the class?

- Again, Socratic method. Though if someone doesn't know, then I typically have the same students trying to reply. Just say 'let's give someone else a shot'. Or, let the student answer and then ask the class if they agree or not. If they do or don't, ask them why. That way they're contributing, but have the comfort of not having to be the first "right or wrong" answer.
- "Let's hear from someone other than Alpha." "Thanks Alpha, but let's let someone else earn some points."
- Try to call on others that may raise their hand and encourage others to participate. I also have no problem calling on someone and ask their opinion.
- I ask them to let others speak.
- I will encourage the student but also suggest other students to follow.

- As the course progresses, I try to identify the extroverts. I then try to put one of these in each group. That seems to help. I also randomly call on people who don't usually talk.
- I speak with them about the issue.
- I have out of class discussions with the student. I frame what is enough and what is too much.
- Don't pick them.
- Speak to them individually and explain why I want them to hold back.
- I don't call on them when this happens.
- I usually speak to them outside of class, or make remarks such as "Well, we have heard a good deal from you today, Tom. whom do you think I should call on instead?" (The athletes in particular, love to flag their team mates!
- Encourage the others to step up.
- Restrict their responses after the first.
- I don't call on them as much as they would like and sometimes speak to them on-on-one and tell them that I appreciate their enthusiasm but want to give other students a chance to participate as well.
- I ask them to stop interfering and wait for me to ask them for their input.
- Sometimes just let them go, but also redirect the discussion.
- I tell them to not dominate the class. That's part of learning to work in groups.
- All students are encouraged and empowered to achieve inclusive excellence.
- I moderate the participation, asking other people.
- Make it a humor/fun experience (make a light joke). Skip their turns. Divide students into groups. Giving each person no more than twice... Not all dominating students have good points.
- Ask them to step back around midsemester, assuring them they already have their A in participation.
- Ask them to let others participate.
- Encourage other students to participate in discussions.
- Ask students to take turn to talk in class.
- I don't really have a good answer for this. Would be interested to learn from other survey respondents.
- Speak privately with student.
- Don't call on them as often and call on others to expand on what the "dominant" students have said.
- I call on someone else. If it is too much, I will ask the student to stay behind and explain the situation in a very positive way. I do not want to discourage their participation but ask them to wait until no one else has their hand up OR if they have a particularly important point to make that they want to make. This approach works - never had a student push back at all. They all seem to like the attention and that I noticed their engagement.
- I occasionally need to step into the conversation and redirect back to core topics.
- Talk to them.
- Say let's hear from someone else

- Try to give them a role on the team, e.g. can you monitor class responses to this question and then report back to the class. Actively engage in activity and give opportunity to summarize results.
- Depends on the size of the class. I don't do anything in small classes, but in larger classes, I ask for others to participate at times when only certain students are raising their hands.
- Small group team participation.
- I privately explain this behavior will negatively impact their career prospects and their grade. I will not tolerate this behavior; it is in the syllabus. Their grade for the discussion is C the first time and steps down from there.
- Let them know that others need a chance to participate and earn participation grade they deserve.
- I'm the referee. It's not a free-for-all.
- Move on to a different student.

What are the biggest challenges to you in teaching a case course?

- It is difficult to give meaningful feedback, especially on written assignments in the time I have to grade assignments.
- The "answers" are available by Googling. It makes it more difficult to use cases. I have cut back enormously because of it. The other issue is bringing in certain concepts to the specific case beyond what the case writers were going after.
- To do it well requires substantially more time than with a lecture.
- Overcoming the resistance of some students who would prefer to cheat/shortcut/memorize/formulating their way to a degree (without learning anything or being able to do any analysis) by having pat answers for everything available online (or have a tutor, online or otherwise, do their assignments for them).
- Preparation.
- Making cases feel “real” and organic. They often are still stiff and feel setup-ish to students.
- Knowing the fundamentals.
- Often selecting a case which is too complex for students, e.g. Alphabet. Works well in graduate course since students understand the company is involved in advertising and is also diversified into other related areas such as health sciences. Undergraduates require a longer process to understand some more complex organizations.
- Getting reticent students to participate more often and actively.
- I feel the need to cycle through a large number of cases to ensure students cannot use last semester’s best answers (handed down from their frat brothers for example).
- Lack of motivation. Students want real problems to solve and businesses consistently tell us cases provide much less intellectual capital for students than live projects. Business want to hear about live projects students have completed; executives repeatedly tell us they are not interested in hearing from students about their case studies in interviews.
- Students not realize the benefits of working on case studies, approaching the assignments like a "necessary evil".
- Cases are not focused enough on what I want to teach. Many times, it comes down to an issue of good or bad firm management.

- Prep and grading.
- Time; engaging students; managing expectations.

Are there other comments you would like to share?

- Preparation is key
- Somehow, the discussion on using cases has to consider a variety of elements: 1) nature of the course (broad introductory, 2a) field elective, 2b) field required. The level of specialization of the course (undergrad vs. MBA). The ability of the students and their academic intensity level. The different varieties of case-based tools, and the different educational technology used. The last point is important: educational simulations may help in cases when text-dry cases are frustrating. Providing EXCEL files students can use --rather than building those themselves-- also may help.
- My case teaching technique is, I think, unique -- doesn't exactly fit into these questions without a lot of explanation.
- I sometimes give case exams. I distribute a written case to students prior to an in-class exam over the case. The exam consists of multiple-choice items related to the case and requiring case information to grade. Exam items are generally written at higher Bloom levels.
- I think case studies have a place in the classroom but don't think they are more effective than lectures.
- Above are my comments to the courses that cases count a significant part of the course. There are also lectures included.
- I use cases in my classes minimally because I find them an inefficient and unproductive way of teaching economics (which is my field). But I also serve on our AOL Committee and independently evaluate and assess the case studies that were used in other classes, graduate and undergraduate business classes. This long AOL experience has only reinforced my opinion that case studies are not a very good way of teaching complex course material. Students are mostly unable to make connections to the specific course material for the which the case was chosen. At best, a case can successfully address just a few aspects out of so many in the material that we are teaching.
- I feel a Case method is not really appropriate at the principles level (say, Accounting, Economics, and Finance). These are survey courses where content coverage is the focus.
- Cases tend to work best for capstone courses where students are expected to have already mastered the key tools and concepts needed to complete the analysis. Mini-cases and applied projects in lower-level courses work best for me. WSJ examples and assignments in lower-level courses often work well.
- I got my MBA at Harvard where all classes were based on cases. I felt that that education was spotty and did not give me the bases for any of the business disciplines. When I began my Ph.D. I retook all the basic MBA courses, even though they were waived due to my MBA. they were primarily taught by lectures, and this is when I truly learned the material.
- While there is a place for short lectures occasionally, lectures used exclusively typically are the sign of a lazy and/or uncaring professor. Students know they will work hard in my course and sometimes be frustrated but my courses have wait lists and students regularly tell me they learn more in my class than in any other. Using the case method, I have won teaching awards at every level from undergraduate to executive MBA.

- These are good questions! I will be interested to hear your findings!
- Most students don't even attempt to try to do the case, just wait for you to go over it in class. Therefore, little learning occurs.
- Case courses can be quite challenging for both teachers and students. Cases can be used effectively to help students "connect the dots" and see the theories and analytical tools can be applied to real world finance and business decisions.
- Assigning cases to groups of students appears to be inefficient because in the majority of the instances one or two of the group members do the work while the rest, as it becomes obvious during the case presentation, simply try to free-ride.
- Lecture vs. case was challenging for me to evaluate, because there's a big difference between lecture with exams and lecture with more project-like assessments that have a lot in common with cases. That said, I find lectures to be an efficient way to introduce material to students.
- I would answer differently if I was talking about undergrads and grads, not just intro classes and advanced.
- Cases are increasing in popularity. There are a lot of case writing competition as well. My MBA students write their own cases too.
- Dearth of cases used to be an issue until I found out about your organization and its cases.

Tahlequah Specialty Hospital: A Capital Budgeting Decision[8]

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A proposal was submitted by a hospital's administrators to legislators to replace an inefficient government-owned hospital with a new, state-of-the-art complex. The hospital was the only intermediate/long-term inpatient health care facility for the region's citizens. The hospital administration believed that the investment in the new complex would result in substantial savings. If the proposal was not implemented, services would continue in the current cost inefficient and clinically ineffective manner.

Introduction

Tahlequah Specialty Hospital (TSH), a state-owned healthcare facility, was an accredited, 200-bed specialty hospital. The fifty-year-old complex was not designed as a specialty hospital and was outdated with respect to current medical practices. It was very inefficient and not conducive to proper patient care. To illustrate, on an average day, forty percent of the available beds were unoccupied. The decrepit complex also required a significant amount of maintenance and was not energy efficient. Given the declining government support for healthcare and the inefficiencies of the current facility, the hospital's administrators wanted to buy a new, smaller, more efficient state-of-the-art complex from Jacob Hospitals Corporation (JHC). The administrators believed that the savings from reduced payroll, maintenance, utilities, and insurance costs would cover the acquisition costs of the new complex.

Current Hospital

Tahlequah Specialty Hospital had approximately 606 full-time and part-time employees. It operated out of a 30-building complex with approximately 400,000 square feet of building space on approximately 150 acres of land. Only 100 acres of the land had been cleared and had three miles of paved roads. The rest of the acreage contained some of the best timber in the area. The hospital, located in an isolated area, operated two deep-water wells and a sewage treatment plant. TSH utilized modern medical devices and computer systems.

The multiple free-standing buildings were a great distance from each other and were built fifty years ago. There was lead paint throughout the facility and pending asbestos and mold related issues. The hospital had already received approval from the state for millions of dollars of upgrades to the facility, with requests for substantial additional upgrades still awaiting state approval. Several of the buildings were not even in service. The buildings, with very wide hallways and large amounts of unused space, housed small offices and patient rooms. The nurses' stations were located far from the patients' rooms, making it difficult to tend to patients' needs in a timely manner. The buildings were not energy efficient, with the annual budget for

[8] This case is based on a consulting project performed by the authors for a government-run hospital. The financial data, names, and a few details have been changed. The actual feasibility study was done over several months with input from many different sources. The authors testified before a government subcommittee.

utilities exceeding $1 million. The hospital incurred high insurance costs due to the poor design of the facility and outdated safety equipment. Salaries and related benefits constituted the largest expense for the hospital.

New Hospital

Since the current complex did not efficiently utilize its physical plant and medical personnel, the CEO had proposed that the state buy a recently built, vacant 135 bed hospital from Jacob Hospitals Corporation. The state would move all operations into the JHC facility and sell the nonessential assets of the current hospital.

Jacob Hospitals Corporation, a for-profit, publicly traded healthcare corporation, had recently filed for bankruptcy protection. As part of its liquidation plan, it was selling all of its hospitals that were currently under construction. JHC had a hospital that would be completed in a week and was across the street from TSH. The new state-of-the-art hospital would be a smaller physical plant than TSH and would allow the TSH medical staff to employ best medical practices. The buildings were built to modern and energy efficient standards, which would result in a significant reduction in energy costs. The hospital would be able to accommodate 135 patients daily, with 105 beds for adults, 10 beds for children, and 20 beds for adolescents. Approximately 450 full-time and part-time staff personnel would be needed to provide excellent patient care and administrative support.

JHC was offering to sell the new hospital complex, including equipment, to the state for $30 million. The $30 million price covered all costs, such as land, equipment, furniture, planning, miscellaneous, and contingency costs. Since all of the assets from the current hospital would be moved to the new complex, there would be no other costs incurred by the state to make the new hospital completely functional. The new hospital would be a single-story facility consisting of approximately 150,000 square feet and is expected to have a 20-year useful life.

Cost Savings

It was anticipated that significant cost savings would be achieved upon moving into the new, smaller facility by reducing insurance costs, utilities, maintenance costs, capital outlay expenses, and employees' salaries and benefits.

Annual Insurance, Utilities, Maintenance, Salaries and Benefits Cost Savings

Insurance, which was priced based on square footage, would be reduced because the complex would be smaller and the buildings would employ the latest safety technology. The buildings would be smaller and more energy efficient, resulting in lower utility bills. Annual savings from reduced insurance and utilities costs would be $750,000 and $500,000, respectively. The new facility would require less maintenance, saving $100,000 annually. It was estimated that 91 full time equivalent positions (averaging $35,000 in salary and $9,275 in benefits per employee) would not be needed, eventually producing annual savings of $3.185 million in reduced salaries and $844,025 in reduced employee benefits.

Since TSH was a state-run hospital, for political reasons, all 91 full time equivalent positions would not be eliminated at once. The savings from employing fewer people would be recognized over time. The ninety-one positions (mostly nurses and support staff) would be eliminated over a six-year period through retirements, resignations, or transfers to other state agencies. Table I presents the attrition rates, and the salary and benefits savings from moving into the new hospital. The savings would gradually grow from year one to year six as additional

positions would be terminated each year, resulting in total annual savings of $4,029,025 ($3,185,000 in salaries and $844,025 in benefits) in years six to twenty of the life of the new complex.

Facility Capital Outlay Cost Savings

If TSH moved into the JHC property, the state would not have to incur additional expenses that were needed to support the existing complex. The hospital administration had a wish-list of 19 future capital outlay projects needed to completely update the current complex. The total cost of the improvements would be over $8.7 million over the next three years. They included a fire alarm upgrade, contaminated soil remediation, asbestos abatement, a HVAC upgrade, and the replacement of water lines, telephone lines, sewer lines, and roads. There would be no additional capital outlay project requests beyond the third year. While the hospital administration realized that all of the projects on the list would not be approved by the state, they were optimistic that the most important ones would be funded. Based on their experiences in working with the state, the hospital administrators learned to request significantly more funds than they really needed in order to get most of what they needed. Historically, the state had funded 60 -70 percent of the requested capital outlay projects for state-owned healthcare facilities.

Table II presents the inflation-adjusted capital outlay requests for the next three years that were pending with the state. The year the project would be funded, the cost of the project in that year, and the probability that the project would be funded are presented for each project. The probability of funding was based on the administrators' past experiences in working with the state. If the new hospital was purchased from JHC, all capital outlay projects in Table II would be eliminated, resulting in significant cost savings for the state.

Inflation-Adjusted Cost Savings

Insurance, utilities, maintenance, salaries and benefits at the hospital had historically increased at the rate of inflation. The inflation rate over the past ten years is assumed to be the expected rate of inflation for the next twenty years, the useful life of the new hospital. The average annual inflation rate over the past ten years, based on the Consumer Price Index, had been 2.5%.

Funding for New Hospital

Part of the funding for the purchase of the new hospital would come from the sale of some of the existing assets currently utilized by TSH. The complex sat on 150 acres of land, of which 100 acres were cleared and the other 50 acres contained some of the best timber in the area. The timber would be removed and sold from the 50 acres before the 150-acre cleared land was sold. Because of local zoning laws, the 150-acre property had to be sold as a whole. The hospital property also contained two deep-water wells, a sewage treatment plant, a water tower, and an electrical system.

The fixed assets had been appraised by two companies, Caroline Inc. and Joseph Appraisal Services (see Table III). They valued the wells, treatment plant, water tower, and electrical system exactly the same. However, they placed different values on the cleared land and timber. Caroline Inc. valued the cleared 150-acre land at $6,000 per acre, while Joseph Appraisal Services priced it at $8,000 per acre. The timber alone on the 50 acres was valued at $4,000 per acre by Caroline Inc., and at $4,500 per acre by Joseph Appraisal Services.

Based on the numbers from Caroline Inc. and Joseph Appraisal Services, the administration estimated cash inflows of $3,150,000 from the sale of the wells, treatment plant, water tower, and electrical system. However, the value of those assets was uncertain because real estate experts believed that those assets would only be of value to a large commercial developer and worthless to all other buyers. Based on the real estate market, there was a 75 percent chance that a large commercial developer would buy the cleared 150-acre property and would be willing to pay $3,150,000 for the wells, treatment plant, water tower and electrical system.

Due to the lead paint, asbestos, and mold problems, all of the buildings on the property would be demolished. Because the demolition process would take ten months, it was estimated that the assets of the current complex would be sold one year after the new hospital was purchased. The state's capital outlay request policy added a 10% cost overrun on all estimates. The demolition costs are presented in Table IV.

Discount Rate

The United States Treasury Yield Curve Rates for 1-year, 5-year, 10-year, 20-year, and 30-year instruments were 1.1%, 1.9%, 2.5%, 2.8%, and 3.1%, respectively. The state had two general obligation bonds outstanding, one with a maturity of seven years and one with a maturity of nineteen years. The 7-year state bond had a yield to maturity of 3%, while the 19-year state bond had a yield to maturity of 5%. There was not a 20-year state bond outstanding that matched the maturity on the new complex.

Decision

A proposal was submitted by the hospital's administrators to the state legislators to replace an existing inefficient government-owned hospital with a new state-of-the-art complex. The existing facility could be used for the next 20 years with the specified repairs and upgrades if the proposal to buy a new facility was denied by the state. If you were hired by the state as a consultant, what would you recommend?

Table I

Attrition Rates and Savings in Salaries and Benefits

Ninety-one full time equivalent (FTE) positions would be eliminated over a six year period, eventually resulting in total annual savings in salaries and related benefits of $4,029,025 (in today's dollars) per year.

A. Attrition Rates and Salary Savings per Year from the Elimination of 91 Positions

The year the position would be eliminated, the number of positions abolished, the total savings per year, and the cumulative savings for salaries are presented below. The average salary per position is $35,000.

BEGINNING OF YEAR	FTE POSITIONS ELIMINATED	SAVINGS (in today's dollars)	CUMULATIVE SAVINGS (in today's dollars)
1	24	840,000	840,000
2	16	560,000	1,400,000
3	16	560,000	1,960,000
4	16	560,000	2,520,000
5	15.5	542,500	3,062,500
6	3.5	122,500	3,185,000
7-20	0	0	3,185,000

B. Attrition Rates and Benefit Savings per Year from the Elimination of 91 Positions

The year the position would be eliminated, the number of positions abolished, the total savings per year, and the cumulative savings for benefits are presented below. The average benefits paid per position is $9,275.

YEAR	FTE POSITIONS ELIMINATED	SAVINGS (in today's dollars)	CUMULATIVE SAVINGS (in today's dollars)
1	24	222,600	222,600
2	16	148,400	371,000
3	16	148,400	519,400
4	16	148,400	667,800
5	15.5	143,762.50	811,562.5
6	3.5	32,462.50	844,025
7-20	0	0	844,025

Table II
Capital Outlay Requests

The hospital administration had requested funding for 19 future capital outlay projects. This table presents inflation-adjusted capital outlay requests for the next three years. There would be no additional capital outlay project requests beyond the third year. The year the project would be funded, the cost of the project in that year, and the probability that the project would be funded are presented for each project. The cash flows would occur at the end of each year.

Project Number and Description	Year 1 Requirement (In Year 1 dollars)	Year 2 Requirement (In Year 2 dollars)	Year 3 Requirement (In Year 3 dollars)	Probability of Funding	Year of Funding
1) Fire alarm upgrade	$1,060,000			1	1
2) Remediation of contaminated soil	$300,000			1	1
3) Asbestos abatement	$378,105			1	1
4) Replace underground cable	$152,000			.5	1
5) HVAC upgrade	$348,063			.75	1
6) Replace water lines	$743,950			.5	1
7) Replace telephone system	$454,400			.5	1
8) Drainage upgrade	$1,070,427			.1	1
9) Replace roads		$786,024		.1	2
10) Replace lock system		$300,638		.25	2
11) Re-roof walkways		$474,718		.025	2
12) Increase outside lighting		$207,683		.1	2
13) Relocate power cables underground		$248,983		.1	2
14) Replace sewer lines		$224,840		.1	2
15) Renovate adult unit			$584,260	.1	3
16) Renovate children's unit			$576,788	.25	3
17) Renovate gym			$202,740	0.1	3
18) Renovate administration building			$232,232	.05	3
19) Renovate food services building			$402,636	.05	3

Table III
Market Value of Wells, Sewage Treatment Plant, Water Tower, Electrical System, Land, and Timber

Description		Value from Caroline Inc.	Value from Joseph Appraisal Services
Two deep water wells*		$450,000	$450,000
Water tower*		$150,000	$150,000
New state-of-the-art sewage treatment plant*		$2,500,000	$2,500,000
Primary electrical system above and below ground*		$50,000	$50,000
150 acres of cleared land		$900,000 (at $6,000/acre)	$1,200,000 (at $8,000/acre)
50 acres of timber		$200,000 (at $4,000/acre)	$225,000 (at $4,500/acre)

* Wells, tower, treatment plant and electrical system are only of value to a large commercial developer. They would be worthless to all other buyers. There is a 75% chance that a large commercial developer would buy the 150 acres of cleared land.

Table IV
Demolition Costs of Current Tahlequah Specialty Hospital

Description	Cost
Cost of demolition of existing facility	$980,000
Cost of roadway demolition	$190,000
Cost overrun (10% based on the capital outlay request software of the state)	$117,000
Total demolition costs	$1,287,000