

JOURNAL OF THE ACADEMY OF BUSINESS EDUCATION

VOLUME 20

CONTENTS

SUMMER 2019

- 1 **An Empirical Investigation of Learning Modalities** by Kristin Stowe and Sharon K. Clinebell
- 17 **Teaching About Planning as a Function of Management: The Paper Airplanes Exercise** by Randall M. Croom, Kelly R. Hall, and Jeanne Johnson Holmes
- 33 **Using an Early-Course Improvement Process to Enhance Business Education: The Case for a Simple PDSA-Cycle Improvement Approach** by Joe F. Alexander, D. Lee Warren, Susan G. Williams, and David J. McClaskey
- 59 **Business Student Perceptions of the Impact of Distracting Behaviors in the Classroom** by Eric Gresch, Pingping Song, Janita Rawls, Kyle Huff, and Melinda Cline
- 76 **Winning with Ethical Leadership: A Student Team Project in Corporate Values** by Mark S. Blodgett, Linda Melconian, and Jason Peterson
- 101 **Service Learning: Value-Added Evidence in the Finance Course** by Michelle C. Reiss, Frances Ann Ford, and Regina Martin
- 111 **Transformative Learning in Sales Education** by Gary R. Palin, Patricia A. Griffin, and Robert S. Heiser
- 128 **Applying Course Activities and Accessibility Standards to Online Business Course Design** by Martina Schmidt and Nicole Stowell
- 158 **Do Instructor-Created Videos Improve Student Performance in the Introductory Accounting Course?** by Kiran Parthasarathy, Janet A. Meade, Parthasarathy Krishnamurthy, and Lida Liang
- 172 **Using Student Drawings to Tap Students' Creative Thinking, Build Reflective Thinking, and Teach Targeting and Positioning** by Brian K. Jorgensen
- 186 **NPV Analysis: Should ABR Buy and Restart the St. Croix Refinery?** by Christian Grandzol and Victoria Geyfman
- 201 **NPV Analysis: Should ABR Buy and Restart the St. Croix Refinery? Teaching Note** by Christian Grandzol and Victoria Geyfman

STUART MICHELSON, Editor
Stetson University

Academy of Business Education

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An Empirical Investigation of Learning Modalities

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Learning preferences have been the topic of much research and debate. This paper presents a brief synopsis of learning preferences research and investigates the modalities through which students absorb information, using the Visual, Auditory, Read/write, and Kinesthetic (VARK) framework [Fleming, 2001]. The results of this research show that approximately 40 percent of students have a preferred learning modality, with the kinesthetic modality being the most popular. There are no differences between business majors and non-business majors in their preferences. However, differences exist between the pattern of responses of male and female students and between traditional age and nontraditional students.

Keywords: Learning Style Modalities, Pedagogy, VARK

Disciplines of Interest: Accounting, Finance, Management, Marketing

INTRODUCTION

Faculty want to optimize their classroom activities to maximize student learning. Business faculties typically have no background in educational theory and learning preferences. We often revert to what we preferred as students, use the best practices of our favorite professors, or borrow practices from well-regarded colleagues. A better understanding of learning preferences could aid faculty in creating a more purposeful teaching and learning environment.

Our purpose herein is to present findings, using the VARK model, about the learning preferences of students in business courses. We evaluate the learning modalities of business majors in comparison with non-business majors, male in comparison with female students, and traditional-age in comparison with nontraditional students.

A learning style is defined as “the preferences students have for thinking, relating to others, and particular types of classroom environments and experiences” [Grasha, 1990, p. 26].

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The educational psychology literature covers a variety of aspects about the mode in which students take in information, the level of cognitive processing, and preferences for group or individual work. Seminal work was done by Kolb [1976, 1984]. Other often-cited work includes that of Felder and Silverman [1988], Fleming [2001], Gregorc [1982], and Honey and Mumford [1993]. It is important to note that learning styles and abilities are different. Willingham, Hughes, and Dobolyi [2015, p. 267] state, “While styles refer to *how* one does things, abilities concern *how well* one does them.” A full review of learning styles is beyond the scope of this paper. Comprehensive reviews of learning styles are provided by several authors [Cassidy, 2004; Coffield, Moseley, Hall & Ecclestone, 2004; Hawk & Shah, 2007] and may be consulted for in-depth discussions of the various models.

CLASSROOM OUTCOMES AND LEARNING STYLES

Studies have examined the relationship between learning styles and student performance. We found mixed results on this question. Several studies did find the relationship between learning styles and student performance was important [Eom, Wen, & Ashill, 2006; Moores, Change, & Smith, 2004; Nicholson, Hamilton, & McFarland, 2007], whereas other studies did not find links between performance and learning styles [Ayersman, 1995; Brunton, 2015; Clark & Latshaw, 2011; Karns, 2006; Van Zwanenberg, Wilkinson, & Anderson, 2000]. Determining whether actual or perceived learning measures were used in these studies is important [Bacon, 2011; Clayson, 2009; Sitzmann, Ely, Brown, & Bauer, 2010]. Examples of actual measures are exam scores and course grades. Eom, Wen, and Ashill [2006] and Karns [2006] used perceived learning measures, whereas the other studies used actual measures. Interestingly, Eom, Wen, and Ashill [2006] and Karns [2006] had opposite results, so it does not appear that using perceived learning measures had a predictable bias.

Pashler, McDaniel, Rohrer, and Bjork [2009] refer to the “meshing hypothesis” in which instruction is best delivered in the preferred learning style of the learner. Some studies found that matching teaching and learning styles is important in student performance [Borg & Shapiro, 1996; Charkins, O’Toole, & Wetzel, 1985; Davis & Bostrom, 1993], but another study had mixed results [Brooks & Khanker, 2012]. Clark and Latshaw [2012] found more support for the importance of a teaching and learning style match in an accounting class than in a marketing class, suggesting the importance of a teaching/learning style match may be context-specific.

CRITICISMS OF LEARNING STYLES RESEARCH

Learning styles research has been criticized [Curry, 1990; Landrum & McDuffie, 2010; Pashler, McDaniel, Rohrer, & Bjork, 2008; Rohrer & Pashler,

2012; Willingham, Hughes, & Dobolyi, 2015]. Curry [1990] criticized learning styles research for lack of definition, lack of reliability and validity information, and lack of identification of relevant characteristics in instructional settings. Although some examination of reliability and validity has taken place since Curry wrote about these research deficiencies (for example, see Leite, Svinicki, and Shi [2010] for their work on the reliability and validity of the VARK instrument), the lack of a clear definition persists. In addition to the issues of reliability and validity, in a meta-analysis of eight studies examining the learning styles of business students, Loo [2002] raised concerns with the existing studies, namely small sample sizes.

Hawk and Shah's [2007] comparative analysis finds that no single learning style dimension or element is common to all models. Hawk and Shah note the following theoretical base differences among the learning styles models: The Kolb Model is an experiential model; the Gregorc Model, although emerging out of Kolb's work, is a phenomenological model; the VARK is a sensory/perception model; the Felder–Silverman model combines parts of the experiential, the phenomenological, and the sensory; and the Dunn and Dunn PEPS combines elements of all four [Dunn & Dunn, 1989]. Additionally, echoing Curry's [1990] criticism, Hawk and Shah note that each model develops its own definition of learning styles. The differing theoretical bases add to the definitional issues in learning styles research and there are varying levels of reliability and validity data available for each model.

Other critiques refer to logistical and practical issues with the administration of learning style instruments in the classroom. For example, cost is a factor. Some assessments are available at no cost, such as VARK, and others are available after payment, such as Kolb's Learning Style Inventory (LSI). To uniquely tailor learning styles in the classroom, the faculty member must assess the students' learning styles, which takes time and effort and, depending on the assessment selected, may require money. Some researchers question whether there is enough benefit to warrant the time, effort, and cost [Karns, 2006; Sandman, 2009; Willingham, Hughes, & Dobolyi, 2015].

Another criticism is that studies did not use experimental methodology to determine the interaction between learning and instructional methods based on learning styles [Willingham, Hughes, & Dobolyi, 2015; Pashler, McDaniel, Rohrer, & Bjork, 2008]. These critiques assert that without that interaction being present, the learning styles hypothesis cannot be proven to exist. Even if the controlled experiment showed benefits to the student, the logistical hurdles of assessing and implementing personalized pedagogy are significant, and it would take extensive benefits to make the process worthwhile [Pashler et al., 2008; Rohrer & Pashler, 2012]. Despite their criticisms, Pashler et al. [2008] stated that further research on learning styles may be warranted and noted that it would be a mistake to label negative results as a conclusive refutation of the learning style hypothesis.

LITERATURE GAPS

Our review of the business education literature found other gaps. Fleming's VARK model [2001] is underrepresented relative to learning style models such as Kolb's. We found no studies that compared business students with non-business students. Determining whether differences exist is beneficial to understanding whether the studies conducted in non-business settings are relevant in a business school, especially in light of recent research that shows personality differences among college majors [Vedel, 2016; Vedel & Thomsen, 2017]. The differences among college majors in personality raise the question of what other differences might exist. In addition, faculty may find themselves teaching classes, especially at the introductory level, that include both business and non-business students. Furthermore, we found few studies that examined differences in business students' learning styles by gender or age. Bernardes and Hanna [2009] found no significant differences in the percentage of males and females who had a unimodal learning style. Sandman [2014] found that age is related to the choice of course in which to enroll but not related to learning style.

METHODOLOGY

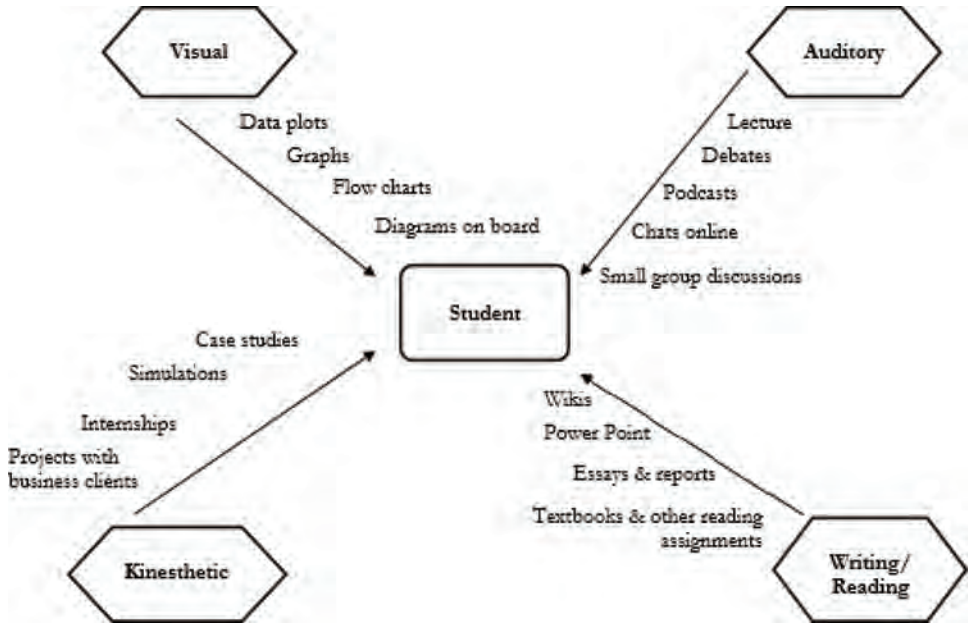
Instrument

This research focuses on a narrow aspect of student learning: the preferred mode through which students take in information. The VARK model was chosen for this study due to its focus on four modalities with clear pedagogical applications: visual or graphic (V), auditory (A), reading/writing (R), and kinesthetic (K) [Fleming & Mills, 1992; Fleming, 2001]. As shown in Figure 1, the visual preference includes forms of symbols, diagrams, charts, maps, etc. that people use to represent ideas rather than using words. The auditory (or aural) modality describes a preference for information that is spoken or heard. People who exhibit the reading/writing modality prefer information displayed as words. The modality where preference is given to the use of experience and practice is labeled kinesthetic. Note that kinesthetic learning need not include physical activity. Faculty may choose from a variety of pedagogical approaches across the VARK framework.

The survey instrument was Fleming's VARK questionnaire for young adults, which is available online [www.vark-learn.org]. The copyright is held by VARK Learn Limited, Christchurch, New Zealand; permission for use was obtained. The VARK survey contains 16 questions and allows multiple answers to each question.

Fleming and Mills [1992] recognized the inherent issues of the "meshing hypothesis," where the goal is to match instructional methods to students' learning styles [Pashler et al., 2008], and asserted that it is unreasonable to expect teachers to be able to match every student's learning style. Their solution was to assist

Figure 1. Reaching Students Through the V/A/R/K Modes



students to recognize their learning modality and tailor their study techniques to their learning preference. Pashler et al. [2008] made a distinction between the existence of study preferences and the learning styles hypothesis. The VARK website provides study strategies for each of the four modalities [vark-learn.com].

VARK was the only model in Hawk and Shah's [2007] review of learning style models that contained the read/write and kinesthetic dimensions. VARK also focuses on the sensory preferences for how to absorb and deliver information, allows for the strength of the preference for the learning style to be assessed, and allows for multimodal preferences [Boatman, Courtney, & Lee, 2008]. Leite, Svinicki and Shi [2010] noted that its face validity, simplicity, ease of use, and availability of wealth of learning materials have been identified as reasons for use of VARK; however, they also noted issues with its question-interpretation consistency and that its questions were aimed toward higher levels of economic options as drawbacks to its use. The VARK instrument has been found to be valid and reliable in several studies [Canfield, 1998; Fitkov-Norris & Yeghiazarian, 2015; Leite, Svinicki, & Shi, 2010].

Sample

Students at two U.S. universities participated in this study, one located in the western United States and one in the southeastern United States. Surveys were

distributed in a variety of undergraduate business school courses; 524 students participated. The large sample helps mitigate Loo's [2002] criticism of the use of too-small samples in learning styles research. Classes in which the surveys were administered were in accounting, economics, finance, marketing, and management. The faculty of those classes volunteered to ask their students to participate. Surveys were distributed during class time, and students were assured that participation was voluntary and had no impact on course grades. Each of the universities' internal research review boards approved the surveys. A minimal amount of demographic information was collected: major, age, and gender.

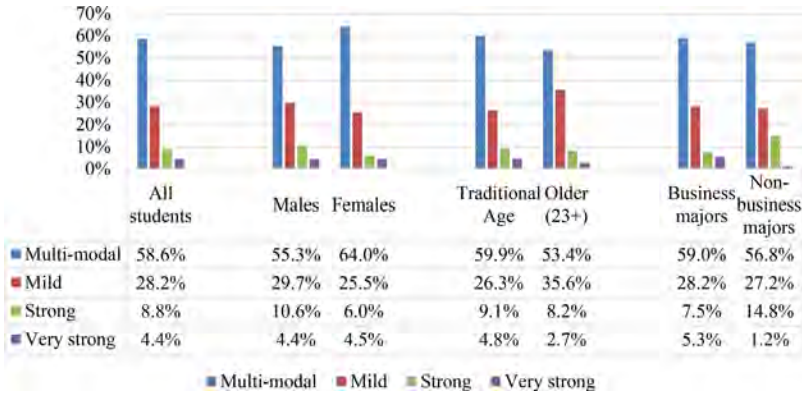
Data Analysis and Results

One research question was whether learners indeed have a preferred modality. If there are no student preferences, then each of the four styles is expected, through random choices, to represent 25 percent of the answers. However, visual techniques were chosen less than 25 percent of the time, and kinesthetic techniques were chosen more than 25 percent of the time. These statistics are reported in Table 2. There are differences in the answer choices of male and female students, and we found differences for two modalities between traditional-age and older students. Males chose a higher percentage of auditory and kinesthetic techniques, whereas females chose a higher percentage of visual and reading techniques. Nontraditional students, age 23 and older, chose a lower percentage of auditory techniques and a higher percentage of reading techniques.

The initial analysis indicates that students' choices of preferred methods are not evenly distributed across the modalities. A next step is to investigate whether individual students exhibit preferred modalities, and if so, to what extent. We expand on prior work that used difference in raw scores [Ganesh & Ratnakar, 2014; Zapalska & Dabb, 2002] by incorporating standard deviation into the classifications [www.vark-learn.org].

To determine whether an individual student has a preferred mode, we calculated the percentage of answers he or she gave corresponding to visual (V), auditory (A), reading/writing (R), or kinesthetic (K) options. The difference in percentage of answers per category was used to classify whether each student is multimodal (no preference) or unimodal. If the difference between the scores for a respondent's highest and second-highest preference was 36 percentage points or more (three or more of the largest standard deviation), the preference is "Very Strong;" if the difference between the scores for a respondent's highest and second-highest preference was 24 percentage points or more, the preference is "Strong;" if the difference was 12 percentage points or more, the preference is "Mild"; otherwise, no preference. For example, one respondent selected 1 V, 9 A, 1 R and 5 K. Fifty-six percent of this respondent's choices were A and 31 percent were K, categorizing this respondent as having a "Strong" auditory preference.

Figure 2. Strength of Modal Preferences



Information on strength of preferences is provided in Figure 2. Forty-one percent of students have a mild, strong, or very strong modal preference, and 59 percent are multimodal. The distribution of preferences is not significantly different across key demographic groups. Chi-square tests for independence indicated no association between gender and strength of preferences [$\chi^2(3, n = 520) = 5.333, p = 0.149, \phi = 0.101, \alpha = 0.05$] and no association between age group and strength of preferences [$\chi^2(3, n = 514) = 3.030, p = 0.337, \phi = 0.077, \alpha = 0.05$]. There is no difference between business and non-business majors in strength of preferences [$\chi^2(3, n = 493) = 6.650, p = 0.084, \phi = 0.116, \alpha = 0.05$].

Given that 41 percent of respondents demonstrate a preferred modality, there is a subsequent question of interest: Which one? Among the students with a preference, more chose kinesthetic learning activities. Auditory and reading modes are equally preferred, with the fewest students choosing visual activities. There are differences between the preferences of traditional age and nontraditional students [$\chi^2(3, n = 211) = 8.785, p = 0.032, \phi = 0.204, \alpha = 0.05$]. Nontraditional students, age 23 and older, are far less likely to prefer visual and auditory learning activities. Although female students are more likely than male students to prefer reading/writing learning activities, the association between preferred mode and gender was not significantly different [$\chi^2(3, n = 215) = 3.550, p = 0.314, \phi = 0.128, \alpha = 0.05$]. Perhaps the lack of significant differences, in comparison with Table 1, is driven by the fact that fewer females were unimodal; only 36 percent had a preferred style. Nonbusiness majors are more likely than business majors to prefer the kinesthetic modality, but again the differences in the overall distribution were not significantly different [$\chi^2(3, n = 204) = 2.004, p = 0.572, \phi = 0.099, \alpha = 0.05$]. Note that Figure 3 analyzes the subset of respondents who had a learning style preference.

Table 1. Descriptive Statistics for Respondents

Variable	Percentage of Respondents
Major	
Business	79%
Accounting	14%
CIS	4%
Finance	20%
General Business	7%
Management	20%
Marketing	15%
Non-business, Related	9%
Non-business, Unrelated	7%
Age	
Traditional age (18–22)	84%
Nontraditional student (Age 23+)	14%
Gender	
Female	38%
Male	61%

Notes: $n = 524$. Percentages may not sum to 100 due to rounding and due to missing responses. A related major is one outside the school of business that requires multiple business courses (e.g. Sports Management). A non related major is one outside the school of business that does not require business courses (e.g. History).

We next looked at the dominant learning style for majors in each business discipline represented in the sample: accounting, computer information systems (CIS), finance, general business, management, and marketing. Unfortunately, there were fewer than thirty respondents each in CIS and general business, which is too small a sample for statistical testing. Figure 4 shows the distribution of modal preferences among the four larger majors. Kinesthetic learning techniques are the most popular choice among all students except management majors; for them, the auditory mode is most preferred. Accounting, finance, and marketing majors all showed a preference for kinesthetic. Marketing majors have the largest gap between their first choice of kinesthetic (40.7 percent) and their second choice of auditory (25.9 percent). However, Chi-square tests indicated no significant association between major and modal preference [$\chi^2(3, n = 204) = 2.017, p = 0.096, \phi = 0.569^D, \alpha = 0.05$].

Direct logistic regression was performed to assess the impact of several factors on the likelihood that a respondent would be categorized as having a strong modal preference. Each model contained six independent variables: gender, age group, and a binary variable indicating whether the student was declared as being in one of the four largest majors (accounting, finance, management, marketing). The results of this test are shown in Table 3. The model predicting

Table 2. Mean VARK Answer Choices

		Percentage of Answers for 'V' Mode	Percentage of Answers for 'A' Mode	Percentage of Answers for 'R' Mode	Percentage of Answers for 'K' Mode
All respondents					
	Mean	22.4	24.9	24.2	28.5
	Std dev	10.10	11.10	11.89	12.08
	<i>t</i>	5.861	0.175	1.521	6.557
	Signif	0.000	0.861	0.129	0.000
Males					
	Mean	21.34	25.84	23.31	29.50
	Std dev	10.09	11.18	11.38	12.06
Females					
	Mean	24.13	23.51	25.66	26.71
	Std dev	9.96	10.81	12.58	11.98
	<i>t</i>	3.077	2.343	2.193	2.578
	Signif	0.002	0.020	0.029	0.010
Traditional Age					
	Mean	22.60	25.55	23.52	28.34
	Std dev	10.18	11.19	11.76	12.25
Older (age 23+)					
	Mean	21.25	21.43	28.14	29.18
	Std dev	9.14	9.93	12.42	11.29
	<i>t</i>	1.060	2.957	3.088	0.548
	Signif	0.289	0.003	0.002	0.584

Notes: $n = 524$. For all respondents, test value is mean of 25.0 percent.

whether a respondent has a visual preference is weak [$\chi^2 = 9.435, p = 0.151$]. Given that the visual mode was least popular, it may be that small sample size limits the scope of the model. The other three models were statistically significant, indicating that the model was able to distinguish between students who preferred the A, R, or K modality and students who did not. Gender is significant in two of the models, with the likelihood of preferring reading techniques lower for male students and the likelihood of preferring kinesthetic learning higher for male students. Older students have a higher likelihood of preferring reading techniques and a lower likelihood of preferring auditory techniques.

CONCLUSION

This present study adds to the literature in several ways. First, it uses the VARK model, which has been underrepresented in the literature related to

Figure 3. Distribution of Preferred Modality

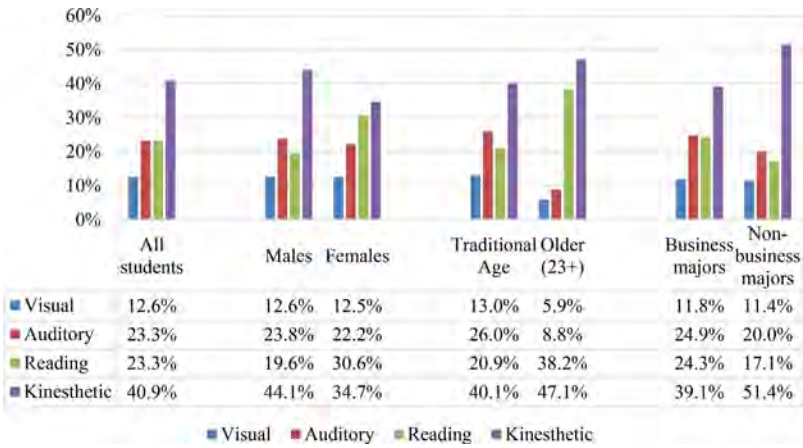
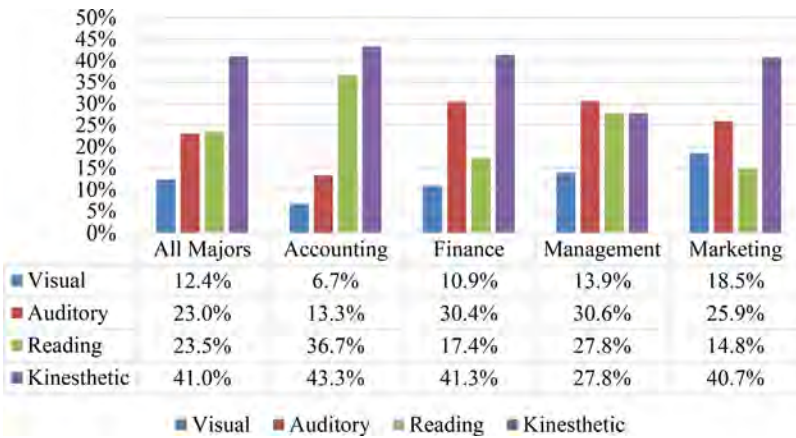


Figure 4. Modal Preferences by Major



business undergraduates. Second, it examines gender and age differences in learning preferences. Third, it compares the learning preferences of business and non-business students. Last, this study provides information about preferred learning preferences for the different emphases of business majors (i.e. accounting, finance, management, and marketing).

The results here show that a strong minority (41 percent) of students are unimodal; however, the majority are multimodal with no clear learning preference. This result is consistent with research using VARK by Bernardes and Hanna [2009], who found 36 percent of students were unimodal and matches Fleming's

Table 3. Binary Logistic Regression Predicting Likelihood of Preferring a V/A/R/K Mode

Panel A: Predicting Visual Modality Preference

	B	Std Error	Wald	Df	Signif	Odds Ratio	95% C.I. for Odds Ratio - Lower	95% C.I. for Odds Ratio - Upper
Gender	-0.471	0.229	4.229	1	0.040	0.624	0.398	0.978
Age Group	0.437	0.365	1.433	1	0.231	1.548	0.757	3.166
Accounting	0.063	0.372	0.029	1	0.866	1.065	0.514	2.207
Finance	0.271	0.348	0.606	1	0.436	1.311	0.663	2.594
Management	0.002	0.323	0.000	1	0.994	1.002	0.532	1.888
Marketing	-0.392	0.333	1.390	1	0.238	0.676	0.352	1.297
Constant	-1.497	0.893	2.812	1	0.094	0.224		

Model: $\chi^2 (6, n = 524) = 9.435, p = 0.151$.

Panel B: Predicting Auditory Modality Preference

	B	Std Error	Wald	Df	Signif	Odds Ratio	95% C.I. for Odds Ratio - Lower	95% C.I. for Odds Ratio - Upper
Gender	0.093	0.207	0.202	1	0.653	1.098	0.732	1.646
Age Group	0.751	0.337	4.960	1	0.026	2.120	1.094	4.106
Accounting	0.554	0.378	2.146	1	0.143	1.740	0.829	3.652
Finance	-0.603	0.277	4.753	1	0.029	0.547	0.318	0.941
Management	-0.579	0.275	4.446	1	0.035	0.560	0.327	0.960
Marketing	-0.113	0.317	0.127	1	0.721	0.893	0.480	1.662
Constant	-1.065	0.818	1.696	1	0.193	0.345		

Model: $\chi^2 (6, n = 524) = 22.091, p = 0.001$.

Panel C: Predicting Reading Modality Preference

	B	Std Error	Wald	Df	Signif	Odds Ratio	95% C.I. for Odds Ratio - Lower	95% C.I. for Odds Ratio - Upper
Gender	-0.423	0.220	3.701	1	0.054	0.655	0.426	1.008
Age Group	-0.788	0.277	8.071	1	0.004	0.455	0.264	0.783
Accounting	-0.475	0.314	2.291	1	0.130	0.622	0.336	1.150
Finance	0.544	0.339	2.578	1	0.108	1.723	0.887	3.346
Management	0.204	0.307	0.444	1	0.505	1.227	0.673	2.237
Marketing	0.370	0.353	1.103	1	0.294	1.448	0.726	2.890
Constant	-0.854	0.817	1.091	1	0.296	0.426		

Model: $\chi^2 (6, n = 524) = 22.974, p = 0.001$.

Table 3. Binary Logistic Regression Predicting Likelihood of Preferring a V/A/R/K Mode (continued)

Panel D: Predicting Kinesthetic Modality Preference

	B	Std Error	Wald	Df	Signif	Odds Ratio	95% C.I. for Odds Ratio - Lower	95% C.I. for Odds Ratio - Upper
Gender	0.668	0.216	9.590	1	0.002	1.950	1.278	2.976
Age Group	-0.161	0.280	0.330	1	0.566	0.851	0.492	1.474
Accounting	0.022	0.316	0.005	1	0.944	1.022	0.550	1.901
Finance	0.048	0.279	0.030	1	0.864	1.049	0.607	1.813
Management	0.456	0.294	2.401	1	0.121	1.578	0.886	2.810
Marketing	0.141	0.312	0.205	1	0.651	1.152	0.625	2.122
Constant	-1.760	0.766	5.271	1	0.002	0.172		

Model: $\chi^2(6, n = 524) = 13.694, p = 0.033$

finding of single-style preferences [2001]. The results differ from Zapalska and Dabb [2002] and Devaraj and Raman [2014], who found that the majority of the students in their sample were unimodal (62 percent and 88 percent, respectively). Note that the highest percentages came from the smallest samples, perhaps because the small samples were less representative. This question of whether students are multimodal or unimodal is important, because if most students do not have a clear learning preference, the question of matching teaching and learning styles becomes largely moot.

For students in this study who had a learning preference, the most-favored mode is the kinesthetic mode. These results are complementary with the emphasis many schools are placing on engaged learning, or learning by doing. Although this study did not find many significant differences among the four larger business majors, being a management major is a predictor of an auditory preference.

We found no statistical difference between the business and non-business students, which may reassure faculty who teach classes that have a mix of majors. Whether a student is traditional age or nontraditional is something for faculty to consider. Our results show nontraditional students prefer reading techniques.

The majority of both male and female students had no preference in learning styles. For those students who did have a preference, both males and females preferred the kinesthetic learning preference. However, we found statistically significant differences in the distribution of responses. Men had higher percentage responses to kinesthetic and auditory, and women had higher percentage responses to visual and reading/writing.

Note that many students are multimodal, with no clear learning preference. Faculty members who plan pedagogy to cover a variety of styles, perhaps emphasizing kinesthetic learning based on our results, may better meet the needs of students. Similarly, instructors who rely on one pedagogical approach (such as

lecture) appeal only to one subset of the class. If a faculty member takes care to use all modes, the unimodal students (41 percent in our sample) will receive some instruction using their preferred mode.

As Willingham, Hughes and Dobolyi [2015] argue, a true incorporation of learning styles involves personalized pedagogy. It is unlikely that individually tailoring instruction is worthwhile for business faculty, given other demands for our time and resources. Providing a range of learning experiences will typically suffice to meet the multiple learning styles that are present in any particular groups of students [Karns, 2006; Sandman, 2009].

Consistent with the existence of study preferences [Pashler et al., 2008], there is value in future research looking at the study techniques of students rather than at the teaching techniques of faculty. The obstacles of trying to match students' learning styles and teaching strategies have been well documented. Given the recent criticisms of the learning styles research, perhaps the value in identifying students' preferred learning modalities lies in their ability to determine preferred study strategies. To that end, the VARK website provides study strategies for students.

Although several studies have related to business majors' learning modalities, we feel this study fills gaps in the existing literature. By using the underrepresented VARK model, including a wide range of business majors, adding a comparison of business and non-business majors, and including the variables of gender and age, this study adds information to the growing literature on the learning preferences of business majors.

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Teaching About Planning as a Function of Management: The Paper Airplanes Exercise

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Action learning pits individuals against complex problems for the purposes of learning through task performance. With a particular focus on managerial planning and strategy, we developed an action-learning exercise in which teams of learners construct and test paper airplanes against a series of evaluation criteria and strategic goals in a competitive environment. Students make strategic, tactical, and operational decisions in a dynamic and constrained environment, observe behaviors, manage ambiguity, test assumptions, and reflect on outcomes. This activity can easily be adapted for courses other than management courses by changing emphases. We provide detailed instructions and support documents for educators.

Keywords: Action Learning, Experiential Learning, Team Learning, In-class Activity, Planning, Principles of Management, Experiential Exercises

Disciplines of Interest: Management, Leadership, Marketing

INTRODUCTION

Management educators strive to help students synthesize knowledge and to prepare them to apply management skills in dynamic, complex, and competitive environments. In academic settings, instructors may find it difficult to approximate contexts that reflect the complexity and competitiveness inherent in the multifaceted challenges that managers commonly encounter. Consequently, activities that provide opportunities for active learning and the exploration of management challenges in a low-risk environment can be valuable learning tools that promote deep learning and prepare students for managerial roles in the workforce. In this article, we introduce The Paper Airplanes Exercise, which is designed to provide students the opportunity to engage in a task that requires strategy formulation and competitive decision-making in a team context. The primary learning objectives of the exercise are to help students (1) conceptualize, understand, and apply behavioral strategies

in a simulated managerial context, and (2) analyze and understand how their decisions, behaviors, resources, and external environment relate to management outcomes.

The exercise provides students the opportunity to seek resources, benchmark, gather competitive intelligence, and engage in the planning and control cycles of management. Moreover, the exercise provides the opportunity to make competitive tradeoffs and observe the four functions of management—planning, organizing, leading, and controlling—in action.

THEORETICAL FOUNDATION

Our exercise integrates the benefits of action learning to enhance students' awareness of managerial challenges. Action learning is a means of intellectual development that requires participants to engage in a real, stressful, and complex problem for the purpose of improving behavior [Revans, 1982] and is a learning approach in which the task serves as the vehicle for learning [Pedler, 1991]. Many scholars have laid theoretical groundwork to explain the effectiveness of action learning, but a consistent theme is that people learn from experience and from doing. People may learn tacitly [Marsick and O'Neil, 1999], through reflection and analysis of the experiences, assumptions, and beliefs that shape their practices [Kolb, 1984; Mezirow, 1990; Marsick & O'Neil, 1999]; through the social, emotional, and transformational content of their experience [Jarvis, 2012]; and through testing their solutions to problems and comparing results with expectations [Revans, 1982].

The Paper Airplanes Exercise is highly experiential, provides the opportunity for reflection, and has the added social elements of competition, comparison, and vicarious experience. Given the theoretical foundation on which we based the development of the exercise, we believe these characteristics help explain why students have reported that they find the exercise valuable.

OVERVIEW OF EXERCISE

In this activity, student teams competitively plan and build multiple paper airplanes in a resource-constrained environment to meet self-determined competitive objectives. This exercise is particularly useful in helping students identify the link between planning and performance because it facilitates active learning in the following areas: introductory planning activities; strategic, tactical and operational planning; and individual and group decision-making.

Using seven evaluation criteria, teams compete for both revenue and market share. For example, students may strive to build planes that fly the farthest, those that stay in the air the longest, or those that are the most durable. They might also choose to focus on production volume, aircraft size, or the creativeness of the aircraft. By extension, choices made using limited resources mean that a team's

Table 1. Steps and Time Frames: The Paper Airplanes Exercise

Step	Description	Time Frame
Introduction	Instructor divides class into teams of four to six members, distributes materials, and emphasizes the rules.	5 minutes
Build Phase	Student teams construct planes and, depending on strategy, seek additional information and resources.	10–15 minutes
Testing Phase	Student teams select a test plane for each test category and demonstrate the effectiveness of their aircrafts.	20 minutes
In-class Debrief	Instructor facilitates a class discussion of the team choices and experiences. Questions should prompt reflection on students' observations and strategies.	20 minutes, time varies
Post-class Debrief	Following class, the instructor completes score sheets and provides them to the class, along with comments about potential relationships between each team's strategy and outcomes.	

decision to focus in one area can reduce their ability to compete in other areas of the market. Additionally, we designed the exercise to ensure that each unit of production does not yield the same return in terms of “revenue”. Some activities are resource intensive but yield a large multiplier (e.g. 4.0), whereas other activities may be less resource intensive but yield a much smaller multiplier (e.g. 0.2). Thus, the exercise illustrates the necessity of competitive trade-offs in organizational settings.

We provide a summary of the steps and time frames for conducting the exercise in Table 1 and a summary of materials and required resources in Table 2. Subsequently, we elaborate on the steps to facilitate and debrief the exercise.

EXERCISE DESCRIPTION AND INSTRUCTIONS

Pre-Exercise Preparation

Before the exercise, the instructor should prepare packets that include the following items: 15 sheets of paper for each team, briefing and evaluation criteria handout (Appendix A), and the scorecard (Appendix B) that displays the revenue multipliers for each category. To emphasize the influence of resource constraints, the instructor can (without disclosure to students) take two or three sheets of paper from one team and add them to the packet of another team. If the instructor decides to do

Table 2. Materials and Resources Needed

Item	Quantity and Use
Sheets of paper	15 per team; aircraft building supplies
Tape	1 piece of tape per review question answered
Paper clips (optional)	If used, 1 paper clip per review question answered
Stopwatch or Mobile Device with Stopwatch Function	1; capture flight time
Tape measure	1; measure the length and flight distance of planes

this, he or she does not reveal this step until the debriefing. The instructor should also have on hand “cargo” to attach to the paper airplanes. A keychain attached to a binder-style paper clip, or a pen or marker cap with a clip, has worked well in our experience. The instructor should also have a tape dispenser and a stopwatch available (stopwatch functions on smartphones work well). Additionally, the instructor should have a copy of the score sheet on hand to track team performance and should select a flight location. Often, a sidewalk works well for outside locations; sidewalk segments serve as easy units of measurement. For inside locations, we recommend using tiles or a tape measure to measure distance flown.

Exercise Instructions Phase 1: Introduction and Building (15–20 minutes)

- At the beginning of class, instruct students to quickly form groups of 5 or 6 members. Distribute an exercise packet to each group.
- Read the instructions provided in Appendix A to students in the briefing. Instruct students to refer to the score sheet and to pay attention to the multiplier. Inform students that they need to identify their strategic focus and communicate it to you via email during the pre-exercise preparation phase. We recommend using email because it can help the instructor more easily provide a written debrief and because it has a clear time stamp and is usually easier and more efficient for the students. However, if email is not available, instructors can allow students to submit a strategy in written form in class. Students can research information about how to build their planes from whatever source they choose. (Student teams in our courses have acquired information from the internet, from the built-in expertise of one or more of its members, and even from watching what other groups do). They also should be encouraged to test the planes they build because the task itself can provide valuable feedback information through the cycle of planning and control.
- Tell students to begin manufacturing, and simultaneously start the timer. Occasionally remind students of the deadline to submit their strategy.
- When students inquire about task-relevant information (e.g. the location of the testing, the nature of the cargo, units of measurement for distance,

etc.) or resources (e.g. tape), inform them that they will be required to “buy” the information and that they can do so by correctly answering a course-content question. Students can consult with their team members and course materials, as the goal is to promote deeper engagement with the course concepts. Sample questions in a Principles of Management course might include the topics of Porter’s Five Forces, the BCG Matrix, historical and theoretical approaches to management, levels of planning, McGregor’s Theory X and Y, and functions of management. After the team has provided “payment” for the requested exercise details, share the appropriate information. However, we suggest shielding the information from other teams, as the inquiring team now has information that can contribute to a competitive advantage.

- Give students about 15 minutes to manufacture, examine, and test their planes. Observe their progress, and make adjustments to the time allotted if, in the instructor’s judgment, more time is needed. Provide a two-minute warning when students approach the final time.
- Immediately instruct students to gather their planes and follow you to the test/evaluation location.

Exercise Instructions Phase 2: Testing/Evaluation (15–20 minutes)

- Once in the test location, instruct teams to 1) count their planes and 2) present their biggest plane. Record and announce each team’s number of planes. Measure each plane, and announce and record the results.
- Direct each team to throw their selected plane for “farthest distance”. Announce and record the distance.
- Use a stopwatch, and instruct each team to throw their selected plane for “longest air time”. Announce and record the time.
- For “aircraft innovativeness/creativity”, direct a representative from each team to step forward with the team’s most innovative or creative plane. Give each team about 30 seconds to explain why their plane is innovative. Instruct students to raise their hands to vote for the plane that is most innovative with the caveat that they cannot vote for their own plane. Announce and record the number of votes for each plane.
- For “farthest with cargo,” direct each team to attach the cargo to one of their planes and throw it. If the cargo ejects, the official distance is the place at which the plane lost the cargo. Announce and record the distance.
- For “durability”, direct a representative from each team to bring forward its most durable plane. Instruct the representatives to stand in a circle and place their planes on the ground in front of them. Then, instruct everyone to rotate one plane to the right and, on the count of three, to stomp on the plane in front of them *once*. Then, have each team throw their damaged plane. Announce and record the distance. Instruct teams to gather their planes and return to the classroom for a discussion.

To accommodate time constraints or large class sizes, instructors may eliminate some performance criteria.

Exercise Instructions Phase 3: Discussion and Debrief (Time Varies)

The exercise debrief includes two stages. The first stage consists of an in-class discussion, conducted immediately after the flights have concluded and scores have been recorded. In Appendix C, we provide a list of questions to guide the in-class debrief discussion. Additionally, we recommend the following guiding principles for the discussion. First, we suggest that instructors structure the discussion so that students discuss what they observed, rather than the instructor emphasizing what he or she observed. Second, we recommend asking additional questions across different levels of analysis—the individual, team, and “global” levels.

Individual-level Questions:

- What did you observe?
- What did you find challenging or interesting about the activity?
- Can you see the planning/control cycle in today’s activity?
- How do you see the four functions of management at work in this activity?

Team-level Questions:

- What were the strengths of your firm? Weaknesses? Opportunities? Threats?
- What competitive advantages did you identify?
- How did your team approach decisions about how to compete?
- Did your strengths and weaknesses influence how you chose to compete?
- Who emerged as a leader in your team?

Global-level Questions:

- Did you pay attention to your competitors’ actions? How did observing others influence your plan?
- How did your choice of strategy lead to competitive tradeoffs?
- What factors may have affected some teams differently than they affected others?
- What factors created uncertainty or ambiguity? How could you mitigate that uncertainty?
- To prompt counterfactual reflection, we suggest asking students questions such as: What do you know now that would have been useful to know earlier? What would you have done differently? Was it possible to have known this information earlier? If so, why didn’t you seek this information?

The second stage of the debrief process consists of a post-class email which includes the score report, strategy, and instructor comments for each team's performance. We provide an example of a post-class communication debrief and completed score sheet in Appendix D. Instructor comments should highlight connections among strategy, behaviors, and outcomes. Finally, as shown in Table 1, the instructor completes the score sheet after class and provides those details to students, along with comments about potential relationships between each team's strategy and their outcomes. In our experience, we provided these details to students via email and asked that they reflect on their results. We also asked students to complete a survey about the experience, and we provided the survey link in the email. To illustrate, we provide survey questions in Appendix F. We used the post-class communication as a guide for follow-up in-class discussions. The nature of action learning suggests that reflection on one's actions is a critical part of the learning process. Thus, the debrief is of special importance as it helps students carefully and intentionally reflect on how the concepts that they have learned in class can help predict or explain the outcomes of the exercise. With respect to helping students focus on a particular class element, we include some representative suggestions for modifications to the exercise in Appendix E.

Results of the survey ($n = 25$) indicated that students found the activity valuable. We asked students to evaluate on a scale of 1 (strongly disagree) to 5 (strongly agree) the degree to which they agreed with various statements about the exercise. The mean score for the statement "The airplane exercise was interesting" was 4.8 out of 5. The statement "The airplane exercise was fun" had a mean score of 4.92. On learning outcomes, students also rated the exercise highly. Students overwhelmingly agreed with the statements that the airplane exercise helped them to "better understand the material" (4.52) and "better understand how the strategic decisions influence outcomes" (4.6), and they reported that the exercise "clearly demonstrated how strategy requires competitive trade-offs" (4.76). Students also reported their opinion that it was a good summary activity for planning, strategic planning, and management theory (4.64). Some students noted that the exercise "helped them to be more aware of material they needed to study" (4.32), and most respondents strongly agreed that they would like more activities like this one (4.8). They found the debrief discussion at the end particularly valuable for tying everything together (4.96). Representative comments in the survey responses included "Great activity, definitely helped me understand the course material better because we applied the techniques learned in class," "fun but effective," and, perhaps most notably, "Yay!!!!"

CONCLUSION

The Paper Airplanes Exercise is an adaptable action-learning exercise that affords students the opportunity to engage in and reflect on the four primary management functions: planning, organizing, leading, and controlling. The exer-

cise requires teams of learners to choose among competitive strategies; to execute the strategy tactically and operationally; and to observe, discuss, and reflect on the outcomes of their decisions and performance. The authors have administered this in-class exercise in more than a dozen classes and have received both formal and informal post-exercise student feedback that suggests that the exercise is an engaging way to increase students' awareness of management concepts and demonstrate the multifaceted nature of decision-making in competitive environments.

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APPENDIX A: Introduction and Evaluation Criteria

Briefing:	
You and your team comprise the workforce of an aerospace company. You are responsible for manufacturing paper airplanes that will be evaluated against certain performance criteria.	
Further, you will compete against other teams in the market (i.e. class). The type, number, and style of airplanes that you manufacture are up to you, as is your competition strategy. In addition to competing on multiple criteria, your performance will be evaluated in two ways: earned revenue and earned market share. “Market Share” for each criterion is calculated by your team ranking, such that your score is the inverse of your team ranking. If there are five teams, the highest performing team in a given area receives a 5, and the lowest performing team receives a 1. “Revenue” for each criterion is calculated by multiplying your performance times a multiplier (specified on the score sheet).	
Evaluation Criteria	Measurement of Criteria
Longest Aircraft	Longest from end to end
Farthest Flight without Cargo	Farthest distance flown; one plane can be submitted
Flight Duration (Longest Air Time)	Longest time remaining afloat, one plane can be submitted
Production Volume (Most Planes Created)	Each of these planes must be able to fly the “minimum distance”
Aircraft Innovativeness/Creativity	Based on votes from other teams (half weight) and the instructor (half weight)
Farthest Flight with Cargo	Farthest flight with cargo attached
Durability	After being “hit by a meteor, how far the plane flies
Rules:	
● The test site may be outside. It may be inside. You do not know.	
● Time is limited. You will have about 13 minutes to manufacture. It may be more. It may be less. You do not know.	
● Strategy must be emailed to the instructor no later than 20 minutes after the start of class. Lateness results in a point(s) deduction. It could be a little. It could be a lot. You do not know.	
● Government Regulations: If you engage in building after the deadline, your plane may be disqualified. This rule means your plane must be completely assembled before the build phase concludes.	
● Government Regulations: A “wadded-up” ball of paper will be disqualified from competition.	
● During the testing phase, you get only one throw—no do-overs.	
● You can only use materials that were provided by your instructor.	
● Your instructor has tape, paper clips, and valuable information. If you try to obtain some these resources, you might have to pay for them. To learn the costs of these resources, you must attempt to buy them.	

APPENDIX B: Sample Score Sheet Tabulation for Market Share and Revenue

Market Share	Team Rank				
	Team 1	Team 2	Team 3	Team 4	Team 5
Biggest	5	2	3	1	4
Farthest Flight	4	1	3	5	2
Longest Air Time	3	4	1	5	2
Production Volume	5	4	3	2	1
Aircraft Innovativeness/Creativity	1	2	3	4	5
Farthest with Cargo	2	4	1	3	5
Durability	5	3	2	1	4
Average	3.57	2.86	2.29	3.00	3.29

Revenue	Team Score					Multiplier
	Team 1	Team 2	Team 3	Team 4	Team 5	
Longest Aircraft (feet or sidewalk squares)	2	4	10	6	3	4
Farthest Flight (feet or sidewalk squares)	7	5	2	5	4.5	2
Flight Duration (seconds)	8	3	2	9	7	.25
Production Volume (# of planes built)	47	12	5	13	8	.25
Aircraft Innovativeness/Creativity (class vote by applause; reverse rank)	5	3	1	2	4	1
Farthest Flight with Cargo (feet)	6	5	1	4	2.5	3
Durability (distance)	4	3	1	1	5	3
Total Score (score x multiplier)	70.75	56.75	52.75	56.50	51.25	

APPENDIX C: Debrief Discussion Questions

Discussion Starters for After-Action Debrief
<i>Initial Debrief</i>
<ul style="list-style-type: none"> ● What did you find interesting about this exercise? ● Did you notice what other teams were doing and, if so, how did that affect you?
<i>Strategic Planning</i>
<ul style="list-style-type: none"> ● What was your strategy? ● What process did you use to determine your strategy? ● How well did you execute your strategy? ● What competitive trade-offs did you make? ● Did someone on your team emerge as a leader? What made him/her a leader? What did he/she do for the team? ● Knowing what you know now, how would you change your strategy if this exercise were repeated tomorrow?
<i>Tactical Planning</i>
<ul style="list-style-type: none"> ● Did your team determine what the cargo was? If not, why was that the case? ● Among your team members, did anyone have particular skills that influenced your team's approach to the task? ● How did you decide what to build? How did you know how to build? ● What assumptions did you make about the process? Did you assume that you did not need to determine what the cargo was? What did you assume about the durability criteria? ● Over the long term, do you think there would be differences in outcomes for teams that asked questions (i.e. did research, looked for answers) in comparison with those who did not?
<i>Operational Planning</i>
<ul style="list-style-type: none"> ● What factors affected your performance? Which of those factors were in your control? Which were not? ● Were there random factors, such as order of performance or wind, that influenced performance outcomes? ● How did the composition of your team influence performance outcomes?
<i>Other Questions (If the instructor opts to give surprise bonus points for "winners")</i>
<ul style="list-style-type: none"> ● How would your performance change if you knew there were bonus points? Why? What would you have done differently? ● Now that you know there were bonus points available, does that change how you view the exercise? What might you have done differently? ● How did the bonus-point allocation influence your strategy?

APPENDIX D: EMAIL DEBRIEF WITH SCORE SHEET

Below, you will find the scorecard for today's Paper Airplanes activity, which includes market share (determined by your team ranking) and revenue (determined by the sum of your score times a multiplier in each category). Congratulations on your efforts and thank you for your contributions to the after-action discussion.

Market Share	Team Rank					
	Team 1	Team 2	Team 3	Team 4	Team 5	
Longest Aircraft	3	3	5	2	1	
Farthest Flight	5	5	2	3	1	
Flight Duration	4	3	2	1	5	
Production Volume	1	3	2	4	5	
Aircraft Innovativeness/ Creativity	1	3	1	5	3	
Farthest Flight with Cargo	3	4	1	2	5	
Durability	4	5	2	2	3	
Average	3	3.71	2.142	2.71	3.29	
Revenue	Team Score					Multiplier
	1	2	3	4	5	
Longest Aircraft (feet)	2	2	2.1	1	0.75	4
Farthest Flight (squares)	3.3	3.3	1.5	3.1	1	2
Flight Duration	3.44	2.05	1.9	1.8	3.73	0.3
Production Volume	5	13	7	14	35	0.2
Aircraft Innovativeness/ Creativity	1	4	1	5	3	1
Farthest Flight with Cargo	2.3	3	1.99	2	4.1	3
Durability	3	4.6	0.7	1.5	1.6	3
Revenue Score	33.53	44.62	22.44	29.04	33.22	

As shown, Team 2 earned first place for overall market share, and Team 5 and Team 1 followed in second and third. Team 2 also earned first place for overall revenue, and although Team 1 narrowly surpassed Team 5 for second, the margin is so close, it is considered a functional tie. To learn more about what happened, please review the teams' strategies provided below.

Team 1's Strategy

Team 1 chose to focus on making the longest plane. They scored highest in “flight duration,” and they attempted to win “aircraft innovativeness/creativity.” They used basic planes for other categories. For the “longest aircraft” category, they placed second, by the smallest of margins (2.0 versus 2.1 and, as a result, functionally tied for third). However, as they strategized, they tied for first in “farthest flight” but came in last for “aircraft innovativeness/creativity.” The team greatly benefited by doing well in the “flight duration” AND “durability” categories. It's possible that this performance was driven by striving for leadership in limited areas while striving for serviceability (“good enough”) performance in other areas.

Team 2's Strategy

“Our strategy includes the making of three paper planes and designing it to fly the farthest and occupy the longest air time.” Let's see how that strategy played out for them. Consistent with their strategy, they had the farthest flight (tie). However, their air time (duration) put them in third place. Regarding ranking, we can also note they never placed lower than third. Thus, even though they might not have been strong performers in every category, being a strong performer in one area, without being particularly weak in another, probably contributed to their victory. Additionally, Team 2 likely benefited from some idiosyncratic things: for example, they placed first in “durability,” without it being a part of their strategy. But who could have planned for that? It would have been difficult. Interestingly, their strategy of “farthest flight” may have played out in a way that was hard to anticipate and was less idiosyncratic than it might appear. Notice that the farthest flight anyone had today was from 2's damaged plane, which was 4.6 sidewalk squares (compared to the previous best of 3.3). It is possible that external factors, like wind, also could have influenced this particular attempt in a way that it did not influence others.

Team 3's Strategy

Team 3 decided to focus on overall market share by making different kinds of planes. This team won the market share and revenue battles for longest plane, but they struggled other categories. Perhaps, when strategy is very broad, teams find themselves competing against someone in a category in which they have tried to excel. There are also some luck and external factors involved. For example, Team 4 edged out Team 3 by 0.01 in “farthest flight with cargo”, and Team 2 edged Team 3 out by 0.15 seconds for “flight duration.” If the wind had been different, if the angle had been adjusted, if, if, if. We will never know what could have been, but sometimes extremely narrow margins can make the difference in a competitive business environment.

Team 4's Strategy

“We decided to first test out a prototype. As we tested our prototype, we decided to compete on 4 categories: Farthest Flight, Biggest, farthest with cargo and, durability. Our strategy is to get each of our teammates to get to work in one of the categories.”

If you explore Team 4's performance indicators, it is evident that even though they rank third in “flight duration,” they were actually extremely close to first place^{3.1} versus two teams that tied at 3.3. Although this can hurt in market share, it didn't hurt them in revenue as much as the market share ranking could lead you to believe. Therefore, this team performed objectively well in this category. One of the challenges that we might note is that two of their strategic objectives—“durability” and “farthest flight with cargo,” were based in the most uncertain and risky categories: We didn't know what the natural disaster would be, and we didn't know what the cargo was. However, strategic threat possibly could have been mitigated by information that was available for purchase. Is it possible that a combination of competing in risky categories and competing in four categories led to this outcome? It is also worth noting that some of Team 4's performance was driven by another unpredictable and risky area of competition, creativity. Last, part of the team's strategy involved the division of labor, having each individual focus on a specific activity, illustrating that structure follows strategy, and that the overall strategy—focusing their competition in four categories—cascaded to their tactical strategy.

Team 5's Strategy

Team 5 chose to focus on production volume (i.e. make the most planes), and to facilitate this by cutting their paper into smaller pieces. Indeed, they executed this strategy well, leading in both market share and revenue for “production volume.” In fact, they swept the category. So, one strength we might observe is the high-quality execution of a very clear strategy. However, as mentioned, they *completely* dominated the category and could have won it with fewer planes. What might have happened if they had made just slightly fewer planes (enough to win market share and still enough to get the multiplier effects)? What if they retained two or three sheets of paper for another purpose? In this particular class, no one made an extremely large plane, although at times teams have been able to manufacture planes as large as 17 feet. Would 30 (instead of 35 planes) and a 2.5-foot airplane have put this team over the top? What about a 3.5- or 4-footstep-length plane? This could have changed the outcomes, as there was a very slight difference between Team 5 and Team 1 in revenue. This is an example of a situation in which competitive intelligence and observing what is going on in the marketplace can help one make strategic decisions.

Well, I hope you had fun, and more important, are learning and making important connections. Those of you who chose to answer review questions, I

hope that these have helped you prepare for the exam. I hope this exercise contributed to your understanding of strategic planning and how competitive tradeoffs can impact performance.

Lastly, I would like to obtain your feedback to determine if you found the exercise useful for your learning. Here's a link to a very short survey; I'd appreciate your feedback.

[We placed a survey link here].

APPENDIX E: SUGGESTIONS FOR MODIFICATIONS TO THE EXERCISE

Some courses may have a stronger emphasis on the strategic level. Below, we offer sample suggestions for modifying the exercise for such courses.

- Strategy is the creation of a position in a marketplace that is both unique and valuable. To increase focus on the positional element of strategy, it may be desirable to create a strategic position map. To this point, provide each group a piece of paper with x and y axes, with the x-axis marked as total revenue and the y-axis marked as total market share. Ask them to plot their firm's position on the map. Later, combine the maps into one so that students can see where they are positioned relative to others. Explore whether positioning is reflected in their performance.
- Learning organizations do more than acquire and distribute knowledge; they also modify behavior. For longer class sessions, repeated class sessions, or with reduced build or testing times, instructors might choose to have teams build and test twice, once before performance is known and once after. Teams can then consider how incorporating learning from previous experience and knowledge of other teams' performance influences future strategy and performance.
- When highlighting resource-based views of firms, instructors may alter the resources among teams, making them substantially different, and communicate this adjustment to the teams from the beginning of the exercise. To elaborate, some teams could receive much less paper (7–10 pieces) than others (20–25 pieces), or some teams may have limited access to paper clips. Team strategies (and outcomes) often depend on the resources to which they have access, particularly when teams understand their resources relative to those with whom they are competing.
- The multiplier weights were chosen to create and reflect the nature of competitive trade-offs. For example, "longest aircraft" has the largest multiplier, but it will likely require the most paper resources. On the other hand, it is possible to make many units of small planes, but "production volume" has the smallest multiplier. The instructor can modify the multipliers to increase and or decrease the differences among categories,

thereby accentuating or attenuating the impact of particular strategies on outcomes.

APPENDIX F: SURVEY QUESTIONS INCLUDED WITH DEBRIEF

When we send out the review email, we include a link to a Qualtrics-based survey to collect feedback about the activity and to provide another opportunity for students to reflect on the activity. We encourage instructors to consider the questions that will be most useful to them and to their students. Below, we have provided the questions we have used. Questions 1–10 were measured on a Likert scale (1 = strongly disagree, 5 = strongly agree). Questions 11 and 12 are open-ended questions. We posed Question 11 to prompt written reflection and Question 12 to capture any additional thoughts that the students wanted to share.

Indicate the degree to which you agree with the following statements about The Paper Airplanes Exercise.

1. The airplane exercise was interesting.
2. The airplane exercise was fun.
3. The airplane exercise helped me to better understand the material.
4. The airplane exercise helped me better understand the connection between theory and practice.
5. I better understand how the strategic decisions influence outcomes.
6. The exercise clearly demonstrated how strategy requires competitive trade-offs.
7. The airplane exercise was a good summary activity for the chapters on planning, strategic planning, and theory.
8. From the airplane exercise, I became more aware of some things I need to study.
9. I would like more summary and review activities like this one in my classes.
10. The presentation (debrief) at the end of the exercise helped tie everything together.
11. What did you learn? Knowing what you know now, what would you do differently?
12. Provide any other thoughts you have about your Paper Airplanes Exercise experience here.

Using an Early-Course Improvement Process to Enhance Business Education: The Case for a Simple PDSA-Cycle Improvement Approach

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The authors propose a simple midcourse improvement system designed for ease of implementation but absent many of the common administrative obstacles that so often hamper continuous improvement initiatives in educational settings. Readers are provided with both the theoretical and practical support for such a system, as well as results from a variety of test cases where the approach was implemented. Though exploratory in nature, from this research readers should see some immediate benefits that can lead to improvements in their respective learning environments.

KEYWORDS: Formative Assessment, Student Evaluations of Teaching (SET), Classroom Quality, Continuous Improvement

Disciplines of Interest: Business, Management, Accounting, Marketing, Finance

Everything should be made as simple as possible, but not simpler.”—Albert Einstein

INTRODUCTION

The use of student feedback in higher education includes a long and somewhat checkered past—a history that began with the use of simple models for learning improvement and would later evolve to a variety of campus wide systems for developing and assessing program and teaching quality. Many groups, ranging

The (PDSA method can be considered in keeping with the idea of students as partners in the learning experience and environment as examined by Cook-Sather 2010 and 2013; Cook-Sather, Bovill and Felten 2014; and Bovill 2011).

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from students to professors, administrators, and even public policy stakeholders, continue to support the notion that student feedback can be useful and supportive in improving the learning process.

Others, however, find that the student evaluation of teaching (SET) or more historically, “course evaluation” approaches now being employed at many institutions of higher education have evolved into an approach where the originally intended benefits may no longer be what are being achieved. Professors can spend an inordinate amount of their instructional time and energies chasing a quantitative student rating to earn compensation bonuses (or avoid administrative sanctions), when at times, student learning can settle to a much lower priority.

In other instances, the systems themselves can become so institutionalized and routine that a student and/or faculty perception can develop such that no one really pays attention to the evaluation feedback. It is simply a required mechanical step in the course process that students nearing the end of each course are asked for their opinions, with an assumption (right or wrong) that no one actually pays any attention to what is submitted because evidence to learners that the feedback results in genuine change never appears [refer to Spooen, Brockx, & Mortelmans, 2013].

The authors of this article propose that many of these current problems can be circumvented through a “grass roots” return to using student feedback as it was originally intended and embracing the power and value of such information in its purest sense. Evidence herein will be submitted to support an approach that focuses on continuous improvement, one faculty member and one classroom at a time. In building a case for this Plan-Do-Study Act (P-D-S-A)-cycle improvement approach, the authors considered the original concept of student feedback from its historical beginnings and suggest that returning to a simpler approach may indeed be better if the ultimate goal is real-time improvement of the learning environment in our business education classrooms.

Review of Literature

The use of SET information by faculty members has been traced to the early 1900s, when organized efforts were made to help faculty members become more aware of student needs [Haskell, 1997]. Marsh and Dunkin [1992] identified four purposes for the collection of student feedback on teaching effectiveness: (1) diagnostic feedback to teachers about the effectiveness of their teaching; (2) a measure of teaching effectiveness to be used in administrative decision making; (3) information for students to use in the selection of course units and teachers; and (4) an outcome or process description for use in research on teaching. Nargundkar and Shrikhande [2012], based on over 100,000 student evaluations, validated the persistent usefulness of a standard SET document, and found that some of the relevant factors may have shifted in importance. Hammonds et al. offered an extensive review of SET as a basic tool for improving teaching quality in higher education [2017].

Most such feedback is targeted toward student satisfaction with some aspect of the course or the teaching experience. In addition, to make things simple to administer, many schools have a system of feedback that is standardized and reported to administrative units. Abrami and Chambers [1996] described the routine of this kind of feedback as “ritual” and contended that it may not always be well-regarded or considered by the participants because of the habitual way it is collected.

Richardson [2005] reviewed literature on instruments for obtaining student feedback and reported that research suggests “students’ evaluations are a function of the person teaching the course unit rather than the particular unit being taught.” Same-teacher evaluations given by successive cohorts of students tended to be very stable over time. Marsh and Hocevar [1991] discovered a strong stability of student ratings of 195 teachers over a 13-year time frame. Over time, teacher perceptions of their own teaching tended to become consistent with their students’ evaluations [Marsh & Roche, 2002]. Although that may be comforting to some, it seems problematic to the authors of this paper. Performance does not seem to improve with experience. “In other words, students’ evaluations may change teachers’ self-perceptions even if they do not change teaching behaviour” [Richardson, 2005, p. 389]. Additionally, according to Kember, Leung & Kwan [2002], routinely collecting student evaluations does not in itself lead to any improvement in the quality of teaching or learning.

Student evaluations of teaching effectiveness are often used in promotion and tenure decisions at colleges and universities. The instruments used for those decisions often fail to capture the teacher’s ability to foster learning or to serve as a tool for improving instruction real time. Seldin [1993] found that between 1973 and 1993, use of student evaluations of faculty in 600 colleges increased from 29 percent to 86 percent. Often such instruments are used in isolation and without alternative measures, making student evaluations “the primary determinant of a lecturer’s success or failure in his academic career. At institutions that emphasize teaching (as opposed to research), higher-than-average levels of teaching effectiveness are often expected. Therefore, it follows that student measurements of teaching effectiveness have the potential to buoy or sink a lecturer’s career” [Emery, Kramer & Tian, 2003, p. 37].

A basic tenet of satisfaction theory in the marketing literature is that the difference between customers’ expectations and perceptions determines satisfaction with the level of service [for examples, see Westbrook & Newman, 1978]. Research on student satisfaction, though, suggests that satisfaction is complex, and it is influenced by a wide variety of contextual factors that are not intrinsically related to teaching quality [Wiers-Jenssen, Stensaker & Grøgaard, 2003]. From the teachers’ perspective, there is a resistance to using student ratings because many believe students are not competent to make such judgments. They contend that teacher popularity rather than effectiveness is the basis for such ratings [Pozo-Muñoz, Rebollosa-Pacheco & Fernández-Ramírez, 2000]. Most teachers

do not consider student evaluations of their teaching to be helpful information [Schmelkin, Spencer & Gellman, 1997], and they are unlikely to change their teaching based on the results of student feedback [Nasser & Fresco, 2002]. An interesting question, perhaps for further research, is whether or not ownership of the feedback data has any effect on its perceived value. Richardson [2005] contends “Teachers may be less disposed to act on the findings of feedback, and students may be more disposed to be sceptical [sic] about the value of providing feedback to the extent that it appears to be divorced from the immediate context of teaching and learning” [2005, p. 408].

Citing numerous studies, Smith, in a 2009 literature review said, “While student evaluations of teaching effectiveness are the most common measure of effective teaching, their use as legitimate indicators of quality in teaching is questionable” [p. 615]. Layne, Decristoforo and McGinty [1999] suggested that online ratings offer significant advantages for efficiency and students express higher levels of satisfaction when the instruments are online. Students are more willing to give responses to open-ended questions online, and faculty perceive responses to open-ended questions as more valuable than categorized responses [Ory & Braskamp, 1981; Tiberius, Sackin & Cappe, 1987; Estelami, 2015]. Faculty do not seem to discount comments given in an open format. Despite the possibility that online administration of SET allows all students, whether or not present in class, to participate in the evaluation, fewer students participated in the online process [Stowell, Addison & Smith, 2012].

Questioning the validity of student evaluations of teaching, Bassett, Cleveland, Acorn, Nix & Snyder [2017] point to several sources of bias in student ratings. Instructor gender [Boring, Ottoboni and Stark, 2016; MacNell, Driscoll & Hunt, 2015], student mood [Zumbach & Funke, 2014], grading leniency [Felton, Mitchell & Stinson, 2004; Greenwald & Gilmore, 1997], teacher attractiveness [Felton, Mitchell & Stinson 2004], and content subject [Vargas-Madriz, Bertwistle & Forgie, 2019; Royal and Stockdale, 2015] have been demonstrated sources of bias in SET.

Given the complexity of collecting student feedback, should we not collect feedback on student experience at the end of the course, when presumably information is fresh on their minds? Narasimhan [2001], Winchester and Winchester [2012] and others noted that obtaining feedback at the end of the course unit could not benefit those students themselves. Earlier feedback becomes more immediately valuable. Greenwald and Gilmore [1997] found student perceptions in the *middle* of a course influenced students’ subsequent studying and final grades. Winchester and Winchester [2014] documented that faculty reflection on midcourse evaluations was beneficial. In the debate about whether or not students are customers or products of the school, Emery, Kramer and Tian [2003] suggested that lecturers are the immediate customers and industry and society are the ultimate customers. If one adopts this position, such use of evaluation is inappropriate for measuring instructional effectiveness. Deming [1986] called such

practices inaccurate and demoralizing. Yet the majority of business schools use summative student evaluations as the only method of evaluating teaching effectiveness [Abrami & d'Apollonia, 1990].

Numerous scholars have repeatedly advocated that students are not qualified to evaluate their lecturers. Adams [1997, p.31] said: “[Are] students, who are almost universally considered as lacking in critical thinking skills, often by the administrators who rely on student evaluations of faculty, able to critically evaluate their instructors? There is substantial evidence that they are not.” DeFina [1996] suggested combining student, peer, and self-evaluation as a way to have a more credible evaluation of effectiveness.

So, if students are not able to evaluate their professors critically, on what, then, are they able to comment effectively and purposefully? It is our contention that through the early-course PDSA improvement model of formative evaluation, students *can* give feedback on their own perception of the learning environment. They can provide feedback on what Stufflebeam [1971] and later Sadler [2012], identified as process—the classroom environment and how they perceive it as a place of learning; they can help the professor understand and remove barriers to learning, whether they be cognitive or process impediments.

Formative Assessment in College Classrooms

Assessment must be integral to any learning effort, whether instructors are developing or using a new approach to teaching, designing or reviewing a course, or developing an entire curriculum. Educational researcher Robert Stake explains the difference between formative and summative assessment with the following analogy: “When the cook tastes the soup, that’s formative. When the guests taste the soup, that’s summative” [Scriven, 1991]. Formative assessment has become an effective way to ensure learning. An article by Black and William in the *Phi Delta Kappan* [1998] is credited with the rise of contemporary interest in formative assessment. The authors supported their argument with meta-analysis of research in which they concluded that student gains in learning triggered by formative assessment are “amongst the largest ever reported for educational interventions” [p. 61]. Although much of their work is K–12 based, the principles of formative assessment carry over to all levels of teaching and learning. The definition of formative assessment offered by W. James Popham in his seminal book *Transformative Assessment* follows: “Formative assessment is a planned process in which teachers or students use assessment-based evidence to adjust what they’re currently doing” [2008, p. 6].

More promising approaches were reported by Gibbs and Coffee [2004]. They found that those teachers who adopted a student-focused or learning-centered approach to teaching received significantly higher ratings from their students than did teachers who adopted a teacher-focused or subject-centered approach to teaching. In Hessler and Humphreys’ article “Student Evaluations: Advice for Novice Faculty,” they caution that “Student evaluations can be intimidating and

negative student comments can be devastating” [2008, p. 187]. They suggest such intimidation can make teachers change requirements, influence course rigor, and encourage harmful changes. Diekelmann [2004] suggests all new faculty have formative evaluations by students in addition to summative ones, provided that the instructor act on student suggestions during that course. Insight arrives too late with only summative evaluations, and “Teachers are left to interpret if students were unhappy with all or only a part of the course” [Hessler & Humphreys, p. 188]. Diekelmann [2004] suggested students write letters to instructors at mid-course or after a new teaching strategy’s implementation.

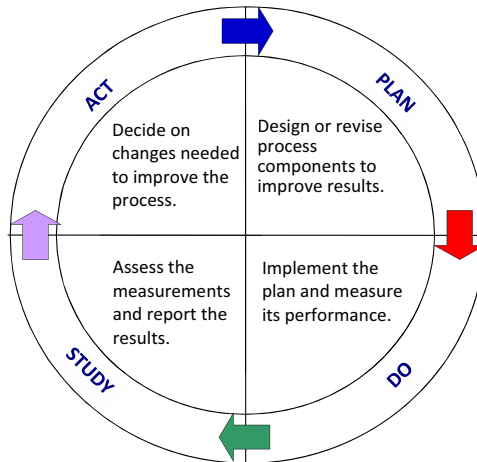
At our university, there has been a history of emphasis on Continuous Quality Improvement (CQI) since the early 1990s. Many faculty members used the LEARN Team method [Hubbard, 1993], allowing students to focus on an improvement themselves and partner with the professor to implement changes—an approach consistent with the proposed approach in this paper. The author of that method, Baugher [1995], served as associate provost at the time. Business school teams learned quality tools and made the improvements in their course projects. Even today, our university continues to offer a midcourse review service through a campus-wide teaching center. In this review, a faculty member from another college visits a class and uses a three-question classroom assessment technique (CAT), then reports results to the faculty member privately. Although these approaches are helpful and certainly effective, the proposed PDSA-cycle method is yet one more way faculty and students can partner to seek improvement in the learning enterprise. Its easy-to-use format is not threatening to students or their teachers, yet the results are often meaningful and helpful.

The PDSA-cycle model advanced here is a type of formative assessment, with its roots stemming from the quality improvement methods advanced by Deming [2000] and others who insist that to improve a system, one must understand the aim, or purpose of that system. The authors embrace the viewpoint that the aim of an educational system should be student *and* faculty learning and knowledge generation—ultimately to the benefit of society and the world. To optimize that system, quality methodology insists on continuous improvement of the enterprise [Lawler, 1992].

Deming [1986] and others advocated studying key processes so that variation in them could be reduced and results predicted accurately. If one applies this principle to the teaching–learning process, the classroom and what goes on in it can be studied, improved, and results can be made more predictable. Quality can be “designed in” rather than simply relying on ad hoc improvement. The current PDSA-cycle model (based on the steps of “Plan-Do-Study-Act”) uses formative assessment to learn what students and faculty believe needs to be addressed. Using this approach should lead to consistent gains in the predictability of student and professor learning.

The proposed model also borrows heavily from a Japanese concept, *nemawashi* [Fetters, 1995; Scupin, 1997]). *Nemawashi* is a process of quietly laying the

Figure 1. The PDSA Cycle for Continuous Improvement (a.k.a., The Deming Wheel)



foundation for some proposed change or project, by talking to the people concerned, gathering information, and gaining support and feedback. It is considered an important element in any change. The word means “taking care of the roots,” or “preparing the soil for growth.” Successful *nemawashi* enables changes to be carried out with the consent of all sides. One of the cautions of using *nemawashi* is that it might be used “behind the scenes” and somehow not be democratic. The authors have addressed this by sharing student and faculty comments with the entire class that contributes them. The proposed approach involves students and faculty alike in preparing for a change or an improvement. It prepares students’ minds for thinking of alternatives and for focusing on ways their learning may be enhanced. Effort is given to building a “harmonious” relationship between faculty, students, and their interaction in the classroom. It also directly models for students a partnering approach to continuous improvement which the authors maintain can be of significant value to them if they replicate it in their own managerial practices.

The Deming Wheel and Current PDSA-Cycle Application

The concept of the Plan-Do-Check-Act (PDCA) (later revised slightly to the “PDSA”) Cycle was originally developed by Walter Shewhart at Bell Laboratories in the 1930s but began gaining widespread industry traction in the 1950s when W. Edwards Deming became a proponent. The simple four-step improvement cycle is commonly referred to as “the Deming Wheel” (see Figure 1).

Simply put, the cycle is a way of determining if a proposed change has actually resulted in any improvement and then using that information to feed into

Figure 2. PDSA Example, Mid-Course Improvement Approach Process



the next cycle of continuous improvement. Testing is critically important so that instructors can ultimately determine if the steps they took to improve actually achieved the desired effect.

To illustrate the current approach in a PDSA-cycle framework, consider the following detailed sequence for the MBA-level marketing management course (also, see Figure 2). Note that the instructor began at the “S” stage, which is acceptable, given the model represents a continuous cycle:

Study

The pilot MBA marketing management course met in the fall term for ten consecutive Wednesday evenings. At the close of the third class meeting (i.e. 30 percent into the course), with approximately five minutes remaining, the instructor briefly explained to students that they had now completed enough of the course to have a baseline understanding of how the course would continue to be taught by the instructor if they did not speak up to offer their input on how it should be improved. Each student was then encouraged to write down on a piece of paper up to three ideas for what the instructor could do differently during the next seven class meetings that would improve the learning environment (refer to Figure 2, Step 1). Students were told that the suggestions could be *anything* they thought could be an improvement but that was within the control of the instructor. This request produced 58 anonymous improvement suggestions from a total of 25 students.

Act

After studying the information and assessing where potential improvements could be made starting that next class, the instructor then entered search mode for

“finding the causes of the problems (see Figure 2, Step 2).” Taking the submitted ideas and then organizing them into similar content domains helped to narrow areas for improvement down to 12 categories (e.g. Lecture/ Discussion, In-Class Activities, Mid-Class Breaks, PowerPoint slides, etc.). In at least two of the cases, the instructor requested clarification from an individual student in an attempt to better understand what might be behind a specific comment. This process led to a decision to focus on seven relatively simple suggestion topics that could be addressed starting with the next class meeting.

Plan

Next, the instructor outlined the “Who, What, and When” project plan for each improvement area being addressed (see Figure 2, Step 3). For example, two students commented on the instructor remaining “hostage” behind the podium to run the PowerPoint presentation. Securing an inexpensive remote mouse prior to the next class meeting would allow the instructor to move toward the students and interact more effectively to change that classroom dynamic. As another example, six students were concerned that the scheduled break half-way through the evening was not happening until almost 8:00 p.m. Further analysis revealed that the problem was more one of hunger for those who had come straight to class from work and the fact that the college snack shop was closing prior to when they were being let out on break. Moving the break back by 15 minutes would overcome this problem. In addition, 11 of the suggestions could be tied to a perception that there was too much lecture from the instructor and not enough class interaction through what was labeled “in-class activities”—very understandable, given the total class length of 165 minutes. Assuring that each evening included even a brief small-group application exercise of the course content was presumed to help mitigate this problem and also to better engage students in the process of applying the lecture content.

Do

At the beginning of the next class, the instructor briefly presented the 12 improvement categories and frequency counts in each category to demonstrate that *every* single comment had been valued (refer to Figure 2, Step 4). Next, the instructor presented to students the 7 mini-plans or themes that had been selected for addressing specific problems. Some improvements were already obvious in the revised agenda for that evening, and any others were apparent by the conclusion of that class. The instructor also thanked students for the input and requested that students help hold him accountable for assuring that the commitment to changes was consistently followed through the end of the course.

Study

At the end of the fourth class meeting, the class was collectively asked if the implemented changes had resulted in improvement (refer to Figure 2, Step 5). Although more of a “voice-vote” at this point, class consensus appeared to be unanimous that the implemented changes had been positive. After the full course was completed, the instructor then used a comparison of the university end-of-course SET to compare overall course ratings with the previous end-of-semester averages and was able to measure an improvement of 1.26 (Spring term = 4.50 to Fall term = 5.76) on the summary SET measure, 6-point scale. Although the instructor was obviously not controlling for any other impact factors in any experimental design sense, the major end-of-course summary rating improvement of eliminating 84 percent of the distance between previous term performance and a highest possible 6.0 score was deemed significant.

Act

The instructor then immediately returned to the syllabus for the following cycle to ensure that each of the improvements was reflected in the plan for how to conduct the class during the next semester (i.e. hard wiring, as in Figure 2, Step 6). Finally, the improvements, along with supporting data, were then shared with other area instructors who had expressed an interest in the PDSA approach. The last step, in particular, is critical in taking this beyond an individual instructor improvement to one capable of producing value across the academic unit.

Additional PDSA examples

To further assist instructors in how to apply this improvement process in a PDSA cycle, also consider some additional examples—one from an undergraduate accounting principles course and then one from a graduate-level negotiation course (see Table 1).

METHODOLOGY

Participants

Ultimately, the PDSA method was employed by five instructors in six course venues (four academic disciplines) continuing in different courses over the next twelve months. All university course trials were within the instructional framework of a medium-sized, AACSB-accredited business school at a private, comprehensive master’s university located in the southeastern United States. As stated earlier, the university’s historical mission of delivering a high-quality learning experience to students through use of quality management techniques extends back into the mid-1990s when the school was an original pilot program for

Table 1. Additional Mid-Course Improvement Course Applications

PDSA Stage	Integrated Accounting Principles I	Negotiation & Decision-Making
1. Study	The professor provides detailed content and format instructions in narrative form re: multiple course projects. Graded projects are returned with a cover sheet that lists the various project elements, possible points and points awarded. A mid-course survey showed students would value a “requirement list,” with point values, prior to these projects.	Students do several in-class negotiation role plays/cases. The mid-course survey revealed students would value more time for debriefing cases done in class. They offered several helpful suggestions.
2. Act	For each of the two remaining projects, the instructor created a grading checklist for students and distributed as part of the project assignment.	For the remaining role plays, the instructor allowed students to view the negotiation examples video on their own before class, thereby adding 15 minutes to each class. For the remaining two longer cases, students agreed they wanted to extend the class 15 minutes for debriefs.
3. Plan	The reformatting of the assignment prompted questions from students about various elements of the project that had been previously ignored. For example, students who had weak excel skills asked for help developing formulas that linked values across spreadsheets. Since developing this expertise is one goal of these projects, this was a welcome benefit. As a result, the professor determined to standardize this practice.	Because students requested more time for debriefs, the professor planned to reorganize the debrief sessions and “offload” some of the in-class work to be done outside of class.
4. Do	The instructor examined the checklists for clarity in communicating expectations as well as the allocation of points. She then reformatted all major assignments in the class. For each assignment, students received a checklist indicating required elements and points	The instructor added course components of 1) video review outside of class; 2) giving students the option to stay later on evenings when longer cases were discussed; 3) advance planning for longer cases.
5. Study	Students reported that this information increased their focus on the most important elements of the project. Items listed on the requirement checklist generally received appropriate attention in completing the projects.	Students reported that they appreciated being able to view the video on their own; in fact, it was easier to take notes. They said that longer-time classes were among the best learning time because they did not feel the pressure of having to be finished by 9:00 p.m. They reported the professor seemed more relaxed.
6. Act	The professor extended this practice to significant projects in other classes. In some cases, the checklist summarizes information provided in narrative instructions. In other instances, the checklist replaces the narrative.	The professor summarized the results for the class and made permanent changes in the course and syllabus to allow for video outside of class and the option for two extended classes to optimize learning.

development of the Baldrige Criteria for Education [National Institute for Standards and Technology, 2017]. Additional trials were also conducted in executive education settings (non-credit) to examine the relative effectiveness outside of a for-credit setting.

The business school serves undergraduate, graduate, and executive education student stakeholders. The instructional environment is characterized by small class sizes (26.1 undergraduate and 15.8 graduate) with high accessibility to

faculty (≥ 8 faculty office hours/week). Student/faculty interaction is encouraged not only to enhance instruction but also to facilitate future professional networking capabilities. Most business faculty are expected to maintain either a Scholarly Academic (SA) or Practicing Academic (PA) qualification to enhance their instructional performance, and actual business experience at a significant level is valued in faculty hiring decisions.

Faculty who participated in the PDSA project described herein represent the broader disciplines of accounting, entrepreneurship, management, and marketing. Each faculty member has professional experience in applying quality processes in various industries, including manufacturing, as well as higher education. This shared quality experience helped the instructors to overcome any loyalties to individual disciplines and helped maintain a shared focus on excellence in teaching. The process employed was consistent with each individual's internal motivations and commitment to students as a general love of learning [Chadwick, 1995].

In addition, these faculty members were guided in the process by a fourth co-author who is a performance excellence consultant/volunteer and trained in Lean, Six Sigma (Master Black Belt), and the Baldrige system for performance excellence [Malcolm Baldrige National Quality Award Foundation, 2019]. His motivation stemmed from a desire to help educators adapt performance excellence processes to classroom use and to help make a difference in the long-term quality of educational systems in the United States.

The PDSA process was applied in the classes shown in Table 2. Learning environment trials were selected based on a plan to include coverage of both graduate and undergraduate courses, required and elective courses, and courses offered in various formats (i.e. variations in class meeting schedule, length of course, etc.).

Process

The PDSA process was introduced to each course after completing half or less (30–50 percent) of the scheduled class meetings. The rationale was that by this point, students were familiar with the classroom procedure and learning processes, in addition to having developed some level of familiarity with the instructor and with their learning peers. Each instructor introduced the process as part of a larger pilot program whereby he/she was requesting ideas on how to improve student learning based specifically on what is done “in the classroom” (i.e. how classroom time and activities are structured). Each instructor also indicated that the exercise was voluntary and anonymous and was not a single effort to gather information but, rather, part of what was planned as an ongoing improvement program to enhance student learning over time, one improvement per class cycle. Each instructor also communicated to students up front that in all likelihood, not all suggestions would be implemented and that the instructor would do his/her best to make as many changes as deemed appropriate within the

Table 2. Mid-Course Improvement Learning Trials Distribution

Subject Area	Class Title	Program*	Class Format	Typical # of Students in Class
Accounting	Integrated Principles of Accounting I	Undergraduate (required)	75 minutes; two days per week; 15 weeks	30
Entrepreneurship	Entrepreneurial Challenge	MBA/MACC (required)	165 minutes; one day per week; 10 weeks	30
Management	Negotiation and Decision Making	MBA/MACC (elective)	165 minutes; two evenings per week; 5 weeks	20
Marketing	Marketing Management	MBA (required) MACC (Elective)	165 minutes; one evening per week; 10 weeks	25-30
Performance Excellence	Introduction to Quality Management	Exec. Education (American Society for Quality)	1 week (5 consecutive full weekdays)	12
Strategic Management	Hoshin Breakthrough Planning	In-House Fortune 500 Co. Exec. Education	Two all day meetings	25

*MBA = Master of Business Administration; MACC = Master of Accountancy.

constraints of time, money, and perceived instructor value of modification. Written feedback from each participating student was gathered at the end of the chosen class session, allowing one to five minutes for participants to complete their answer to the question posed.

Instructor Request

Each instructor prompted students to make at least one but no more than three suggestions for improving the learning in the classroom. Professors provided examples to help students appreciate the concept that even simple ideas could hold great potential. Therefore, “talk more loudly” might lead to substantive improvement in the classroom learning. Providing only a limited amount of time encouraged students to provide “top of mind” suggestions and avoided any “over-thinking.” Feedback forms were small sheets of white paper with the word “Ideas:” printed at the top and followed by listed numbers “1., 2., and 3.” on separate lines, with blank spaces next to each.

Student Response

In general, students welcomed the opportunity to offer their feedback on the classroom experience. Worth noting here is that all students present in each class participated, with most individuals providing between the one to three suggestions requested. A few students responded that everything in the class was going well and offered no proposed changes; however, this return varied by class (e.g. all 25 MKT 6,450 students present submitted at least one suggestion on what could be improved).

Instructor Data Analysis

Each professor collected and recorded all student responses for his/her class. After compiling the list of ideas, each instructor then sorted responses into more specific categories based on general topics. Examples of topics included class format, class pace, lecture/ discussion, class activities, space, and textbooks. No attempt was made to fit comments into a predetermined set of categories, with each instructor allowed to process the entire list and then create appropriate categories that worked for them (see Table 3). The table below describes the topical sorts for each class, the number of comments addressing the topic and an example topic in each category.

With sorted responses in hand, the professor then identified one or more actions that could be implemented immediately and efficiently. In many cases, very simple actions appeared to hold the potential for significant improvement. For example, based on one suggestion to remedy hallway distractions, the professor decided to close classroom doors that were normally kept open. To address lighting issues that resulted in the instructor unknowingly standing in a “dark spot,” the instructor conscientiously moved to a different place in the room that

Table 3. Mid-Course Improvement Student Feedback (“Study” Stage)

Class	Topic (frequency)	Example Comments
The Entrepre-neurial Challenge (graduate)	Class format/speakers (9)	<p>“Bring in speakers that use some of the strategies we learn...to see if they work or not.”</p> <p>“Continue with speakers & post-speaker discussion. I find it valuable to listen to entrepreneurs tell their story.”</p> <p>“I enjoyed the evening where you ask about topics we were interested in...”</p> <p>“[Offer] different discussion forums for entrepreneurs that come to class (smaller groups).”</p>
	Lecture/discuss. (7)	<p>“More real-life examples during lectures.”</p> <p>“Talk about the material (lecture portion) before discussing the case.”</p>
	Readings (5)	<p>“...I realize fundamentals don’t change over time, but current info/research would keep it interesting.”</p> <p>“Update readings; more current text.”</p>
	Theory/practice (3)	<p>“Less emphasis on the academic side of entre. and more on the entrepreneurs themselves.”</p> <p>“Less theory...More about actual entrepreneurs.”</p> <p>“More personal success stories from you.”</p>
	PowerPoint (3)	<p>“If you hand out slides w/out going over them, make sure they’re understandable on their own. [Some of] last week’s slides make no sense without a lecture reinforcing them.”</p> <p>“Have PowerPoint [slide handouts] available for use during class.”</p>
	Instructions (2)	<p>“Clearer instructions on assignments.”</p>
Integrated Accounting Principles I (under-graduate)	Format (25)	<p>“Helps a lot by working together (with partners).”</p>
	Space/envIRON. (16)	<p>Halfway distractions</p>
	Lecture/discuss. (15)	<p>“Review briefly what was discussed during the previous class.”</p>
	Exams (9)	<p>“Supply a general study guide before the tests, highlighting main areas.”</p>
	Pace/rigor (7)	<p>“Pace is a little fast <u>sometimes</u> when we are working problems.”</p>
	Grading (5)	<p>“Give away more extra credit point for in class work. This will cause everyone to focus more.”</p>
	Business Week link (5)	<p>“Talk about Business Week more in class. This would spark an interest in me as well as help me remember to do the BWL.”</p>
	Projects (3)	<p>“Having a check list like you used to grade our business plans would be helpful just because there is a lot to remember with that project.”</p>
	Class time (2)	<p>I don’t enjoy having class at 8:00 am because I am still tired, therefore cannot concentrate to my fullest</p>
	Textbook (2)	<p>Bringing the massive book to campus is rather cumbersome—especially since only half is used during this semester. Maybe letting us know the specific days or it being bound separately for each semester.</p>
Negotiation and Decision-Making (graduate)	Format (15)	<p>“I like it that you change things up in the class—keeps it interesting.”</p>
	Pace/rigor (8)	<p>“Sometimes the case debriefs are cut short because of the cases and lecture. I wouldn’t mind staying late sometimes to finish.”</p>
	Textbooks (6)	<p>“Getting to Yes could be pre-reading.”</p>
	Grading (5)	<p>“Wish your comments were more detailed on papers so I’d know exactly what to do differently.”</p>
	Cases (5)	<p>“Cases make me engaged in the learning.”</p>

**Table 3. Mid-Course Improvement Student Feedback (“Study” Stage)
(continued)**

Class	Topic (frequency)	Example Comments
	Videos (5)	<i>“The video is old; can’t you find a more up-to-date one?”</i>
	Tests/quizzes (2)	<i>“Textbook quiz was just me looking up something in the book and giving it back to you.”</i>
	Preparation (2)	<i>“I had a partner who wasn’t prepared and I hated that negotiation. How can you prevent that?”</i>
Marketing Management (graduate)	Lecture/discuss. (14)	<i>“More examples of real life marketing experience/situations.”</i>
	In-class activities (11)	<i>“Group can work in class to discuss certain topics and engage in mini-exercises.”</i>
	Videos (7)	<i>“Frontline video was great. More like it?”</i>
	Breaks (6)	<i>“Make sure break is before 8:00 so food shop is still open.”</i>
	PowerPoint (4)	<i>“Less information/detail on PowerPoint slides.”</i>
	Pace (4)	<i>“Slow down; we rush through way too much material.”</i>
	Cases (3)	<i>“If you see continuing things (major shortcomings) on the cases we turn in, maybe bring up in class.”</i>
	Space/environ. (2)	<i>“Install a light that point to the corner of the room where you stand. It’s dark there, hard to see you.”</i>
	Guest speaker (2)	<i>“Perhaps a guest speaker in marketing field to discuss a particular course topic.”</i>
	Handouts (2)	<i>“Handouts that help to explain and embellish on certain concepts.”</i>
	Format/structure (1)	<i>“Change the format/structure one night—maybe we can be in a room at a marketing retreat—coming up with new ideas using what we’ve learned.”</i>
Food (1)	<i>“Bring food—other professors do it.”</i>	
Introduction to Quality Management (corporate)	Pace (2)	<i>“Spent too much time on some items and not enough on others.”</i> <i>“More time to think and document how to apply to my organization.”</i>
	Depth of Topics (1)	<i>“Would like more on how to manage change.”</i>
	Lecture/Discussion (1)	<i>“More chances to discuss in small groups.”</i>
	In-class Activities (1)	<i>“Would like more time to practice the techniques.”</i>
	Examples (1)	<i>“More examples of how you have applied concepts in organizations similar to mine.”</i>
	Breadth of Topics (1)	<i>“Would like more material on quality standards.”</i>
Hoshin Breakthrough Planning (corporate)	Examples (4)	<i>“Give us more healthcare examples.”</i> <i>“I liked the examples, but want more that are about health care.”</i>
	In-class Activities (12)	<i>“The most helpful part of the class was actually DOING the tools as we learned.”</i> <i>“Great way to learn.”</i>
	Format/structure (2)	<i>“The combination of lecture/learning and then practicing was excellent.”</i>
	Materials (6)	<i>“Actually having the Memory Jogger book to take home was helpful. I now know how to use it.”</i> <i>“Good handouts and thanks for sharing the PowerPoint with us.”</i>

was also closer to the students—a change that required no more than a few steps and the addition of a remote mouse for PC slide control.

As students had been forewarned, not every suggestion was addressed. However, the general pattern of modeling to students that instructors were

listening, based on the proportion of total ideas that were being addressed, was generally met with a positive overall class response to the process. In addition, with each instructor detailing an inventory of specific things that *were* being changed based on their feedback, it was typically clear to the class that the instructor was doing what he/she could to improve things. In some cases, for example, recommendations from students were conflicting (e.g. more PowerPoint, less PowerPoint). In other cases, no short-term solution was available (e.g. class meeting time is too early). In still other instances, suggestions were inconsistent with the instructors' teaching philosophy or methods. In all classes, the sheer volume of suggestions, while providing a rich array of ideas, prevented an exhaustive set of solutions.

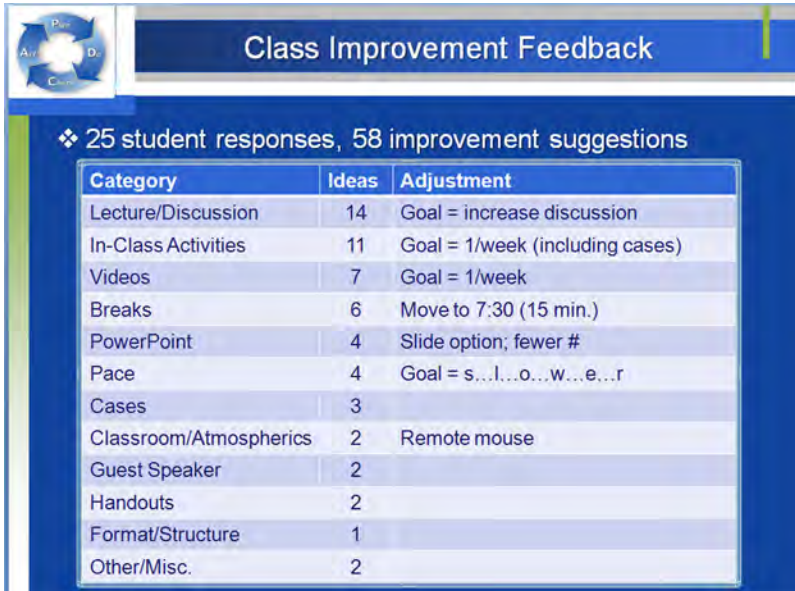
Course Improvements

Once each instructor had reviewed and sorted the responses and determined the most effective course of action in the relevant time frame, he/she shared the results and plans with the class (at the next class period in most cases). These debriefings included several important elements: (1) thanking class members for the improvement information; (2) presenting a summary of the student suggestions, including the categories and their respective frequencies; (3) describing the planned instructor actions to address suggestions; (4) reemphasis that the goal was not to immediately address every idea, but rather to begin making incremental changes that would, over time, improve the quality of the teaching experience; and (5) presenting a request for students to hold the instructor accountable (to help avoid "relapses" into previous patterns).

The debrief with students was carefully constructed to meet several goals. First, instructors wanted students to know that their feedback was taken seriously and to appreciate instructor commitment to the improvement process. Second, professors wanted to ensure that students recognized that the changes in classroom protocol and environment were direct responses to the students' improvement suggestions. Third, instructors wanted to model a continuous improvement process that students could adapt to their own work environments. Finally, it was deemed very important that students be given the explicit permission to "call the instructor" on any departures from agreed-upon improvements.

The partial sample included as Figure 3 provides a format for documenting the comment structure back to students. To provide context, the full form includes a description of the class (the program in which it is included, the format, the number of students and a physical setting of the class) and of the situation in which the professor collected improvement information (the class period or date as well as an outline of how the process was introduced). The second section organizes the student responses. All comments are reported verbatim here, in the categories identified by the instructor. The third section provides a narrative of the instructor's response, including how the professor presented the results to the class, as well as a general plan for response. The final portion provides details of

Figure 3. Mid-Course Improvement Approach Instructor to Student Feedback Example



responses to individual, or groups of, improvement suggestions and documents the proportion of comments to which some action responded. The formalization of the process using this, or some other format, is a critical step in sustainability. It helps to ensure that improvements are continued in future semesters.

At the end of the semester, using both formal and informal methods, instructors solicited feedback from students on the process and its results. Students recognized the changes that were made and appreciated the responsiveness of professors.

RESULTS

The PDSA approach herein was developed specifically to overcome some of the basic shortcomings in traditional SET systems. Using the current approach, both the students and the instructor are engaged in what can best be described as a shared ownership of the classroom learning experience. Furthermore, the formative nature of this PDSA approach leads to the potential for immediate improvement in the learning environment (as opposed to a subsequent teaching term). In this case, instructor participants in these trials preferred an improvement methodology that involved only the participation of individual faculty and their students, rather than institutional obligation (i.e. supervisors/administrators).¹

Table 4. Mid-Course Improvement Approach and Mean Measures of End-of-Course Effectiveness MKT 6450 (Marketing Management-MBA Core Course)*

Summary Course Measures	Semester 1 Instructor A (n = 16)	Semester 2 Instructor A (n = 17)	Improvement
Overall Mean Rating of the Course	4.25	5.76	+1.51
Overall Mean Rating of the Instructor	4.50	5.65	+1.15
Evidence of change (<i>t</i> -statistic, degrees of freedom, <i>p</i> -value)	<i>t</i> = 3.42 <i>df</i> = 15 <i>p</i> = .005	<i>t</i> = 2.85 <i>df</i> = 15 <i>p</i> = .01	

*Marketing Management (MBA Core Course); means measured on a 6 pt. scale, from 6 = Strongly Agree to 1 = Strongly Disagree

In applying the current PDSA method to classes at various levels of the curriculum (i.e. lower-division, upper-division, graduate, and executive education) and in different course formats (i.e. day vs. evening, short vs. long) participating instructors sought to demonstrate the generalizability of this process to a wide range of learning environments. In each and every case, students responded favorably to being asked about their learning experience and willingly participated in the improvement process. Furthermore, in end-of-course conversations and written comments, many students do recognize the impact of their suggestions on the conduct of the class. Comments such as “You listened!” and “The professor clearly values what we think on how to make the class better” are quite common in end-of-semester SET responses. Such results respond directly to the goal of shared ownership of the learning experience. Students, in many cases for the first time, realized their own role in shaping the environment and outcome of their learning efforts. Although not reported for every course described in this article, one of the authors examined his traditional post-course SET responses on a pre- (a semester prior to implementing the proposed system) and post- (at the close of the semester where the system was implemented) course basis. The results of those evaluations are reported in Table 4 and illustrate that dramatic improvements in student end-of-course assessments can be achieved through proper use of such a system.

In addition, conversation about the learning experience sensitizes students to both instructor attentiveness to classroom environment and the variety of responses and preferences of their classmates. The benefits of this sensitization are both increased respect for the teacher and improved awareness of peer diversity. Students often perceive that instructors use the “plug-and-play” method of instruction, walking into the classroom and simply beginning to playback the same material they have delivered countless times in previous lecture settings. This perception is part of what prompts students’ lack of engagement. The early course

PDSA-based process, in asking for and responding to student input, provides evidence to the contrary. In processing the responses, students become aware that tactics appealing to one student are ineffective for another. This awareness allows students to appreciate instructor efforts to use a variety of teaching approaches.

Students at all levels of the program and in all kinds of classes hold the potential for valuable input to the classroom experience. Of equal importance, that intelligence is unlikely to be provided from any other source. Regardless of how thoughtful an individual instructor may be, without the observation of students, the instructor will miss substantive opportunities for improvement. For example, the teacher is likely unaware that he/she is standing in a dark spot, making it difficult for students to see him. This problem has an easy fix. However, absent student comments (or getting comments only at the conclusion of the semester), no change will be made.

At times, the instructor may have some inkling that there is an opportunity for improvement. When feedback from students confirms the instructor's suspicions, he/she has the incentive to make a change. In addition, students may provide specific suggestions about solving problems. In most cases, student feedback in the process described here took the form of ideas for improvement, rather than complaints. Finally, the proposed PDSA model provides a platform to ask students to assess the change and contribute ideas for further improvement or refinement.

Strikingly, many of the suggestions that students make are simple to implement. For example, students suggest closing classroom doors to reduce noise and distractions. The drawback to implementation is that students who are late to class will have to knock and be admitted. However, given that the idea was initiated by the students, all participants understand the purpose of closing the doors (to reduce noise rather than exclude students). With very little effort, the instructor can both improve the learning environment and demonstrate a commitment to a participatory improvement process.

Not all of the comments suggested change. In many cases, the students affirmed the teaching methods currently in place. "I like doing the quick prep with others before negotiation. I learn from other people's ideas." These comments allow the instructor to standardize effective processes for the class.

Formalizing the improvement process models best practices for students. This aspect is especially beneficial for graduate students. Although faculty may describe the benefit of continuous improvement processes, when students actually participate in the PDSA model, these ideas come to life. The simplicity of the process is compelling and one that we hope encourages students to engage in their own quality exercises. Our intent is that students recognize the benefits of small changes in the classroom and then transfer those ideas to their own work environments.

Student feedback can provide data to support larger changes on the part of individual faculty members that extend well beyond a particular section of an

individual course. At a mechanical level, student responses that room temperature was unpredictable prompted the implementation of an additional step in the morning classroom walk through (by facility staff) of adjusting room thermostats. An individual instructor consistently closes classroom doors to reduce noise and distractions. The structure of class periods, affirmed by students, was standardized for future sections.

The PDSA model provides an effective method of including students in the ownership of the classroom experience. A minimum investment of class time provides the instructor with a wealth of suggestions for improving the environment as well as feedback about which teaching tactics are working and should be sustained. Results based on actual feedback (Table 4) and anecdotally from instructor feedback indicate that many of the students both recognize and appreciate these efforts by faculty.

IMPLICATIONS AND CONCLUSIONS

Ultimately, this PDSA early-course improvement process is rooted in the original philosophies naturally shared by most instructors who enter the academic profession. The authors submit that over time, many instructors have lost sight of the original purpose of a SET process (i.e. enhanced learning) and evolved into an errant belief that evaluation tools must somehow be both complex and tied to an employee-evaluation system.

Consider the possibilities of a business program that managed to adopt such a PDSA or similar approach without it having been imposed on faculty as a top-down initiative by administration. The authors maintain that significant untapped potential exists in any business program for systematic college-wide improvement in teaching and learning if an appropriate bottom-up evaluation culture could be stimulated. In the authors' college, the SET described herein began independently by two individual instructors, with each individual attempting similar approaches. However, over time the process has now spread to a point where several professors now regularly apply the approach in their own classes on a purely voluntary basis.

From the standpoint of learning as a "shared responsibility of instructor and students," (or students as partners) the approach described represents at least one step in that direction; for those instructors who might choose to argue that many students are incapable of accurately assessing whether or not they are learning the correct material, the authors' experiences would at least offer evidence to support the notion that students are certainly capable of judging when they are *not* learning effectively. Furthermore, experience has shown students to be quite capable of identifying numerous obstacles that may be impeding their opportunities to learn effectively. In addition, the approach models for business students a method of continuous improvement that is practical, approachable and successful.

Recommendations for Additional Research

The authors recognize that any direct evidence we have detailed in this paper is based on the seven student-instructor course combinations across three organizations (i.e. ~500 student learning participants) from which we hail. Although ours is a rather extensive and broad sample as most studies go, it will of course be helpful in the future to see the results of other instructors implementing this approach at other potentially dissimilar schools and in various other student-instructor formats.

Furthermore, the authors did not attempt to control for student demographic differences, other than the expected characteristic of age difference based on the range of courses in which this PDSA approach was employed (i.e. undergraduate, graduate, or executive education). We look forward to seeing the results of additional trials conducted in other instructional environments (e.g. public universities, community colleges, for-profit universities, online environments) and where population characteristics (e.g. gender, academic major, GPA, required vs. elective enrollment) are more closely measured and controlled for effect.

Further research is also suggested for measuring the direct (vs. indirect) learning experienced in a PDSA vs. a standard evaluation environment. As discussed, because the proposed methodology appears to promote students' engagement in their learning, the concept of student engagement should be studied further to clarify the role of formative assessment on learning. Additional research could certainly target a more comprehensive assessment of student course ratings (indirect assessment). However, even more value would come from a direct learning assessment, such as would be contained in a post-course content exam or observer rating of change in student skill levels.

In sum, it is our sincere hope that readers will grow to appreciate the value in pure "simplicity" as it can be applied to the SET process. As academicians, we sometimes have a tendency to view the value of a tool or system based on its degree of complexity, when many such systems can crash or fall apart under their own weight. We argue that simple is good and that it can actually be the path toward a better and more rewarding learning environment for instructors and students, which should enhance administrative satisfaction as well.

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Business Student Perceptions of the Impact of Distracting Behaviors in the Classroom

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This survey of undergraduate business students examined behaviors that students find most distracting in the classroom environment. This study focuses on student perceptions of the impact of a student's self-distracting behaviors and the behaviors of other students. Results identify behaviors students find most distracting, and we examine differences in the level of distraction experienced by a student engaging in a given behavior in comparison to the level of distraction experienced by observing classmates. Additionally, the results examine student perceptions of the level of distraction his/her behavior causes others. Using this information, strategies for reducing distracting behaviors are explored.

Keywords: Student Perceptions, Distracting Behavior, Classroom Management, Disruptive Behavior, Incivility, and Teaching and Learning

Disciplines of Interest: Accounting, Economics, Finance, International Business, Management, Marketing, and MIS

INTRODUCTION

Problematic classroom behaviors are on the rise in colleges and universities [Alberts, Hazen, and Theobald, 2010; Lashley and de Meneses, 2001; Morrissette, 2001]. Learning requires concentration and focus; however, the reality is that a variety of student behaviors in the classroom divert students' attention away from learning. Many professors routinely observe students engaged in behaviors such as texting, talking on cell phones, leaving classrooms early, and engaging in side conversations. These behaviors can be distracting to both the student engaging in these behaviors and other students in the classroom.

Since learning is a coconstructivist process [Carnell, 2007], a student's interpretation of what is learned may be vastly altered by the degree of distraction present. Most individuals may be able to overcome a minor distraction, but major distractions

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can significantly alter one's learning experience in the classroom. This disruption impacts the learning environment and can change the nature of how a student interprets and what a student can contribute to the topic under consideration.

The purpose of this paper is to examine distracting behaviors in the business classroom from a student's perspective to determine which self-generated and other-generated behaviors students find most distracting. Distracting behaviors are defined, in this study, as classroom behaviors that divert student attention away from learning and interrupt concentration. Research indicates that when a student engages in a distracting behavior, students within close proximity may also learn less too, leading some to conclude that distraction is contagious [Turkle, 2015]. This study examines the difference between a student's perceptions of the level of distraction his/her behavior causes others relative to the level of distraction the student personally experiences when others engage in the same behavior. Finally, implications for teaching are explored to provide guidance to instructors for maintaining a focused classroom environment.

LITERATURE REVIEW

Teaching and learning research has established that college students learn more when they focus their energies toward purposeful educational activities [Kuh, 2003]. Student engagement, defined as the time and energy students invest in educationally purposeful activities [Arend, 2004; Molinari and Huonker, 2010], has been shown to have a direct positive effect on both grades and persistence levels of college students [Kuh et al., 2008]. Pintrich and De Groot [1990] highlight the impact that a student's efforts to self-regulate their behavior in the classroom has on academic performance. Unfortunately, distracting behaviors can prevent students, both those who generate the behaviors and those who observe the behaviors, from focusing on learning activities taking place in the classroom.

Many higher education faculty members have found problematic student behaviors in the classroom to be a major challenge [e.g. Bjorklund and Rehling, 2009; Langdon and Vesper, 2000]. Although the literature on problem behaviors in higher education was scarce before the mid-1990s [Boice, 1996], since then there has been a substantial rise in the number of studies in the literature examining uncivil (incivilities) and other disruptive behaviors in the classroom. Researchers describe incivilities as disrespectful or rude by nature. Morrissette [2001] suggests that uncivil behavior is the intentional behavior of students to disrupt and interfere with the teaching and learning process. Charles, Senter, and Barr [1999, p. 2] define misbehavior as "behavior that is inappropriate for the setting or situation in which it occurs". Generally, incivilities are purposefully disrespectful, rude, or in violation of academic integrity guidelines, whereas other disruptive behaviors may negatively impact the learning environment, while not necessarily being intentional. Other scholars adopted a more general definition of

uncivil behavior as behavior that is not in accordance with the classroom community [Bjorklund and Rehling, 2009].

Additionally, scholars have provided classifications for student problem behaviors, including taxonomies of the degree of incivility. For example, Feldmann [2001] developed a framework to classify uncivil behaviors based on the level of intensity, categorizing uncivil behaviors in a range from annoyances to threats of violence. Similarly, Connelly [2009] classified student behaviors by seriousness; more serious behaviors involve integrity violations or hostility, and less serious behaviors are minor violations of classroom expectations, such as arriving late or chewing gum in class. Meyers [2003] suggested that student problem behaviors can be overt (more open or observable) or covert (less observable, more passive and inattentive). Burke, et al. [2014] combine the degree of intensity and level of disruption, thus creating a two-by-two typology of student incivility.

The four quadrants in the two-by-two typology proposed by Burke et al. [2014] include challenge or high-maintenance behaviors (high intensity, low disruption), threats or intimidation (high intensity, high disruption), issues of decorum (low intensity, low disruption), and misbehavior or irritants (low intensity, high disruption). While it is important to study high-intensity student behaviors that are severe in nature, the detrimental impact of low-intensity behaviors (whether low or high in disruption) is also worthy of consideration, since these behaviors occur much more frequently and the decision to address these behaviors is often at the discretion of the instructor.

This current research specifically examines low-intensity behaviors that may be intentionally or unintentionally distracting, including some behaviors that may be considered uncivil as well as other behaviors that may be very appropriate for a classroom. For example, typing notes on a laptop while listening to a class lecture may generate a noise that others find distracting. The perceived impact of distracting classroom behaviors is subjective [Alberts et al., 2010] for both faculty and students. What one finds acceptable or tolerable may irritate another person significantly. Minimizing distracting behaviors in the classroom is important because these behaviors have adverse effects on students, faculty, and institutions. Students feel dissatisfied and annoyed when their concentration is interrupted by the behaviors of other students in the classroom. Seidman [2005] noted that problem behaviors in classrooms act as a “learning killer.” Distracting behaviors may negatively affect faculty, who must use time inside and outside the classroom to address the related issues [De Lucia and Iasenza, 1995; Wilson, 1990].

Distracting behaviors are also a particular concern for new educators [Ciampa, 2015]. If these student behaviors are not addressed, they may lead to conflict, tension, and stress, resulting in faculty burnout and discontent with the profession [Appleby, 1990; Schneider, 1998].

Impact of Technology Brought by Students

Researchers have recognized an increase in student problem behavior issues [Alexander-Snow, 2004; Lashley and de Meneses, 2001; Seidman, 2005; Sorcinelli, 1994], many of which can be classified as distracting behaviors. Technology, brought by students, adds to the ways students can engage in distracting behaviors. While many higher education institutions have used technology as learning aid in classes to facilitate learning and engagement through in-class polls, interactive online activities, and research activities, Anshari et al. [2017] found that integrating smart phones into the classroom is a challenging task, as they can interfere with, as well as enhance, learning. They noted that interference may come in the form of distraction, dependency, lack of hands-on skills, and reduced quality of face-to-face communication. Bjorklund and Rehling [2009] found that students reported the behaviors of text messaging and packing up belongings before the end of class occur most frequently; while continuous talking, ringing cell phones, and loud conversations with others were most distracting. Maurer et al. [2009] found that students are most distracted by other students' side conversations and cell phone conversations, and Tindell and Bohlander [2012] reported that more than 90 percent of students have used cell phones to text message at least once during class. Similarly, Hoffman and Lee [2014] reported that side conversations and the use of technology, such as laptops, cell phones, and iPods, are the most frequently occurring distracting behaviors. They found that the most distracting behaviors were side conversations and miscellaneous issues such as bringing a child or a pet to class, bullying, public display of affection, and newspaper reading.

In studying student use of personal digital devices, Seemiller [2017] found that the platform used most frequently was the platform for accessing class information during class. The author notes that some behavior on class course platforms might be distracting (i.e., taking a quiz for another class) rather than engaging. Other frequently used platforms included online communication, online photo sharing, and information seeking, which are even more likely to be used as distractions. In a study by Selwyn [2016], participants identified the use of electronic devices by others as a distraction during lectures. These distractions included ringing phones and the visual disturbance experienced by others seated near a student browsing social media on their electronic device. Laptop multitasking has also been found to pose a substantial distraction not only to laptop users, but fellow students as well, detrimentally impacting several measures of student learning, including comprehension of lecture content [Fried, 2008; Sana, Weston, and Cepeda, 2013]. Cell phone use has also been studied. Williams et al. [2011] found that students reported that they were often distracted in class by their own texting as well as by others' texting.

Filling the Research Gap by Studying Student Perceptions

Prior literature provides a firm foundation from which to study distracting student behavior. Many studies have examined classroom distracting behaviors from the perspective of faculty [Alberts et al., 2010; Kelly and Stanley, 1999; Quddus et al., 2009]. Other studies have identified types of behaviors that students perceive as disruptive, measured distraction frequency, and reported the degree of disruption [Bjorklund and Rehling, 2009; Hoffman and Lee, 2014; Nordstrom, Bartels, and Bucy, 2009; Seidman, 2005; Tindell and Bohlander, 2012]. While Boice [1996] reported that students and faculty agree on a few highly distracting behaviors, the literature also suggests that the two groups' perceptions on the degree of distraction may be significantly different [Hogan, 2007]. However, a previously unexplored area addressed in this research is assessing a student's perception of the degree to which their own behaviors are self-distracting.

Likewise, little if any research has studied a student's perception of the degree to which his/her own behaviors distract others. If students do not recognize the degree to which their behavior distracts others, they could be more likely to engage in distractive behavior. To fill the research gap, this study assesses these student perceptions. By taking a more comprehensive look at the impact of distracting behaviors, this study contributes to both research and practice. It adds to the research literature by establishing a better understanding of how a student is not only distracted by other students' behaviors, but also by their own behaviors. From the perspective of practice, findings from this research may be used to help faculty members develop effective strategies to prevent and reduce distracting behaviors to improve the classroom learning environment.

Research Questions

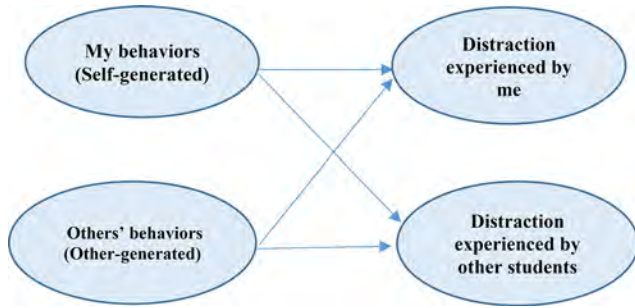
From the student perspective, sources of distraction in the classroom can include behaviors displayed by other students (other-generated behaviors), as well as the student's own behaviors (self-generated behaviors). Likewise, an individual's self-generated behaviors may be a source of distraction for others (see Figure 1). Using this framework, this study introduces three research questions, the answers to which can be used to enhance teaching practices.

First, recognizing that some behaviors may be more distracting than others, this study seeks to identify the self-generated and other-generated behaviors that business students find most distracting:

Q1: Which self-distracting behaviors and which behaviors of others do students find most distracting?

Second, this study seeks to determine if a student experiences different levels of distraction depending on whether a given distracting behavior is self-generated or other-generated:

Figure 1. Sources and Impacts of Distractive Student Behavior



Q2: For a given distracting behavior, will a student experience a greater degree of distraction if another student engages in the behavior or if the student engages in the behavior themselves?

Third, recognizing that students may be aware that their self-generated behaviors may distract not just themselves, but other students as well, this study seeks to better understand the perceptions of the distraction they create for others. This study seeks to determine whether students believe their self-generated behaviors create a level of distraction for others that is different from the level of distraction they experience as a result of other-generated behaviors:

Q3: For a given distracting behavior, do students believe their own behavior creates a degree of distraction for others that is different than the degree of distraction they personally experience as a result of someone else's behavior?

METHODOLOGY

Following Yin's [1984] guidelines for identifying situationally appropriate research strategies, the researchers evaluated the form of the research questions, determined if control over behavioral events was required, and assessed if the research focused on contemporary events. Based on the evaluation, a survey methodology was adopted to address the research questions in this descriptive study. A pilot test of the survey was first conducted for a small student sample. The instrument was examined and revised to increase validity. The revised questionnaire was then administered online. Participants first read an informed consent form and then completed the questionnaire.

The Research Context and Survey Instrument

The survey was administered at a medium-sized, public, teaching-oriented institution in the southeastern United States. Participants were undergraduate

students pursuing a Bachelor of Business Administration degree. A total of 270 valid surveys were collected from students enrolled in Principles of Management courses. All students in these courses are required to participate in a research requirement that introduces them to the research process. Students may choose from several different studies to serve as a participant. The participants' average age was 26.2 years, with 51.3 percent being male. Class standings of the participants at the time were 0.7 percent freshmen, 16.3 percent sophomores, 25.6 percent juniors, and 57.0 percent seniors, with the remaining 0.4 percent not providing class standing.

The questionnaire included a total of 21 distractions that participants were asked to rate. The distractions used in the survey items incorporated distracting behaviors identified previously in the literature and included behaviors such as arriving late to class, talking, ringing cell phones, sleeping, leaving class early, text messaging, use of computers/electronics, doing homework for other classes, eating, and drinking [Bjorklund and Rehling, 2009; Hoffman and Lee, 2014; Maurer et al., 2009; Tindell and Bohlander, 2012]. To assess the level of distraction associated with each behavior, participants were asked to evaluate:

1. The degree of distraction the participant experienced when a classmate displayed a given behavior (impact of other-generated behavior on oneself);
2. The degree of distraction the participant experienced when he engaged in the behavior himself (impact of self-generated behavior on oneself); and
3. The participant's perception of the degree of distraction experienced by classmates when the participant engaged in a behavior (perceived impact of self-generated behavior on others).

Each item was rated on a 5-point Likert scale with "not distracting" and "very high degree" used as anchors, and students could indicate if they had never personally engaged in a behavior as well as indicate if they had ever observed a classmate display a given behavior. The items for the three sets of questions demonstrated good reliability as measured using Cronbach's alpha; impact of other-generated behavior on oneself (21 items; $\alpha = 0.92$), impact of self-generated behavior on oneself (21 items; $\alpha = 0.93$), and perceived impact of self-generated behavior on others (21 items; $\alpha = 0.93$).

To answer research question 1, means and standard deviations were calculated for the degree of distraction associated with each behavior before sorting the means from high to low. For research question 2, a paired sample *t* test was used in order to test for significant differences in the level of distraction experienced by a participant in two different situations. The *t* test analysis for each given distractive behavior only included participants who acknowledged both engaging in the behavior themselves and observing others display the particular behavior.

Likewise, for question 3, a paired sample *t* test was used in order to test for significant differences in a participant's perceived level of distraction in two

Table 1. Most Distracting Other-Generated and Self-Generated Behaviors

Behavior	N	Mean Likert Score	Standard Deviation
<i>Other-Generated</i>			
Talking on cell phone	225	4.44	0.880
Ringing cell phone of classmate	269	3.44	1.191
Talking/whispering to another student	268	3.20	1.109
Tapping on desk with a pencil	268	3.15	1.224
Tapping foot on floor	267	2.62	1.296
Entering the classroom	269	2.59	1.138
Leaving the classroom	270	2.54	1.089
<i>Self-Generated</i>			
Talking on cell phone	119	4.02	1.127
Your cell phone rings	221	3.60	1.189
Sleeping	156	3.53	1.648
Playing games using a laptop/tablet	151	3.15	1.447
Listening to music using earphones	138	3.14	1.526
Texting, e-mail, games, or web applications using a cell phone	238	3.14	1.233
Social networking (e.g., Facebook) using a laptop/tablet	185	3.06	1.317

different situations. For each participant, the degree of distraction they experienced when another student engaged in a given behavior was compared to the participant's perception of degree of distraction experienced by others when the participant engaged in the behavior themselves. The *t* test analysis for each given distractive behavior only included participants who acknowledged engaging in the particular behavior.

RESULTS AND DISCUSSION

Results for the first research question indicate a number of other-generated and self-generated behaviors to be moderately to highly distracting (see Table 1).

In assessing the most distractive other-generated behaviors, it appears that while some behaviors may be intentional (talking on cell phone, talking/whispering to another student), at least a few behaviors could potentially be inadvertent (foot and pencil tapping), accidental (cell phone ringing), and sometimes unavoidable (classroom entrance and departures). These findings are consistent with those of Hoffman and Lee [2014] who found that behaviors such as side discussions, proximity issues (including tapping pens and fidgeting), and commitment issues (including arriving

late and leaving early) all resulted in a significant level of disruption to others. Likewise, several of the other-generated behaviors that this study found to be the most distracting (others' ringing cell phone, talking/whispering to others, entering the class, and leaving the class) were among the behaviors that students found to be the most uncivil in Bjourlund and Rehling's [2009] study.

In contrast, most distractive self-generated behaviors could be characterized as intentional, including the use of technology such as talking on a cell phone, playing games using a laptop/tablet, listening to music using earphones, texting, e-mail, games or web applications using a cell phone, and social networking (e.g. Facebook) using a laptop/tablet. Only a few could potentially be considered inadvertent (sleeping) or accidental (cell phone ringing). These findings are consistent with those of Fried [2008] and Sana et al. [2013], who reported that a student's laptop use significantly interfered with their classroom learning and comprehension.

It is noteworthy that there were seven self-generated behaviors with a mean of 3.0 or greater, while there were only four other-generated distractions with a mean of 3.0 or greater. Given that the majority of moderately to highly distracting behaviors are self-generated and that students arguably possess greater control over their own behavior than that of others, a student successfully limiting his own self-distractions could be an effective strategy for reducing the overall level of distractions he experiences in the classroom.

Results relating to research question 2 indicate that for many behaviors, a student experiences a higher level of distraction when the behavior is self-generated rather than other-generated (see Table 2).

For most behaviors, the level of distraction experienced by a student differs depending on whether the distractive behavior was self-generated or other-generated. When identifying behaviors with statistically significant differences in means beyond the 5 percent level, a number of behaviors that were more distracting when self-generated can be characterized as relatively quiet, intentionally self-distracting behaviors including the use of various electronic devices, listening to music, reading non-class materials, doing homework, and sleeping. Exceptions to that characterization include ringing cell phones and leaving the classroom. These findings are consistent with those of Tindell and Bohlander [2012], who found that more students believe an individual who is texting will be more distracted than others observing the texting individual.

The results for research question 3 indicate that, for a number of behaviors, students tend to perceive the impact of their own behavior on others to be equal to or greater than the distraction they experience as result of others' behavior (see Table 3). This finding indicates that with few exceptions, when students engage in behaviors, they are well aware of the distractions their behavior creates for others. Exceptions to these perceptions include tapping on desk with a pencil and talking/whispering to another students, with both behaviors having statistically significant differences in means beyond the 5 percent level.

Table 2. Comparison of Distraction Resulting from Other-Generated and Self-Generated Behaviors

Distraction	N	Mean Likert Score (Other, Self)	P Value	Difference
Chewing gum	244	1.51, 1.30	<.001	0.21
Doing homework on paper	247	1.20, 1.75	<.001	-0.55
Doing homework using a laptop/tablet	218	1.39, 1.96	<.001	-0.57
Drinking a beverage	262	1.34, 1.29	0.230	0.05
Eating food	235	2.11, 1.77	<.001	0.34
Entering the classroom	251	2.58, 2.69	0.201	-0.11
Leaving the classroom	249	2.49, 2.97	<.001	-0.48
Listening to music using ear buds/earphones	137	2.11, 3.13	<.001	-1.02
Playing games laptop/tablet	150	2.20, 3.25	<.001	-1.05
Reading non-class materials	184	1.60, 2.97	<.001	-1.37
Ringling cell phone	220	3.36, 3.60	0.006	-0.24
Sleeping	156	1.47, 3.53	<.001	-2.06
Social networking using a laptop/tablet	184	2.01, 3.07	<.001	-1.06
Surfing the web laptop/tablet	207	1.88, 2.75	<.001	-0.87
Talking on cell phone	117	4.28, 4.02	0.017	0.26
Talking/whispering to another student	252	3.18, 2.90	<.001	0.28
Tapping foot on floor	209	2.41, 1.73	<.001	0.68
Tapping on desk with a pencil	197	2.95, 1.94	<.001	1.01
Texting/e-mail/games/web applications using cell phone	238	2.26, 3.14	<.001	-0.88
Typing to take class notes using a laptop/tablet	210	1.60, 1.50	0.069	0.10
Writing class notes in a paper notebook	266	1.15, 1.30	<.001	-0.15

Since students continue to engage in highly distractive behaviors despite recognizing their impact on others, the question arises of why they continue to do so. While some might conclude that students intentionally disregard the impact of their action on others, other factors may be at play. Studies provide insights into the physical causes, emotional challenges, and environmental factors that may contribute to student distracting behaviors [Alberts et al., 2010; Ali and Gracey, 2013; Knepp, 2012; Kuhlenschmidt and Layne, 1999]. Additionally, as acknowledged previously, students may not be cognizant of some behaviors they are displaying, such as foot tapping and pencil tapping. In other situations, however, a student may intentionally engage in a behavior despite knowing the distraction experienced by others.

Table 3. Comparison of Distraction Resulting from Other-Generated Behaviors with Perception of Distraction Experienced by Others

Distraction	N	Mean Likert Score (Other, Perception)	P Value	Difference
Chewing gum	245	1.53, 1.49	0.569	0.04
Doing homework on paper	250	1.20, 1.33	0.007	-0.13
Doing homework using a laptop/tablet	221	1.38, 1.62	<.001	-0.24
Drinking a beverage	261	1.33, 1.47	0.002	-0.14
Eating food	235	2.10, 2.16	0.351	-0.06
Entering the classroom	253	2.55, 3.01	<.001	-0.46
Leaving the classroom	249	2.50, 2.98	<.001	-0.48
Listening to music using ear buds/ earphones	149	2.11, 2.53	<.001	-0.42
Playing games laptop/tablet	159	2.14, 2.47	<.001	-0.33
Reading non-class materials	189	1.61, 1.83	0.002	-0.22
Ringling cell phone	219	3.37, 3.82	<.001	-0.45
Sleeping	163	1.46, 1.82	<.001	-0.36
Social networking using a laptop/tablet	186	1.97, 2.26	<.001	-0.29
Surfing the web laptop/tablet	206	1.83, 2.06	0.001	-0.23
Talking on cell phone	131	4.30, 4.13	0.070	0.17
Talking/whispering to another student	253	3.18, 2.98	0.005	0.20
Tapping foot on floor	209	2.41, 2.32	0.260	0.09
Tapping on desk with a pencil	204	2.92, 2.71	0.009	0.21
Texting/e-mail/games/web applications using cell phone	234	2.22, 2.25	0.713	-0.03
Typing to take class notes using a laptop/tablet	213	1.61, 1.79	0.003	-0.18
Writing class notes in a paper notebook	267	1.15, 1.28	<.001	-0.13

Action to Reduce Distraction in the Classroom

If learning in the classroom is coconstructed through dialogue [Carnell, 2007], unrelated side conversations and other distractions can have profound effects on student comprehension, understanding new word sets, and ultimately on learning in general. As Carnell [2007] notes, “[d]ialogue prompts reflection, critical investigation, analysis, construction of knowledge” [p. 31]. When energy is diverted away from dialogue in the form of distracting activity, learning is diminished.

Distracting behavior can be reduced through effective teaching. Toward the goal of achieving effective teaching in higher education, Ramsden [2003] proposes six principles to guide educators, including (1) generating student interest and providing clear explanations of subject matter, (2) demonstrating concern and respect for students and student well-being, (3) conducting appropriate assessments and providing quality feedback to student work, (4) setting clear goals that offer intellectual challenge, (5) cultivating a sense of student control over learning and interest in the subject matter, and (6) evaluating the effects of instruction on learning and modifying instruction based on the evaluation. These principles are helpful to engage student learning and have the potential to reduce distracting behaviors.

A number of teaching practices have been proposed that are consistent with Ramsden's principles. Based on his research, Bain [2004] suggests that faculty adopt strategies that engage and challenge students. These take many forms, including framing questions and problems in ways that are relevant to students, as well as gaining and keeping students' attention with provocative questions or interesting case studies. Bain also encourages teachers to seek commitments from students, which can include discussing the obligations of each student to support the class as a community of learning on the first day of class.

Likewise, Biggs and Tang [2011] encourage educators to focus on factors that encourage students to take a "deep approach" to learning by engaging students through academic activities that are meaningful and worthwhile. In facilitating learning of declarative knowledge, the authors identify a number of effective interactive strategies, including the use of concept maps, class learning partners, the minute paper [Angelo and Cross, 1993], note taking, think-aloud modeling, and work-along exercises. Smaller classrooms are conducive for using questions (convergent, divergent, high and low) to facilitate learning. To achieve deeper, functioning intended learning outcomes, the authors recommend using activities that apply learned material, including case-based learning, group work (buzz groups, jigsaw groups, learning cells, problem-solving maps, syndicate groups, reciprocal questioning, and spontaneous collaboration), workplace learning (e.g., practicums and internships), reflective learning, and problem-based learning.

Reducing student-distracting behaviors in the classroom may also be accomplished by keeping a consistent set of norms for classroom culture. For example, Anderson, McGuire, and Cory [2011] advocate using the first day of class to set a tone of mutual respect and civility while engaging students in setting expectations for student and faculty behavior, including punctuality and the use of various technologies. Engaging students in setting expectations may be especially important as it relates to student use of technology. In their study on personal mobile device usage and related policies in the classroom, Santos, Bocheco, and Habak [2018] suggest that distractions can be reduced and effective learning can be promoted through ongoing discussions between instructors and students to de-

velop acceptable device policies in the classroom. Similarly, in their study of the use of technology for non-class-related activities (cyber-slacking), Taneja, Fiore, and Fischer [2015] encourage educators to establish clear policies about the consequences of cyber-slacking, encourage students distracted by others' cyber behavior to speak up, and structure lessons relevant to students to increase engagement and reduce students' lack of attention. Some faculty may find it appropriate to adopt policies that prohibit the use of some digital devices entirely. In a study on the impact that cell phone use policies have on learning, Lee et al. [2017] concluded that their results provided support for the benefit of having a strict no cell phone policy in the classroom to enhance learning. For norms to modify behaviors and improve the classroom environment, they must be clearly communicated upfront and consistently enforced through the course of the semester.

Schools of business may also benefit by offering training to both faculty members and students. Faculty training in classroom management practices can promote consistent student behaviors across the school and also increase the likelihood of faculty addressing disruptive behaviors. Student training can be framed as a professional or career development series and delivered in a variety of formats [Collins, Saunders, and Bradley, 2017]. Faculty members should assess the level of students' self-awareness and professional knowledge so that they can provide the specific type of training needed.

Future Research Topics

The researchers acknowledge that this self-generated and other-generated distracting student research can be further explored in a variety of ways. First, additional student data from different kinds and sizes of institutions would provide increased generalizability. Furthermore, regional and cultural differences could be explored to determine if there are statistically significant differences associated with these variables.

CONCLUSION

By studying distractive behavior using the student's perspective, it is possible to gather insights into students' perceptions that would be difficult to obtain by studying the behavior from the instructor's perspective. Identifying the most distracting self-generated and other-generated behavior from the student's perspective helps instructors focus on preventing and addressing the most distracting types of behaviors. This research recognizes the dual nature of distracting behavior, observing that the student engaging in the behavior may be distracted to a different degree than that of nearby classmates witnessing the behavior. Additionally, behavior that might not distract others can still be highly distracting to the person engaging in the activity, underscoring the need to minimize much

“quiet” self-distractive technology use in the classroom. Last, this research acknowledges that many students are aware of the level of distraction their behavior creates for others. While distracting behaviors threaten student learning in the classroom, a variety of interventions can be used to reduce those behaviors.

As is often the case with survey research, limitations to this study include its generalizability to the larger student higher education population and its cross-sectional design. While this study drew its participants from a Bachelor of Business Administration degree at one public four-year college, the findings are potentially applicable to the larger higher education population.

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Winning with Ethical Leadership: A Student Team Project in Corporate Values

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This article describes a pedagogical approach to imbuing moral and ethical values in business curriculum. The pedagogical approach includes a student team project and presentation exploring corporate values. Values identify and shape the corporate culture as they are established, articulated, and transmitted throughout the organization. The team project helps students to appreciate more fully the importance and role of values affecting the organization and its stakeholders as it advances in scope and complexity of research and analysis to include values-based reflection and resolution.

Students begin the project by selecting a Fortune 500 company to research. They identify its values as articulated in mission, CEO vision, and statements of ethics and sustainability. Next, they identify and re-search an ethical controversy experienced by the company and create a case vignette. Students then apply the following literature-based criteria to the company research to draw value-based conclusions about the company's ethical leadership and accountability: 1) corporate ethics values, 2) sustainability values, 3) diversity and inclusion values and 4) global citizenship values. This article succinctly yet comprehensively reviews these criteria for the instructor and includes corporate examples.

This project exposes students to major corporations in different business sectors. Students examine how strongly business leaders are committed to ethical decision-making as the students explore corporate culture, behavior, and values. It adds a cumulative layer of analysis, values reflection, and resolution to the business ethics curriculum. The project is an engaging way to culminate student learning in a business ethics course or to help demonstrate the importance of a business ethics perspective across the curriculum.

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Disciplines of Interest: All Business Disciplines

INTRODUCTION

This student team project is appropriately positioned in a business ethics course or across the business curriculum. A business ethics course may cover many famous business cases involving small and large companies' ethical breaches, which are easily classified as product liability, financial malfeasance, environmental sustainability, corruption, and bribery, worker safety or supply chain [Trevino & Nelson, 2014]. In addition, it applies essential ethical doctrines, such as the Golden Rule, the deontology of Immanuel Kant, and the Consequentialism of Utilitarianism. We also entwine moral and corporate values in case discussions and their value-based resolution. This student team project adds yet another layer of analysis and values reflection to our business ethics curriculum.

Students learn that corporate values originate from a variety of sources, including corporate and global codes and business ethics literature [Schwartz, 2005], to form the ethical culture of a corporation. The Board of Directors (BOD) and corporate officers lead this ethical culture from the top of the organization. Ethical leadership resonates from their language and behavior as it guides the company's objectives, actions, and strategies. Ethical leadership at the top is of crucial importance in today's global business environment where business has the opportunity to strengthen values [Schwartz & Dunfee et al., 2005].

Values are increasingly at the center of today's business ethics curriculum as it advances in conception and approach. For example, Arce and Gentile [2015] call for a values-driven leadership curriculum not confined to awareness and analysis but including action—ethical action. Values can guide behavior where compliance falls short [Schwartz & Dunfee et al., 2005] and be a matter of personal commitment [Trevino & Weaver et al., 1999; Paine, 1994, a, b]. This view of ethical leadership beyond compliance is rooted in values, i.e. integrity [Trevino & Nelson, 2014]. In fact, there appears to be a harmonization of values among for-profit and nonprofit organizations and social enterprises that indicate a further integration and institutionalization of organizational values [Blodgett & Melconian et al., 2016].

Therefore, this article describes and explains a student team project in corporate values. As a method of instruction, its description and explanation is intended both for the seasoned scholar of business ethics as well as for those less familiar with the discipline. The approach can conclude a course in business ethics or provide a business ethics perspective across the business curriculum. It emphasizes integrity beyond compliance and acquaints the student with corporate articulations and applications of values. When students see that the language of

the business ethics curriculum is used by major corporations, they further appreciate its relevance.

This project has been successfully implemented in our curriculum and well received by students as demonstrated by the course evaluations that include levels of learning and satisfaction. The student teams select, from among the U.S. Fortune 500 corporations representing various industry and business sectors, a company for their team project. They 1) identify its ethical values articulations, drawing from its mission, CEO vision, statements of ethics and global sustainability, diversity, and inclusion; 2) research the company's ethical challenges or breaches and create a case vignette of facts and analysis that applies a values-based resolution; 3) apply various criteria to assess the company's commitment to ethical leadership; 4) evaluate internal and external ethical accountability; and 5) draw a conclusion by addressing the company's overall ethical strengths and weaknesses.

This article describes how to locate corporate value statements and provides a template for such statements and the case vignette. It also explains literature-based criteria for assessing the company's commitment to ethical leadership, making it easily accessible to any instructor. We include many examples of corporate value statements that show the richness and variety of their applications. This article and its examples are intended as a guide that can be easily adjusted for instructor preferences as it advances in scope and complexity of analysis and values-based resolution. The explanations are likewise intended as a guide. Student teams are encouraged to present within 15-minutes, including Q&A. Appendix A includes an outline of the recommended format. We describe the project in detail below.

RESEARCHING THE PROJECT

We introduce research guidelines for the student project in a way that connects the guidelines to the business ethics curriculum as described in the following three steps:

1. Review the Fortune 500

This project requires that a student team, typically composed of three students, first search for and select a Fortune 500 company. Therefore, preparing the class for the project consists of a general description of the Fortune 500 companies and providing a list of those companies. The online list provides the company name and ranking; identifies the industry and business sector; and provides essential business data such as revenues, assets, and number of employees, and a web address. The Fortune 500 list is compiled annually by total revenue and published by *Fortune Magazine*. It includes mostly publicly held companies listed on the U.S. stock exchanges. We suggest that this information and the following data be communicated to the class to demon-

Table 1. Company Document Location

Company URL	Website Location	Document
Walmart.com	Investors; Corporate Governance	Statement of Ethics (Global)
McDonalds.com	Corporate Governance	Standards of Business Conduct
Chevron.com	Corporate Responsibility	Business Conduct & Ethics Code
Wells Fargo.com	Leadership & Governance	Code of Ethics

strate its economic significance and business influence. “The Fortune 500 companies represent two-thirds of the U.S. GDP with \$12 trillion in revenues, \$890 billion in profits, and \$19 trillion in market value; the companies employ 28.2 million people worldwide.” [Fortune.com/fortune500/list; accessed 31-January 2018].

2. Review Company Website(s)

In preparation for this project, the instructor selects one or two Fortune 500 companies and reviews their respective websites in class to familiarize the students with their organization and content. A review may include the varying document names and locations that identify myriad values statements such as those elaborated on in this article. For example, one statement of values is the ethics and compliance code located and named as in Table 1 above.

3. Review Company Research

The instructor introduces students to company and industry research to develop more fully understanding of the business ethics context for a company’s values statements and applications. Beyond a simple Google query, the instructor can introduce a library database such as *Business Insights: Essentials*, which provides comprehensive company and industry data and comparisons. This database also includes access to company websites and histories, market reports, applicable academic and trade journals, SWOT analysis, rankings, news reports, films, and ethics controversies [<http://bi.galegroup.com/essential/search#q=last>].

The Company Case Vignette

Corporate ethical controversies or breaches occur, and they must be managed and resolved. This part of the project involves organization of an ethical controversy by first determining the essential facts, then analyzing and providing a values-based resolution. After students provide a brief statement of the facts, they then can begin the analytical framework with a statement of the conflict among opposing interests, responsibilities, rights, or values [Trevino & Nelson, 2014]. Next, the students ask a number of questions, for example, “What would I do or

have done if this were widely publicized? ” and “How are stakeholder interests impacted?” Also, “Can one address the conflict by uniting stakeholder interests with core competencies of the firm and make a profit?” and “Is there a distinction to be made between legal and ethical practices?”; and “Are different cultural norms applicable?” For example, “Have employees or consumers been injured even though required safety regulation standards have been met?” Or they may consider, for example, “Do cultural norms regarding bribery affect ethical perceptions?” Depending on the ethical challenge, these questions help students consider various dimensions of an ethical conflict [Trevino & Nelson, 2014]. Last, the teams manage and resolve the conflict by applying the values of ethical leadership.

Constructing the company case as a vignette is a convenient format to unite the pedagogical case approach of the course with the team project. Throughout the course the instructor has exposed the students to a variety of cases and case vignettes with similar ethics challenges and conflicts of values. The students see this interrelationship that reinforces the significance of both class case discussions and the project. In this article, we choose Wells Fargo as a template of a case vignette to guide the student teams as they prepare their own case vignette. To reinforce the interrelationship of the pedagogical case-study approach of class discussions and this student project, we also provide continuity and context throughout the criteria and accountability areas by introducing each area with a Wells Fargo ethics-statement example.

Wells Fargo Case Vignette

Wells Fargo & Company’s banking unit embarked on an employee incentive system that appears to have over-incentivized employees to meet sales targets. When an employee reported “gaming” to his manager, the response by upper management was apparently inadequate. It created the perception that the bank was slow to react to a situation without adequate controls in place [La Roche, Feb. 14, 2018]. In question were more than 1.5 million deposit accounts and 565,000 credit card accounts that regulators alleged were opened without account-holder authorization. Thousands of employees were fired. The government alleged “fraudulent conduct,” and the bank was famously lambasted by Massachusetts Senator Elizabeth Warren, who accused CEO John Stumpf of engaging in “gutless leadership” [Corkery, Sept 20, 2016]. Wells Fargo did not admit wrongdoing but agreed to a \$185 million fine [McLean, May 31, 2017, p.4; Pastin, Jan. 21, 2018]. In addition to the fine and potential civil lawsuits, shareholders saw a 2 percent decrease in share price as a result of the news [Tayan, Feb 6, 2019].

The alleged conflict is between incentives and disclosure. Customers as primary stakeholders may have felt manipulated if they did not authorize the opening of accounts established in their names. Possibly Wells Fargo could offer an awards program for these customers to regain their trust, loyalty and patronage. Wells Fargo has agreed to a significant monetary fine, impliedly recognizing an

Appendix A: Presentation Outline

Organization Areas	Content
1	Company Name
	Students Names
	Date/Course
2	Company Data
	Industry Data
3	Corporate Values
4	Sustainability Values
	Environmental:
	Societal:
	Economic:
5	Diversity & Inclusion Values
	Statistics
6	Global Citizenship Values
7	Case Vignette Facts
8	Case Vignette Analysis
9	Ethical Leadership Criteria:
	Corporate Values
	Sustainability Values
	Diversity & Inclusion Values
	Global Citizenship Values
10	Internal Accountability–Strengths and Weakness
	External Accountability–Strengths and Weaknesses
11	Conclusion
12	References

ethical breach but not an illegality. A values-based resolution may require additional responsibilities with stronger internal controls to regain the trust of these customers. Instead of a narrow rules-based approach that focuses on the specific cross-selling transgression, Wells Fargo could establish a values-based approach that extends across many departments and practice areas. Truthfulness is foundational to such reforms where an ethical culture cannot ignore its reward system and its values [Pastin, Jan. 21, 2018; McLean, May 31, 2017].

Seemingly, Wells Fargo has failed to properly align its values with its practice and incentive systems because its problems did not end with the cross-selling scandal. More recently they were fined \$1 billion for another transgression, this time involving automobile loans. Wells Fargo improperly charged customers to keep automobile loan rates locked and manipulated borrowers into acquiring unnecessary insurance. Even when borrowers complained, Wells Fargo often failed to respond [Kiley, April 28, 2018]. This conduct is in addition to disclosures

that the bank may have improperly acquired low-income housing tax credits and that it may have improperly foreclosed on more than 400 properties despite those consumers possibly qualifying for relief [Levitt, Aug 5, 2018].

We review major business ethics themes below as value-based criteria for assessing the ethical leadership of a company. This part of the student project ties together current thought on the ethical role of the corporations in today's global business environment and demonstrates to students the relevance and practicality of business ethics as it applies to corporate articulations of values and decision-making.

CRITERIA FOR ETHICAL LEADERSHIP

Ethical values are the foundation of this student project. Students benefit from having substantive values-based criteria, such as 1) corporate ethics values; 2) sustainability values; 3) diversity and inclusion values; and 4) global citizenship values for assessing corporate ethical leadership. They help students frame their conception of the role of values within an organization and understand how values are defined and prioritized through application. Additionally, the criteria provide a quick point of reference for the instructor who wishes to incorporate this project into a business ethics course or use it for an ethical perspective across the business curriculum as students apply their knowledge of these areas to assess a company's strengths and weakness in ethical leadership.

The following sections describe and explain substantive values-based criteria for students to assess corporate ethical leadership based on the four corporate values statements referenced above. Each one of these criteria areas begins with an applicable values statement from Wells Fargo, also the company case vignette template. Such value statements are central to the students' research. After the instructor covers the content area in class, students will identify and apply the appropriate values statements of their company to this content area as organized in Appendix A. A rich collection of company ethics statements that demonstrate the articulation, importance, and variety of expression and context for the integration of values throughout the organization is included (See Appendix B). However, it is worth noting that these statements often do not have precise boundaries; values often interrelate and blend across the criteria. For example, sustainability values can also include diversity and global citizenship values.

Corporate Ethical Values

Ethics. We're committed to the highest standards of integrity, transparency, and principled performance. We do the right thing, in the right way, and hold ourselves accountable. Our Code of Ethics and Business Conduct (Wells Fargo), p. 5.

Appendix B: Corporate Ethics Statements

Criteria	Company	
Corporate Ethics Values	Starbucks	“To inspire and nurture the human spirit-one person, one cup and one neighborhood at a time.” www.starbucks.com/about-us/company-information/mission-statement [accessed 4 February 2018]
Corporate Ethics Values	Chevron	Integrity and trust are core Chevron Way values. We are honest with ourselves and others, and honor our commitments. We trust, respect and support each other. We earn the trust of our colleagues and partners by operating with the highest ethical standards in all we do.”
		Chevron Corporate
		http://www.chevron.com/corporate-responsibility/our-approach/boar . . . [accessed 13 March 2018]
Sustainability/ Business Case	Walmart	“Working with others, we aspire to reshape the way we work to achieve significant and lasting improvement in environmental and social outcomes, in a way that also improves our business.” https://corporate.walmart.com/global-responsibility/sustainability/ [accessed 8 February 2018]
Sustainability/ Business Case	Chevron	“environment we conduct our business in a socially and environmentally responsible manner, respecting the law and universal human rights to benefit the communities where we work.” https://www.chevron.com/corporate-responsibility/environment [accessed 7 February 2018]
Sustainability/ Shared Value	Gap	“We are committed to pursuing technology and product innovation, allowing us to continually deliver great products that look good, delight our customers wear after wear and reduce our impact on people and the planet.” http://www.gapinc sustainability.com/product/product-sustainability [accessed 6 February 2018]
Sustainability/ Shared Value	Wholefoods	“Healthy eating is a basic foundation for optimum health and well-being. By providing healthy eating education we inspire and empower our stakeholders to make the best health-supportive, delicious food choices to maximize personal health and vitality.” http://www.wholefoodsmarket.com/mission-values/core-values/we-p . . . [accessed 6 February 2018]

Appendix B: Corporate Ethics Statements (continued)

Criteria	Company	
Diversity & Inclusion	McDonald's	McDonald's identifies diversity as a core value: "Promote diversity and inclusion. Foster a work environment that values the unique contributions of all." www.mcdonalds.com <i>The Good Business Report</i> , 2014 [accessed 2 February 2018].
Diversity & Inclusion	Walmart	Walmart calls for "understanding, respecting and valuing diversity . . . while being inclusive of all people and states that "inclusion is the key to growing our business." https://careers.walmart.com/diversity-inclusion [accessed 2 February 2018]
Global Citizenship Values	Merck	Merck is a signatory of the United Nations Global Compact of which the CEO letter demonstrates continued support "that helps align their business activities." www.msdrresponsibility.com/our-approach/reporting-framework [accessed 24 July 2018]
Global Citizenship Values	ExxonMobil	Participation in the UNGlobal Compact is one way of exhibiting commitment to good global citizenship; however, there are many ways to exhibit global citizenship. ExxonMobil states that "while ExxonMobil is not a formal signatory of the United Nations Global Compact, its values represent key elements of our standards." http://corporate.exxonmobil.com/en/investors/corporate-governance/ethics [accessed 4 February 2018]

Wells Fargo sends a strong corporate ethics message with the use of the word "integrity." As part of its vision, integrity endorses values beyond compliance as a driver of corporate culture and business strategy. The company's values and ethical culture are thereby established at the top of the organization, i.e. the "tone-at-the-top," and embrace both shareholder and other stakeholders' interests.

Wells Fargo's commitment to "doing the right thing" echoes Immanuel Kant's standard of responsibility and its commitment to transparency as a way to enhance its accountability to all stakeholders. As part of its corporate ethics code, these core values are a guide for employee decision-making where personal commitment of all employees is viewed as necessary to create an ethical culture. These core values can also guide behavior in a global business environment where businesses must respect human rights.

Appendix C: Internal & External Accountability

Company	
McDonald's	<i>Internal:</i>
	<p>“Our success depends on each of us accepting personal responsibility for doing the right thing.” “McDonald’s management is committed to living up to high standards of ethical behavior.” “The McDonald’s Business Integrity Line is staffed 24 hours a day, 7 days a week, 365 days a year by an outside firm experienced in handling sensitive calls. Interpreters are available.” P. 10 Standards of Business Conduct http://corporate.mcdonalds.com/corpmcd/investors-relations/codes-of . . . [accessed 21 March 2018]</p>
	<i>External:</i>
	<p>McDonalds was recognized by the Great Place to Work Institute in 2012 and received the “World’s Best Multinational Workplaces” award placing in the top 25. http://news.mcdonalds.com/stories/company-news-details/mcdonalds [accessed 23 February 2018]</p>
Walmart	<i>Internal:</i>
	<p>“Personal and moral integrity is one of our basic fundamentals and it has to start with each of us.” Sam Walton, Founder p. 5 Global Statement of Ethics “Immediately Reportable Criteria” includes “Bribery–Providing, offering, promising, requesting, or receiving any improper or unearned benefit and Global Brand Reputation Risks – Threats to human life, slave or forced labor, human trafficking, or child labor” p. 9 Global Statement of Ethics http://stock.walmart.com/investors/corporate-governance/governance . . . [accessed 21 March 2018]</p>
	<i>External:</i>
	<p>Walmart de Mexico Foundation has been recognized for its Indigenous Product Commercialization winning a World Business and Development Awards, 2010. https://corporate.walmart.com/_news/news-archive/2010/0922/walm . . . last [accessed 1 February 2018]</p>

LITERATURE REVIEW

Core values transcend the business organization. They are essential for articulating a vision for the firm [Collins & Porras, 1996] as is evident from Wells Fargo’s statement above. After all, it emphasizes “integrity”– the current movement that embraces values beyond compliance [Trevino & Nelson, 2014]. From BOD codes, to a statement of values, to mission and CEO vision statements, to statements of ethics and culture, values dominate corporate statements. Therefore, it is helpful to instruct students to approach values as integrated throughout the organization, not as separate statements, categories, or departments. “We’ve

learned . . . that the soft stuff and the hard stuff are becoming increasingly intertwined. A company's values—what it stands for, what its people believe in—are crucial to its competitive success. Indeed, values drive the business” [Howard, 1980, p. 3].

Some of the most fundamental corporate values are the legal duties of care and loyalty as manifested in the fiduciary duty of the BOD and Officers to act in the best interests of the corporation's shareholders [Blodgett & Melconian et al., 2016]. Responsibilities may extend to other stakeholders because there are two schools of thought about corporate governance: profit maximization and stakeholder theory. The accountability of corporate leaders to shareholders does not dispense with responsibilities to other stakeholders, a point of view articulated in many expressions of values found in corporate statements today, including Wells Fargo's ethics code above.

The articulation of corporate ethical values is often expressed as the tone-at-the-top predicated on the independent ethical leadership of the BOD and corporate officers [Schwartz & Dunfee et al., 2005]. These ethical values manifest themselves as an ethical vision for the firm that permeates all levels of the organization and creates an ethical corporate culture. Students may find them in the CEO's vision in the annual report, in its Code of Ethics as articulated by Wells Fargo, or elsewhere on the corporate website. Schwartz and Dunfee [2005] point out that a values approach ensures corporate ethical behavior in comparison with a mere compliance approach.

Leaders can influence ethical or unethical employee behavior [Brown & Trevino, 2006; Mayer & Kuenzi et al., 2009]; therefore, leadership values are paramount, and directors have a responsibility to adhere to them [Schwartz & Dunfee et al., 2005]. The ethical leader must infuse the organization with values that guide employee behavior as distinguished from focus on profits [Trevino & Hartman et al., 2000]. “True and effective leadership is that in which the leader's behavior and the exercise of the leadership influence process are consistent with ethical and moral values” [Mendonca, 2001, p. 266].

Consistent with the tone at the top, students will see various ethics statements that set forth the values of the firm commonly articulated on the corporate websites. Statements of mission, ethics values, culture, and core values are among various names and categories of values commonly found on corporate websites. Mission statements enhance core values that can affect the bottom line. “The mission statement provides the guiding direction for developing strategy, defining critical success factors, searching out key opportunities, making resource allocation choices, and pleasing customers or stakeholders” [Dumas & Blodgett, 1999, p. 215].

Furthermore, corporate ethics statements reflect organizational culture [Trevino & Weaver et al., 1999], and their ethical standards guide decision-making [Peppas, 2002]. These ethics statements include statements of compliance that also embrace an ethical purpose [Di Lorenzo, 2007]. “In cases of uncertainty,

conduct consistent with the law's purpose is the proper standard against which to judge ethical conduct" [Di Lorenzo, 2007, p. 276]. The ethics statement is a useful guide for decision-making in ambiguous or unregulated areas that call for a disciplined exercise of ethical and compliance judgment. This approach could be expressed similarly to the Avery Corporation's statement of ethics: "Obeying the law, both in letter and in spirit, is the foundation on which this Company's ethical standards are built" [Blodgett, 2011, p. 1].

Corporate ethics codes, like Wells Fargo's Code of Ethics and Business Conduct, are often the subject of analysis and scrutiny and may be the subject of a student team evaluation [Dhooze, 2011]. The universal values of responsibility, trust, and fairness are often included in these statements along with honesty and integrity [Davies, ed. 1977; Cavanaugh, 1998; Boatright, 2003]. The enhancement and revision of codes of ethics and compliance to more adequately and clearly reflect the ethical values behind such statements has been proposed and could include such initiatives as detailing the spirit behind compliance [Blodgett, 2011].

As with Wells Fargo, calls for a personal commitment to corporate ethics values are centered on integrity, not compliance [Trevino & Weaver et al., 1999; Paine, 1994 a, b]. To advance the articulation of personal values, Gentile [2010] describes encounters with ethical conflicts and offers insights that give voice to younger managers' ethical concerns. This approach enables a stronger corporate culture rooted in honesty. After all, "If people don't believe it's possible to voice their values effectively, they won't bother trying" [Gentile, 2010, p. 117]. However, the importance of values is not confined to business. For example, values are also important in nonprofit organizations where ethical lapses have resulted in breach-of-public-purpose missions. Best practices can reinforce core values in these organizations to ensure transparency, disclosure, and accountability that "fulfill the public trust and satisfy stakeholders" [Blodgett & Melconian, 2014, p. 18].

Corporate ethical values are also global in nature. Donaldson and Dunfee [1999] explain this global context as an environment where hyper-norms embrace essential ethics values acceptable across different cultures and religions. Hyper-norms are "deep moral values" [Donaldson & Dunfee, 1999, p. 27] and ". . . a convergence of religious, political, and philosophical thought" [Donaldson & Dunfee, 1999, p., 44; Schwartz, 2005, p. 31; Donaldson & Dunfee, Sum. 1999] that provide a rich benchmark for corporate values and ethical leadership standards. Moreover, Donaldson also identifies three values that comprise an ethical base point for companies globally: "respect for human life, respect for basic rights, and good citizenship" that in turn "establish a moral compass for business practice" [Donaldson, 1996, p. 8]. Possibly similar to this hyper-norm context of values is a comprehensive study that reaffirms the six universal moral values asserted by the Josephson Institute of Ethics in the Aspen Declaration of 1992: "(1) trustworthiness, (2) respect, (3) responsibility, (4) fairness, (5) caring, and (6)

citizenship” [Schwartz, 2005, p. 31]. However, for these values to be effective, company commitment is necessary. “In a global business environment, values in tension are the rule rather than the exception” [Donaldson, 1996, p. 12].

This substantive values-based criterion encompassing corporate ethics values is a critical element for student teams to assess senior leadership commitment to corporate ethical leadership. It helps students to frame their conception of the roles of values in a corporate culture. The students evaluate the company’s ethics statements by comparing and contrasting its corporate ethical values with the various considerations explained above, and this approach is to be repeated in each criteria area that follows. We also include sample value statements that transcend corporate missions, values, culture, and conduct statements, and that speak of ethical leadership as commitment to values—integrity beyond compliance—and the infusion of corporate culture with values. In addition, we include applicable sample statements for each criteria area that follows. See Appendix B.

Sustainability Values

Business Case for Corporate Social Responsibility (CSR)

Develop and deliver products and services that advance clean technology and environmental solutions. [Wells Fargo; CSR Interim Report 2016, p. 5].

Wells Fargo’s focus on sustainable products and services through clean technology clearly endorses the business case for corporate social responsibility (CSR), where benefiting society and generating profits can exist together. It makes use of its core competencies to enhance its corporate legitimacy. Many large companies and international organizations such as the United Nations also emphasize environmental sustainability.

LITERATURE REVIEW

Today many companies like Wells Fargo, refer to their CSR activities in terms of “sustainability” and address its multiple dimensions—economic, social, and environmental—in their applications. In addition, the conceptualization of CSR has evolved over the years beyond philanthropy to a popular and significant view known as the business case for CSR [Blodgett & Hoitash et al., 2014]. It is a rational justification for CSR because it produces financial reward, i.e. bottom-line reasons for engaging in CSR activities and strategies [Carroll & Shabana, 2010]. However, “the idea that business enterprises have some responsibilities to society beyond that of making profits for the shareholders has been around for centuries” [Carroll & Shabana, 2010, p. 99], and it is a view consistent with public purpose corporate governance history [Blodgett & Melconian et al., 2016]. The CSR approach can strengthen both consumer and institutional investor loyalty through perceptions of common values [Carroll & Shabana, 2010] and has led to a different approach to philanthropy.

Often philanthropy is neither effective nor strategic; however, uniting philanthropy with competitiveness can increase societal benefit [Porter & Kramer, 2002]. Firms can unite the philanthropy of CSR with their core competencies and expertise instead of engaging in distractions. For example, Home Depot helped victims of a hurricane with its business core competency in building. This type of strategic philanthropy and sustainability advances business interests and corporate legitimacy so business can do good things while it does well, i.e. makes a profit [Carroll & Shabana, 2010].

Vogel [2005] sheds light on historical perspectives of CSR because, at one time, there was no perceived link between good activities in society and profitability. “Traditionally, expenditures for CSR have often been considered an illegitimate waste of resources that conflict with a firm’s responsibility to its shareholders and by extension with the very function of business in modern societies” [Schreck, 2011, p. 167]. However, past studies generally indicate that there is evidence of a link, but not causation, between participating in socially good endeavors and maximizing profits [Blodgett & Hoitash et al., 2014; Schreck, 2011]. Consistently, global CEOs generally recognize the value of CSR to profitability [Vogel, 2005], and it may be evolving as part of core business missions [Carroll & Shabana, 2010].

This substantive values-based criteria encompassing the business case for corporate social responsibility helps students to explore corporate commitment to society. The student teams can identify sustainability values of corporate social responsibility and assess how the senior leadership of their Fortune 500 company acts responsibly to benefit the economy, society, and the environment and unite financial rewards with sustainable activities. See Appendix B for examples.

Corporate Shared Values

Though more work lies ahead, we are fully committed to making every community in which we do business better because we are there—through our products and services, culture and operations, and philanthropy. (Wells Fargo Timothy J. Sloan CEP and President, CSR Interim Report, 2016, p.2.

Wells Fargo’s further commitment to the communities served by its products and services is a powerful statement of shared values where societal benefit, profitability, and competitiveness are intrinsically linked through creativity and innovation. In fact, Wells Fargo views its practice of shared value as a matter of corporate strategy supported by its culture, operations, and philanthropy.

LITERATURE REVIEW

The prior discussion of the narrow view of the business case for CSR ties CSR initiatives to profitability. In other words, the business opportunity comes first in terms of profitability, and then any applicable social dimension is considered.

“They are only pursued when there is a *clear* link to firm financial performance” [Carroll & Shabana, 2010, p. 93]. However, a broader view of the business case appears to be more aligned with Porter and Kramer’s [2011] corporate shared value (CSV), because it focuses on profit directly as a function of CSR. Wells Fargo’s statement above captures this shared-value concept with its commitment to community and its business. A company can therefore discover and expand its business opportunities far beyond the scope of the narrow view of the business case [Carroll & Shabana, 2010].

Porter and Kramer’s [2011] CSV proposes that capitalism address societal needs by creating economic value. It embraces creativity and innovation in products and services that intentionally serve society and produce profits. It brings business and society together as the primary focus of its core business, not as a social afterthought. This focus beyond creating profits legitimizes business as a new capitalism [Porter & Kramer, 2011]. “The fact is, the prevailing approaches to CSR are so fragmented and so disconnected from business and strategy as to obscure many of the greatest opportunities for companies to benefit society” [Porter & Kramer, 2006, p. 80].

Among the ways CSV is different from CSR is that CSV is “integral to competing” instead of “discretionary or in response to external pressure” and that CSV is “integral to profit maximization” instead of “separate from profit maximization” [Porter & Kramer, 2011, p. 76]. Students learn through CSV that society and business are not to be viewed as mutually exclusive. When they are, it creates an obstacle to many types of profitable innovations that benefit society [Porter & Kramer, 2006].

Also, Prahalad [2011] has developed a value and innovation concept for underdeveloped markets. He asserts that new business sectors can be accessed and grown through innovations that reach the market of the socioeconomically disadvantaged groups by reducing costs and creating new consumers. Affordable housing and automobiles (Tata), inexpensive cell phone time (Airtel), and eye care (Aravind) are examples. CSR “can be a source of opportunity, innovation and competitive advantage” [Porter & Kramer, 2006, p. 80], and business appears to have moved beyond the CSR critique of the past.

Sustainability shared-value statements speak to students about ethical leadership through innovation and creativity, creating societal value that maximizes profits. Statements of shared value are generally distinguishable from statements of corporate social responsibility because they exceed them in uniting business and society; however, it may be difficult to distinguish all the prior examples of sustainability, i.e. some may venture into the realm of shared value. Perhaps a blurring of values may be expected when value applications are evolving. After all, the values identified and articulated in the profit and nonprofit sectors as well as social enterprises indicate a blurring of values that are also reflected in the activities of corporate foundations [Blodgett & Melconian et al., 2016]. See Appendix B for examples of shared-value statements.

Diversity and Inclusion Values

We value and promote diversity and inclusion in all aspects of business and at all levels. Success comes from inviting and incorporating diverse perspectives. (Wells Fargo, Our Code of Ethics and Business Conduct, p. 6.

Wells Fargo acknowledges the importance of diverse and inclusive perspectives among its employees at all levels of the organization. This policy exceeds a mere compliance-in-hiring approach to diversity. This ethical leadership approach enhances corporate culture and customer satisfaction. Having a diverse and inclusive workforce is a commitment to core values of fairness, equality, and human rights. In the global business environment in which it operates, this commitment also demonstrates the business case and shared-value where business success and societal benefit are mutual and intrinsic.

LITERATURE REVIEW

A diverse workplace can present powerful criteria for students to assess a firm's culture and ethical leadership. It is clearly related to the first criteria, ethical values beyond compliance [Trevino & Nelson, 2014], because large corporations are required to comply at a minimum with Federal Equal Opportunity laws; yet, they can also exceed this simple compliance view. A separate aspirational statement on diversity, such as Wells Fargo's above, indicates that diversity is also a part of the firm's ethical culture and commitment, i.e. its core values [Blodgett, 2011]. In a global economy, a diverse and inclusive workforce shapes a corporate culture of diversity [Kossek & Zonia, 1993] and is compatible with the broad view of the business case, CSR, CSV, and good global citizenship.

Students will find that corporations may disclose their diversity data. For example, Walmart reports that 43 percent of its managers are women. <https://careers.walmart.com/diversity-inclusion>. In addition, McDonald's reports that 70 percent of its U.S. employees are women/minorities; more than 25 percent of leadership is women/minorities, and 45 percent of franchisees are women/minorities. Furthermore, McDonald's created the Global Women's Initiative. "This initiative is active in all of McDonald's operating areas of the world and supports the recruitment, development, and advancement of women at all levels of the company while creating a culture where women have the opportunity to succeed and grow." <https://corporate.mcdonalds.com/corpmcd/about-us/diversity-and-inclusion.html>

Student teams see that statements of diversity and inclusion values articulate ethical leadership by including them as core values where respect for diverse employees enhances the bottom-line and corporate legitimacy. See Appendix B for examples.

Global Citizenship Values

Wells Fargo's ongoing respect for human rights reflects our vision and values. We recognize that respecting human rights is a continuing effort, and we must regularly assess our practices and approaches in light of changing global policies and business practices. (Wells Fargo) [<https://www.wellsfargo.com/about/corporate/human-rights-statement/>].

Many companies like Wells Fargo claim adherence to an essential global ethics value: respecting human rights. Universal respect for human rights is an objective of UN initiatives in general through the Declaration of Human Rights and for global business through the UN Global Compact for Business. Other global principles and multinational codes also endorse universal respect for human rights. Wells Fargo recognizes that the global environment is different from that of the past and evolving and that its company practices and approaches require continued oversight. Such vigilance will enhance its global citizenship and ethical legitimacy among global stakeholders.

LITERATURE REVIEW

Many companies engage in global business. When operating abroad, a company may be faced with additional ethical considerations. For example, less-regulated geographic markets may create inadequate regulatory infrastructure, resulting from either an absence of laws or a lack of their enforcement. Additionally, many global business environments have varying levels of corruption. A U.S. corporation may also face political challenges, including civil unrest and lack of government leadership, when operating abroad. Corporate culture and behavior may therefore face additional ethical issues and challenges and be exposed to a high degree of media scrutiny. However, global business may also exert a stronger ethical leadership on behalf of stakeholders when it operates in a less-regulated environment [Blodgett & Hoitash et al., 2014]. This presents an opportunity to identify and act on core values as articulated by Wells Fargo above, with its emphasis on respecting human rights in a changing global business environment. Fortunately, global business does not face this challenge alone because international organizations offer guiding values.

For example, the UN offers support for ethics in global business through the UN Declaration of Human Rights and the UN Global Compact for Business. They address specific values and behavior that can help shape corporate culture and ethical leadership. The UN Declaration of Human Right enumerates 30 Articles that embrace equality, freedom, rights, respect, dignity, and quality of life globally [<http://www.un.org/en/universal-declaration-human-rights/>]. In addition, the UN Global Compact sets forth principles that imply core values and address four main areas: 1) "human rights, 2) labor, 3) environment, and 4) anti-corruption" [Schwartz, 2005, p. 30]. In addition, the UN has 17 stated goals for sustainability,

from poverty and hunger reduction to clean water, good health, and gender equality, that support and define a global value system for shaping corporate culture and for being a good global citizen [[http://www.un.org/sustainabledevelopment](http://www.un.org/sustainabledevelopment/sustainable-development) . . .].

Students will find other support for global ethical values in the Caux Roundtable [2010] and Global Sullivan Principles [1977] and multinational codes. For example, the Caux Principles embrace a moral global capitalism rooted in business-ethics values of responsibility and trust in free markets. Its stakeholder principles reflect the spirit of the law, not mere compliance. Similarly, the Global Sullivan Principles reflect a global stakeholder concern as expressed in its preamble. Additionally, “Multinational corporations generally support the concept of codes of conduct that standardize rules of corporate behavior across a broad range of countries and industries” [Jackson, 2013, p. 7].

Donaldson [1996] includes citizenship as a global value and one benchmark for assessing corporate behavior. Waddock and Smith [2000] point out that the importance of being a good global citizen is not merely to identify corporate core values; rather, it is to initiate corporate dialogue with stakeholders resulting in values: human rights, freedom and dignity that emphasize the corporate relationship with its global stakeholders. “For globalization to succeed, it must be ethical” [Hoffman & Driscoll, 2000, p. 222]; and, it must create new perspectives on business ethics [Blodgett, 2011].

Student teams see that statements of global citizenship embrace good corporate citizenship by asserting respect for human rights, global sustainability, and other relevant values in addition to stakeholder engagement. (See Appendix B for examples.) In general, the various criteria used in the student research project display a vibrant cross-section of ethical leadership values that transcend the corporation—all subject to evolving formal and informal stakeholder accountability.

ACCOUNTABILITY

We are all accountable for complying with the Code, as well as all company policies and applicable laws, rules, and regulations that apply to us. Likewise, we are all accountable for our decisions and actions, especially managing the risks inherent in our roles and appropriately escalating issues and violations of which we become aware. If mistakes are made, we acknowledge them and act to correct them. [Wells Fargo, Our Code of Ethics and Business Conduct, p. 6].

Internal Accountability

In addition to acquainting students with a values-based assessment format of ethical leadership, it is important to expose them to corporate accountability both internally and externally as articulated in Wells Fargo’s accountability statement

above. Accountability reinforces the practicality and relevance of the business-ethics curriculum because business controversies quickly make the news and have global context. Internal accountability is a powerful message to students because they may have been exposed only to an external news story; however, they quickly see that the corporation can be proactive in addressing potential ethical controversies by strengthening internal controls and by establishing a formal ethics program. Also, “One of the main objectives of an ethics program is to improve the ethical culture of an organization” [Kaptein, 2009, p. 261]. This dynamic relationship between a formal program and the informality of corporate culture is rooted in values. Thus, the student team explores internal accountability, addressed formally through various ethics programs’ expression of values, including procedures and expectations [Kaptein, 2009].

Formal internal programs have become institutionalized [Weaver & Trevino et al., 1999; Morph & Schumacher et al., 1999] where communication and training is key along with compliance statements, reporting requests, awareness reminders, and prioritization of concerns. Kaptein’s [2015] sequenced steps of formal internal programs include adoption of a statement of ethics, training, accountability, administration, reporting, procedures, and incentives. An ethics office and officer may be established along with an ethics hotline [Weaver & Trevino et al., 1999]. Such an office can provide much-needed access not otherwise provided in the traditional management structure and thereby can contribute to a positive corporate culture [Kaptein, 2009]. Furthermore students explore internal informal accountability through an emphasis on shaping the values of the individual employee, including the leadership as role models in the overall work environment, i.e. the corporate culture [Kaptein, 2009]. Students also see that the informal ethical culture embraces commonly held values. “Ethical culture encompasses the experiences, assumptions, and expectations of managers and employees about how the organization prevents them from behaving unethically and encourages them to behave ethically” [Kaptein, 2009, p. 262].

Both formal ethics programs and the informal organizational culture are assessed as part of ethics programs, including content, implementation, and outcomes [Weaver & Trevino et al., 1999; Kaptein, 2009]. Our student project criteria for assessing ethical leadership and the numerous corporate examples illustrate this synthesis. “Every component of an ethics program has the potential to shape the ethical culture of an organization” [Kaptein, 2009, p. 261].

External Accountability

The case vignette is the vehicle for the student team to demonstrate the conflict of values between internal and external accountability that results in an ethical breach. Is the ethical accountability civil, criminal, or both? Are fines assessed? Is the external accountability effective as a future deterrent? The student team should consider public opinion, consumer reaction, and overall firm and brand reputation. External and internal accountability are related, however. Ex-

ternally, personal values of stakeholders regarding their trust in business, empowers employees in that business and furthers its success and competitiveness [Person & Martin, 2017]. External also interacts with internal because of the federal sentencing guidelines enacted in 1991 that promote corporate internal controls and incentives to prevent wrongdoing [Morf & Schumacher et al., 1999].

In general, Wells Fargo exhibits a strongly stated commitment to corporate core values as indicated by the examples of its value statements above. However, the students see that the case vignette describes actions that appear in opposition to effectively managing compliance, risk, timely admission of mistakes, and adherence to the “highest standards of integrity” and “transparency”—the values of its accountability statement above. More personal commitment to such standards can take Wells Fargo beyond allegations of non-compliance and result in enhanced consumer trust, thus bolstering its image and reputation as well as its business success. Its incentive program, perhaps reminiscent of Sears & Roebuck’s incentive program that resulted in national exposure for fraud and state-initiated lawsuits, was likely preventable with an ethics program where personal commitment to values is part of the corporate culture [Trevino & Nelson, 2014].

Therefore, applying a values-based resolution to Wells Fargo based on trust as applied in the case vignette is consistent with its business case and shared-value expressions of CSR, diversity and inclusion, global citizenship, and accountability, where sustainable stakeholder interests are balanced with corporate profits. Wells Fargo can reach a high level of accountability both internally and externally with a corporate culture that embraces consumer trust and that does not give rise to externalities of compromised reputation, regulatory scrutiny, and financial penalties. When companies in general resort to merely consequential or cost–benefit approaches where profits may be weighed against the costs of non-compliance, the costs may ultimately outweigh the benefits and result in a weaker ethical approach. Applying a higher deontological standard can be a corporate strength. For example, one rooted in the ethics of responsibility or “doing the right thing” as espoused by Immanuel Kant, can ultimately lead to greater benefit, where companies win with strong ethical leadership. [Trevino & Nelson, 2014].

Trevino and Weaver et al., [1999] conclude that a corporate culture of values is the best approach to the management of ethics and compliance. “This approach requires the sincere commitment of leadership at all levels, including ongoing attention to key issues such as fair treatment of employees, rewards for ethical conduct, concern for external stakeholders, and consistency between words and actions” [Trevino & Weaver et al., 1999, p. 149]. Motivation, accountability, and communication are key aspects of this approach, which results in committed employees who have ethical awareness, seek advice, and report violations. “Results also include fewer instances of unethical and illegal behavior in the organization and better decision-making because of the organization’s ethics and compliance efforts” [Trevino & Weaver et al., 1999, p. 149].

Corporate awards and recognitions are one way to further institutionalize the values of ethical leadership and enhance both internal and external accountability. Awards and recognitions range from company designations of good places to work to more comprehensive evaluations of sustainability, corporate values, and ethical culture. Recipient companies report these acknowledgements, and the student teams can research the award-granting organization and its methodology to evaluate its significance more effectively. The following are among many awards and recognitions: The 100 Best Corporate Citizens, The World's Most Ethical Companies, and the DOW-Jones Sustainability Index. Statements of ethics recognitions and awards speak of ethical leadership through responsibility, transparency, philanthropy, citizenship, and other attributes of corporate values. When corporations meet their responsibilities to stakeholders, trust ensues and business wins with ethical leadership.

CONCLUSION

This student team research project is an engaging and effective pedagogical exercise for conveying the importance of values in an organization and their role in ethical leadership. Students see how values are identified and applied. They see where ethical challenges occur and how they can be managed with values-based reflections and resolutions. Students' evaluations of internal and external accountability and overall strengths and weaknesses helps them to formulate the identification and application of values necessary for personal commitment to ethical leadership [Trevino & Weaver et al., 1999; Trevino & Nelson, 2014; Gentile, 2010; Arce & Gentile, 2015; Paine, 1994 a, b].

This project is helpful to culminate a business-ethics course or provide a business-ethics perspective across the business curriculum. The research component, student team efforts, and in-class presentations enliven the course material, delivery, and application. Students are exposed to many major corporations and see that these organizations use the language of the business-ethics curriculum; thus, they understand the relevance of what they are learning.

Significantly, this project should also enhance the students' ability to explain and discuss the impact of business ethics approaches and decisions with a variety of stakeholders. It also exposes them to the institutionalization of ethics through formal ethics programs, incentives, and awards. Ultimately, ethical leadership shines through these project presentations as corporations face ethical challenges and strive for and continue to achieve integrity in business through a culture of values.

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Service Learning: Value-Added Evidence in the Finance Course

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In business education, the finance discipline stands out as significantly lacking in service-learning research. This paper provides qualitative and quantitative evidence on the use of service learning in the finance course in the School of Business at a small, private, urban university. On the post-service-learning evaluation, the largest impact was in the student's attitude to service, the value of future service work, and involvement in the community. Reflection papers supported the positive attitude change toward the benefits of service and the desire to participate in service work in the future.

Keywords: Service Learning, Finance, Accounting

Disciplines of Interest: Finance, Accounting, Business

INTRODUCTION

The idea of community service and civic engagement in higher education has a long history beginning in the 19th century and continuing until today (National Service-Learning Clearinghouse, 2008). In the realm of business education, service learning is a relatively recent integration and published research in certain business disciplines is rare to nonexistent. Specifically, the finance discipline stands out as significantly lacking in service-learning research. In a detailed search of service-learning applications in business, Andrews [2007] found only one application in finance. In this article, we provide a brief overview of the use and benefits of service learning in general and in business programs and finance courses specifically. We then describe a service-learning project developed and used by the School of Business of a small, private, urban university, including qualitative and quantitative evidence that service learning helps to meet learning outcomes.

SERVICE LEARNING

Service learning has been described in a variety of ways. Service learning was defined as “a course-based, credit-bearing educational experience in which students participate in an organized service activity in such a way that meets identified community needs, and reflect on the service activity in such a way to

gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility” by Bringle and Hatcher [1996]. Rose et al. [2005] similarly defined service learning as projects designed to support both specific learning objectives and benefit the business community. Gujarathi & McQuade [2002] identified five factors that are essential for a successful service-learning assignment. First, the university must incorporate service learning as an integral part of its mission statement with a positive commitment to service learning at all levels in the university. Second, a working relationship must be developed with the community agencies that will be affiliated with the service-learning program. Third, the importance of the community service-learning program must be established. Fourth, the faculty and students must be motivated by the service-learning program. Fifth, a clear connection between the assignment in the service-learning program, and the skills and topics that are covered in the related university course must be established.

Godfrey et al. [2005] asserted that reflection was a critical component of the effectiveness of a service-learning program. The idea was that reflection would force the participating students to think deeply and write about how the service-learning experience affected them on a personal level as well as how the community agency involved in the program was affected. This reflection should be from an emotional, rather than analytical, perspective. The questions should be based on how the student is different after the experience and what they felt was learned, rather than what should be done differently next time. The students should be able to make direct correlations between their service-learning experience, their related coursework, and their personal lives. Connors & Seifer [2005] also thought that structured critical reflection was important to the success of a service-learning program. They stated that the reflection is also a means of assisting in making the connection between the service experience and the learning experience.

SERVICE LEARNING IN BUSINESS PROGRAMS AND FINANCE COURSES

The application of service-learning programs in business schools has been fairly recent. Historically, service-learning assignments were restricted primarily to the social sciences and liberal arts. Therefore, published research in certain business disciplines is very limited. However, universities, particularly business schools, are in a unique position to provide valuable service to community organizations by assisting them in business operations. At the same time, the business students gain an enhanced overall learning experience and are able to better visualize how their course-related material relates to the real world. The students also gain an enhanced sense of civic responsibility [Gujarathi & McQuade, 2002]. Manning [2012] contended that the incorporation of service learning offered an approach for business schools to reinforce and increase students’

civic values as well as their emotional-intelligence insights and skill development. Poon et al. [2011] also asserted that service-learning provides opportunities for students to learn about civic and social issues and responsibilities and develop interpersonal, communication, and leadership skills, with a focus on community service. Poon et al. stated that universities would also benefit from an enhanced social responsibility and commitment image and a greater link to the community.

Although business schools may have been slower than the social sciences and liberal arts disciplines in adopting the use of service learning into the curriculum, Govekar and Rishi [2007] maintained that business schools are increasingly interested in developing more real-world experiences for students. Instructors in business programs thought that this increasing interest is due to increasing complexities of the global economy, which requires managers to possess the ability to apply academic skills to practical settings, problem-solving ability, teamwork skills, and ability to understand multiple viewpoints. The skills learned from the participation in service-learning projects will better prepare students for roles as responsible and effective leaders with a sense of civic value. However, the accounting and finance sections of the business discipline appear to be particularly lacking in the integration of service learning in academia. Very limited literature exists on the use of service-learning projects in accounting or finance courses in universities.

According to Gujarathi & McQuade [2002] the desire by accountants, both in the profession and in academia, to incorporate an active-learning aspect to the accounting curriculum is evidence of the need for service-learning programs in the business field, specifically the accounting and finance professions. The finance discipline in particular stands out as significantly lacking in service-learning research. In a detailed search of service-learning applications in business, Andrews [2007] found only one application in finance. Dahlquist [1998] provided a description of a service-learning project that was developed for a senior-level finance seminar course taught at a private, liberal arts university. Students were divided into teams and were required to take on the task of developing a loan process for a local nonprofit organization. After developing the loan process, including preparation of sample forms, the student teams made presentations to the board of directors of the nonprofit organizations.

SERVICE-LEARNING EXPERIENCE: SCHOOL OF BUSINESS

An emphasis on service has been a part of the mission of the University that served as the subject of this study since its founding in 1814. The University actively encourages all members of the community to participate in the larger community and offer learning experiences beyond the classroom. According to the *University Catalog* [2013], service learning is defined as “a cooperative venture of academic study and community service through which students can be

helpful in a community setting while gaining concrete career skills, work experience, and, possibly, academic credit.”

In spring 2007, the School of Business was given a specific charge to determine how to incorporate service learning into the Business Administration and Accounting degree programs. At that time, the Chair and a faculty member in the School of Business were volunteering in Junior Achievement [JA] Chase Finance Park, which provides a practical hands-on personal budgeting simulation for middle-school students. The students immerse themselves in reality-based decision-making in areas such as housing, investments and banking. JA was contacted about the possibility of college student participation, and the idea was received very positively. Because of the nature of Chase Finance Park, it was decided to incorporate service learning into the business finance course, a required course in both the Business Administration and Accounting degree programs. For the service-learning program to fit into student schedules, students volunteered on a Friday during the course because there are no scheduled classes on Friday. To provide the most benefit to JA, the instructor contacted JA to determine Fridays with the most need for volunteers. Students could either choose a Friday when the instructor would be there [preferable], or another Friday as long as they provided attendance verification. In spring 2008, the first time the project was required, the schedule for the day at Chase Finance Park was explained to the students prior to volunteering. The students then spent a day [8:30 a.m. to 1:30 p.m.] at Chase Finance Park assisting seventh graders in the preparation of their budgets. Students worked with anywhere from 6 to 12 students. Once a student’s service-learning experience was complete, a reflection paper was required.

After finance instructor observation of this first interaction at Chase Finance Park, changes were made in the presentation of the project for the Spring 2009 offering of the course. The finance instructor received permission from JA to use the actual budget paperwork from Chase Finance Park with the students. In class the students went through the entire Chase Finance Park activity. Having the students complete the project before going to JA gave them a better understanding of the project and an awareness of areas in which the middle-school students might tend to make mistakes in their budgets. The value of this procedure was confirmed in Spring 2009 by finance instructor observation of a much-improved interaction between the college students and middle-school students at Chase Finance Park. Also, in 2009, a pre- and post-service-learning evaluation, as well as a rubric to assess the reflection papers was added.

MEASUREMENT AND DATA ANALYSIS

Data collection began in Spring 2009 and ended in Spring 2013. A total of 62 business and accounting majors have participated in the study over this five-year period. These students were full-time students in the traditional day program.

Two measurement tools were used to assess the service-learning activity. First, a pre-service learning and post-service learning evaluation was added to measure students' attitudes toward service-based activities. The pre- and post-service-learning evaluations were adapted from pre-course and post-course student surveys used by the University of San Francisco Leo T. McCarthy Center for Public Service and the Common Good [www.usfca.edu/templates]. Second, a previously developed rubric [www.compact.org] to assess service-learning reflection papers was revised to measure the students' reflection papers.

Data analysis of the pre-service learning and post-service learning evaluation included a descriptive analysis of the findings and *t*-tests to determine if any significant differences in student attitudes occurred before and after service-learning participation. Data analysis of the students' reflection papers included: 1] reporting of the percentage rated as "distinguished" across the five rubric categories and 2] examining the student reflection papers qualitatively for themes across each category of the student reflection-paper rubric.

SERVICE-LEARNING PROJECT RESULTS

Pre-Service Learning and Post-Service Learning Evaluation

Overall, the students were highly service-oriented prior to participating in the service-learning project in business finance. As shown in Table 1, 97 percent of the students, both pre- and post- evaluation believed that most people can make a difference in their community. Also, 95 percent of the students pre-service hoped that the community work in the course would benefit the community, increasing slightly to 97 percent post service. Further analysis of each statement on the pre-service learning and post-service learning evaluation uncovered eight attitude changes worth noting. First, post service a larger percentage of students either agreed or strongly agreed that the community aspect part of the course revealed how to become more involved in their community, and students thought the idea of combining community work with coursework should happen more often at the University. Further, post service, a larger percentage of students thought the community work made them more marketable in their profession, more comfortable working with people from other cultures, and more skilled in group work. Second, post service, a smaller percentage of students either agreed or strongly agreed that the service work helped with increased understanding of lectures and readings in the course or helped them clarify their own strengths and weaknesses.

As can also be seen in Table 1, of the changes in attitude, only three statistically significant positive changes in attitude were found. First, post-service, on average more students thought community service and coursework should be combined in more classes at the University [$t = -2.37$, p -value = 0.02]. Second, post service, on average more students saw how they could become more involved in the community [$t = -2.44$, p -value = 0.02]. Finally, post service, on average

Table 1. Difference in Mean Values between Pre-Service Learning and Post-Service Learning

Statement	Pre-Service		Post-Service		t-test
	A/SA*	μ	A/SA*	μ	<i>p</i>
Helped see how subject matter can be used in everyday life.	87%	4.16	91%	4.13	.80
Helped better understand lectures and readings in course.	72%	3.81	65%	3.65	.38
Idea of combining work in community with University coursework in more classes.	57%	3.48	78%	3.95	.02
How can become more involved in my community.	75%	3.91	93%	4.2	.02
Benefited the community.	95%	4.33	97%	4.30	.77
Feel have responsibility to serve my community.	70%	3.69	76%	3.98	.07
Helped define personal strengths and weaknesses.	72%	3.87	69%	3.87	.99
Helped define profession I want to enter.	43%	3.26	26%	2.96	.09
Should make me more marketable in my profession.	71%	3.80	80%	3.87	.66
Most people can make a difference in their community.	97%	4.32	97%	4.4	.46
Comfortable working with other cultures.	86%	4.16	93%	4.33	.20
Enhance leadership skills.	85%	4.13	85%	4.13	.99
Enhance ability to communicate in real world context.	87%	4.13	84%	4.13	.99
More skilled in group work.	84%	4.03	92%	4.13	.48

*Percentage agreed or strongly agreed with each statement.

more students felt they have a responsibility to serve their community [$t = -1.81$, p -value = 0.07].

One statistically significant change resulted in a lower average rating post service. Specifically, post service, on average fewer students thought that the service work helped them to define the profession they want to enter after graduation [$t = 1.69$, p -value = 0.09].

Student Reflection-Paper Results

As can be seen in Table 2, the percentage of students rated as “distinguished” across five rubric categories varied from year to year. On average, across the five years of data, the largest percentage of students [89 percent] demonstrated in their reflection papers an awareness of the purpose of the service-learning project. Comments such as “I feel like I have helped someone see what the future brings them . . .” and “At the end of the day I felt good about going there and about helping the kids learn a little about what is in store for them in the future, whether they are excited to have to pay bills or not” support the ratings.

Table 2. Percentage of Students Rated as Distinguished across Five Rubric Categories

Rubric Category	Average %	2009	2010	2011	2012	2013
Awareness of Purpose	89%*	80%	75%	0%	100%	100%
Apply Theory to Service Learning	75%*	80%	75%	0%	83%	62%
Responsibility to Community	87%*	85%	81%	0%	83%	100%
Impact on Personal Life	83%	90%	100%	75%	83%	69%
Critical Thinking	73%	80%	88%	50%	83%	62%

*Average percentage without outlier of 0%.

Second, 87 percent of students acknowledged a responsibility to the community. As one student pointed out, “After doing this service project I can definitely say that I would do it again if I had the opportunity. Doing service is a vital part of society in today’s world and if we didn’t have people that were willing to sacrifice time and effort then the world would be in a lot worse shape than it is.” For some students an attitude shift toward serving the community occurred: “I am so glad that I got to participate in a volunteer activity at Finance Park. This really opened my eyes to how fulfilling community work can actually be.”

Third, 83 percent of students were able to articulate the impact that participating in the service-learning project could or did have on their personal lives. As clearly stated by one student, “Volunteering at Finance Park and working with middle school kids really made me look back and think about where I came from and how I got to this point in my life, who has helped me in the past and how I can give back to others the same privilege that was granted to me.”

Other themes emerged in the “impact on personal life” rubric category, including the teacher/student dynamic, the earning of respect, the development of patience, and future service plans. Regarding the teacher/student dynamic, for some students this service-learning experience was the first time they were in a “teacher” role. Comments included “I have a newfound respect for teachers”, “I felt like a teacher and that I accomplished something” and “My interaction with the students was the best part of the whole day.” Along with the teacher/student dynamic the business finance students discovered that patience is an important part of being a teacher. One student specifically stated “Patience is something I developed while I was there.” Another student walked away from the experience stating, “I have learned to be more patient with others, to not get frustrated when I have to explain things a few times, and that we are all different and do not learn the same way.”

Regarding earned respect, one student stated, “The kids really looked up to me and I felt a sense of importance that they in some way idolized me and wanted to be like me when they were older.” Another student openly admitted to not feeling like a good leader stating, “I know that personally I am not the best leader

and leading young kids can be even more difficult. . . . At the end of the day I had their respect, and they had mine.”

Finally, regarding future plans, students used this experience to think about specific ways to serve their community. For example one student wrote, “I plan on joining some organizations at school so I can start helping build the community around my school.” And another stated, “I think future classes should do the Junior Achievement project; . . . it helps build character At the very least the experience at Junior Achievement will help keep me focused on my own goals and should inspire me to continue to do volunteer service.”

Fourth, 75 percent of students used their own perspective based on both theory and service and applied it beyond the curriculum. For example, one student stated, “I enjoyed sharing what I have learned with the students and helping them have a better understanding of finance.” Another added, “It is a good opportunity to reinforce economic concepts and learn management skills over a group.”

Finally, 73 percent of students used critical thinking to express an abstract level of responding to the service-learning experience in their reflection paper. Critical thinking is measured as part of the student reflection-paper process to determine whether the students are using evidence from their experience to demonstrate awareness of purpose, the application of theory to the service, a responsibility to the community and the impact on their personal life. Critical thinking had the lowest average percentage rating [73 percent rated distinguished] across the five years of data collection. Some statements reflected a higher level of analysis: “This experience definitely helped me to understand that it is our duty as a community to help each other out to not only better ourselves but to better our state, country and world as a whole.” Another noted, “In a world of business that is often characterized by self-achievement and selfish pursuits, I want to be a part of those that aim for something greater than an impressive bottom line.”

Also, regarding overall student reflection paper results, one additional theme existed. The college students were very skeptical of working with middle-school students, but once they realized that the middle-school students looked up to them and appreciated their help, the skepticism turned to excitement. As one business finance student said, “I was a little nervous, but anxious at the same time about the experience. I have never been involved with service work that involves young kids. . . .” And, at the end of the experience another student stated, “Junior Achievement was an eye opener for me. I actually felt honored to be helping all the students out.”

CONCLUSIONS AND RECOMMENDATIONS

Based on these findings, overall, we feel this project has been a beneficial addition to the Business Finance course and to the School of Business. The students are able to take concepts learned in the class dealing with budgeting, and first, apply that on a personal level for themselves by completing the budget

exercise in class. They also experience the impact the exercise has for the JA participants. The leadership roles they take at JA help our students look at the budgeting exercise from a different perspective.

There may not have been as many significant differences in the pre- and post-service-learning evaluation because our students were more service oriented prior to the Finance class. Service is stressed at the University, starting with freshmen orientation. The most significant impact, post-service, for the students was in their attitude to service as a class requirement, and the value of future service work and involvement in the community.

The reflection paper, along with the discussion in the classroom, reflected a difference in attitudes toward service. Prior to participating, the students were concentrating more on how the JA participants would behave and react to them. After participating, the discussion and the paper centered more on the positive benefits of service and the desire to do something like that again, especially with younger students. Our students saw the value of the contributions they made at JA and translated that into the possibility of future volunteer work and civic responsibility.

The only recommendation would be to require the students to write a short paper on their thoughts about service in general and their future JA service at the beginning of the class, along with the pre-service survey. Such papers would offer a better insight into any changes in attitude toward service that are now seen more thoroughly in the class discussions.

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Transformative Learning in Sales Education

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Improving sales employee performance is critically important, as the sales team generates top-line revenue and profit for organizations. Colleges and universities participate in this training process by recruiting and training new sales candidates in university business schools. This paper examines current collegiate sales training practices and then offers an alternative approach for training new sales personnel in the sales areas of building rapport, establishing trust, uncovering customer needs, and overcoming objections. We highlight the lasting impact of transformative learning sales exercises and provide preliminary evidence of positive student response to transformative learning exercises in school of business classes.

Keywords: Transformative Learning, Disorienting Dilemma, Critical Reflection, Sales Training, Professional Selling

Disciplines of Interest: Sales Education, Sales Management, Marketing

INTRODUCTION

Organizations continue to invest heavily in the training and development of their human resources. According to the 2017 Training Industry Report, companies plan to invest \$90.6 billion in employee training programs, an increase of 32.5 percent over that in 2016 [Wentworth, 2016]. Sales organizations are no exception, as they continue to make large investments in the training and development of their sales forces [Andersson, 2017; Tan and Newman, 2013]. These organizations hope to improve the performance of their existing sales personnel, as well as to train new recruits. For existing sales personnel, experiential exercises and customer relationship management are two areas of concentration frequently utilized by large numbers of U.S. sales management teams [Little, 2012; Singh,

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Manrai, and Manrai, 2015]. At the same time, there continues to be a shortfall of qualified salespeople. It is estimated that the United States will continue to require significant numbers of new inside and outside salespeople each year into the next decade [Gschwandtner, 2011]. Because many of these new sales positions will be filled by graduates of U.S. business schools, it is very important for academic researchers to utilize training techniques and methods that simultaneously stimulate interest in sales as a profession and also train students for new sales careers [Cummins et al., 2015; Sojka, Gupta, and Hartman, 2000; Spillan, Totten, and Ziemnowicz, 2007; Stevens and Macintosh, 2003].

Prior academic research has focused primarily on training effectiveness and development outcomes for working, on-the-job salespeople [Singh, Manrai, and Manrai, 2015]; much less is known about the methods and impact of training students in college prior to graduation [Leasher and Moberg, 2009]. In addition, business schools continue to offer programs and promote other business majors and minors besides personal selling and sales management. Studies have noted a surprising shortfall of sales training programs within U.S. schools of business, with as few as 90 out of 2,000 business schools offering majors, minors, or certificates in sales [Sales Education Foundation, 2018]. There are many proposed reasons for the low number of sales programs in U.S. business schools, including negative perception of the sales profession [Hartman, 2006], programs focusing on the “hot” current topics [Singh et al., 2015], and administrator avoidance of linking universities to job training activities [Leasher and Moberg, 2009]. Despite these limitations, a growing number of business schools are training and developing students for careers in sales.

In our paper, we begin with an examination of current professional sales training and development goals and practices. After noting the objectives and examining the results of current sales training practices, we introduce transformative learning theory (TLT) [Mezirow, 1995; 1997] as an alternative to more traditional sales training approaches. We then examine three widely used experiential sales exercises [e.g., National Collegiate Sales Competition; Loe and Chonko, 2000] and discuss how to reframe these exercises with transformational learning theory. Finally, we discuss some preliminary findings and implications from the application of transformational learning in collegiate business classes.

PROFESSIONAL SELLING GOALS AND PRACTICE

In a time when students expect a college degree that delivers a guaranteed job in their related fields, courses in professional selling can deliver exciting opportunities in almost every industry and region of the United States. While many university administrators remain unconvinced of the value of professional selling, the tide appears to be turning, as Marketing Directors and Chief Marketing Officers are noting the central role of professional sales within company communications programs, and a number of these officers are urging academia to

invest more in sales training and development programs [Gulati, Nohria, and Wohlgezogen, 2010].

Inside business schools, students sign up for sales classes within dedicated sales programs or as an elective course within business, management, or marketing programs. Because the introductory sales class has the widest exposure to U.S. business students of any sales course, we focus on training exercises in typical professional selling classes. The training goals for an introductory sales course include teaching students the sales framework, communicating basic sales procedures and norms, and developing student critical skills for building customer relationships [Ingram et al., 2007]. Some other goals in an introductory sales course include improving customer encounters, developing student analytical and consultant skills so students can become problem solvers, having students understand the value of long-term relationships with customers, exploring the ethical implications of marketing and sales processes and programs, practicing communications on products, features, advantages, and benefits, understanding the sales framework, and developing skills to help guide customers toward fact-based purchasing decisions. Most introductory sales courses also introduce students to methods for self-evaluation and continuous improvement of sales skills through learner-focused activities [Ingram et al., 2007]. In introductory sales courses, students learn how customer relationships grow with rapport; this concept is experientially explored and reinforced via exercises on active listening, effective verbal communication, and assessment of customer nonverbal signals [Nadara-jaha et al., 2012].

Professional selling courses also focus on interactive skills that grow customer relationships and help connect salespeople to even the most indifferent or unconcerned customers [Arndt et al., 2014]. Building on selling skills and good selling strategies, a professional selling course is designed to improve student sales performance by exposing students to and training them in a variety of sales approaches, a critical skill set necessary for salespeople to relate to a wide range of customer personality types [Aidla, Koiv, and Reinumagi, 2016]. Written exercises are also used to enhance students' understanding of how each phase of the sales process can be fine-tuned to build rapport with clients. Finally, role-playing exercises are very common in introductory sales classes. Role-playing allows students to not only practice complete sales conversations but also to receive immediate feedback so they can adapt their sales competence and confidence [Thomas et al., 2018]

The objectives of any quality academic sales program are to deliver course content so that students develop an organized approach to sales and to help each student develop their own individual sales career skills. Perhaps more importantly, students need to draw upon those schemas during sales encounters. These schemas and frameworks are actively engaged in introductory courses with experiential exercises and role-playing [Lewicki, Czyzewska, and Hoffman, 1987; Schneider and Stern, 2010]. Overall, the value for the organization hiring a

student exposed to these sales skills should be a better return on their startup costs and human resource investment and a happier, better-performing new salesperson [Ingram et al., 2007].

All of the above-mentioned activities have been working with varying degrees of success. Prior studies have shown that students who learn via experiential learning practices make an easier transition to full-time sales positions, exhibit less turnover, and perform better in the field [Kraiger, Ford, and Salas, 1993; Jaskari and Jaskari, 2016]. We next explore a different experiential learning approach, transformative learning theory, which has the potential to increase student learning and long-term retention of sales concepts, methods, and skills.

TRANSFORMATIVE LEARNING THEORY

Although there are numerous exercises, simulations, and active engagement scenarios employed for sales personnel development, studies of both academic output [Avlonitis and Panagopoulos, 2007] and practitioner training [Salopek, 2009] have highlighted very slow learner adoption, as well as lower-than-expected attitudinal and behavioral changes from these programs. Perhaps the gold standards for applied sales training programs have been role-playing and gaming and simulation exercises; however, researchers and practitioners alike have noted a general “lack of stickiness” for many sales training programs, as trainees return to their old jobs with their old thinking, processes, and habits [Cron et al., 2005].

A primary goal of role-playing and experiential sales exercises is to internalize learning via a shift of perspective or behavior. Techniques that shift one’s perspectives and frames of reference by challenging prior habits of mind, old assumptions, and established patterns of behavior have shown to be very impactful, although hard to implement [McAteer & Dewhurst, 2010]. Transformative learning theory is a “learner-centered” theory that actively engages participants in experiential situations with the goal of shifting participants’ perspectives and changing some of their basic assumptions.

Transformational learning theory is defined as “learning that induces more far-reaching change in the learner than other kinds of learning, especially learning experiences which shape the learner and produce a significant impact, or paradigm shift, affecting the learner’s subsequent experiences” [Clark, 1993]. This definition was extended to incorporate psychological and societal elements in a consumer setting [O’Sullivan, 2003]. Transformative learning also involves “experiencing a deep, structural shift in the basic premises of thought, feelings, and actions. Such a shift involves the understanding of ourselves and our self-locations; our relationships with other humans and with the natural world; our understanding of relations of power in interlocking structures of class, race and gender; our body awareness, our visions of alternative approaches to living; and

our sense of possibilities for social justice, peace, and personal joy” [O’Sullivan, 2003].

Transformative learning is not an addition to traditional forms of education, but rather a different approach with a purpose: “to help the individual become a more autonomous thinker by learning to negotiate his or her own values, meanings, and purpose rather than uncritically acting on those of others.” [Mezirow, 1995, 1997]. Transformative learning theory seeks to explain the ways which learners revise deeply ingrained frames of reference and meaning structures [Taylor, 2000; 2017]. The theory posits that deep-rooted meaning structures provide us with familiar filters so we can make sense of our daily lives; however, these structures also reflect our own personal cultural and psychological perspectives. When new learning experiences (whether in an educational setting or through life events) are assimilated into existing meaning structures and frames of reference, such experiences usually reinforce existing perspectives or stretch their boundaries. Transformative learning theory proponents have found deep shifts occur after a “disorienting dilemma” followed by cycles of critical reflection. This disorienting, reorienting, and reflection process ultimately leads to longer-lasting changes in personal perspectives. Changes in perspective are a gateway to understanding others’ narratives and worldviews [Meichenbaum, 2017].

Mezirow [1995] divided such perspective transformation into 10 stages or factors, including the following common steps or factors typically involved in meaningful perspective transformation: (1) a disorienting dilemma, (2) self-examination, often with feelings of guilt, shame, or confusion, (3) a critical assessment of one’s previous sociocultural or psychological assumptions, (4) recognition that one’s discontent and process of transformation are shared, and that others have had to negotiate a similar path of change when faced with such disorienting events or experiences, (5) exploration of options for new roles, relationships, and actions, (6) planning of a course of action to resolve the disorienting dilemma, (7) acquisition of the knowledge and skills needed for implementing one’s selected plans, (8) provisionally trying out new roles, (9) building a sense of competence and self-confidence, and (10) a reintegration into one’s life on the basis of new conditions necessitated by the new perspective. According to Mezirow, these developmental stages are a learning process that is both instrumental and communicative [Mezirow, 1997]. Transformative learning is a reintegration into one’s life of a new perspective based on new conditions and personal experience. Mezirow suggested that this process is different from socialization because adults are capable of critical reflection on new relationships.

As transformational learning theory was applied in educational settings, a number of common practices developed [Benson, Palin, and Cooney, 2012; Saavedra, 1996; Maurer et al., 2003]. Taylor [2000] reviewed these practices and identified four common themes in transformative learning pedagogy, namely that (1) exercises were experiential and group situated, (2) exercises and reflection were time consuming, (3) learning included affective or emotional learning during

periods of critical reflection, and (4) learning worked best when both educators and students were engaged as transformative learners. There are relatively few examples of TLT in marketing, although many authors within the transformational leadership stream note the value of this leadership style [Shannahan, Bush, and Shannahan, 2013]. In examining athletic coachability of salespeople, transformational leaders foster a “context” for sales personalities to develop. Although characteristics of sales managers are examined and sales outcomes measured, the question remains of how to implement these leadership attributes. Our study of transformational learning theory is one set of recommendations for applying this leadership theory. We next discuss three popular experiential role-playing sales exercises in detail and explain how each of these learning objectives can be approached from transformational learning theory. We highlight preliminary student feedback from these transformational learning exercises in business classes.

SALES EXERCISES REEXAMINED

Role-playing is a useful tool for sales training, producing positive gains. One goal of role-playing is for students to develop communication competencies to the point where effective and focused verbal and nonverbal communications become second nature [Stadler, 1989]. In addition, role-playing with situational problem solving has been shown to be positively correlated with sales outcomes [Fogel et al., 2012]. Finally, because sales competence leads to increased sales, role-playing can help new sales personnel quickly gain expertise.

One role-playing training technique, developed by Chapman and Avila [1991], integrates an experiential, real-world element into professional selling classes. Throughout the semester, different teams of students are presented with real-world situations, with one team member acting as salesperson, one member assuming the role of the buyer or customer, and the third member monitoring the exchange, completing an assessment instrument, and providing feedback to the other two students. The team members rotate assignments and roles until each member has presented, acted as customer, and observed and assessed the sales exchange. The observer specifically evaluates the building of customer rapport; the identification of needs; the overall communication style (using both verbal and nonverbal cues); the use of features, advantages, and benefits; overcoming objections; and closing. All of these sales-phase components are consistent with many other role-play simulations in professional selling classes. Students also videotape their role-plays for the instructor to review and assess so that instructors can also provide feedback to each student. Despite all of these efforts, the impact of role-playing may only be temporary for sales trainees.

Role-Playing and Transformative Learning Exercises Compared

Here, we examine three sales role-playing exercises within an introductory professional selling class. First, we examine traditional role-playing methods and confirm the stated sales learning objective; then we examine the same objectives using transformational learning exercises.

Within each role-playing scenario, we follow the Chapman and Avila [1991] paradigm, with teams of three students each assuming the three roles of customer, salesperson, and evaluator. Each week during a semester session, the role-play objective changes to match the weekly sales class learning objective. Because the scenarios change each week, teams are allowed a brief 15-minute period to review the exercise, consider their roles, and practice their delivery. The groups then conduct their role-playing exercises and videotape their sessions. Evaluators provide immediate feedback after each role-play session within their small team so students can hone their professional sales skills. At the end of class, the videotape sessions are sent to the instructor for review and feedback.

Scenario 1: Building Rapport and Trust with the Customer

Building rapport and trust with a customer is an important first step, and to be effective, sales students need to develop excellent listening skills. Listening skills are central to establishing communication and building a relationship with a client. When students consider this task prior to the assignment, it appears to be quite easy; however, students and instructors often find it difficult to develop these skills. In-class experience suggests that active listening, signaling mutual respect, understanding the client, and reaching an agreement require great concentration, focus, and effort.

The role-play exercise asks students to assume the role of a newly hired representative for the orthopedic division of a large pharmaceutical company. They have recently completed a 4-week initial sales training and it is now week 2 in their new territory. The students have been briefed by their sales manager that the previous sales representative had not been well received by several customers and many of them were now doing business with competitors. The students have managed to schedule an appointment with Dr. Thrasher when traveling in your territory during your first week in the field. You were surprised and thrilled that you and Dr. Thrasher's gatekeeper, his scheduling secretary Joanne, hit it off.

Here is the sales summary given to each student team: "You have an appointment with Dr. Thrasher. You are told you have 10 minutes to successfully establish rapport and build trust so Dr. Thrasher will let you make another appointment for a follow-up call. Characters: You and Dr. Thrasher; Scene Location: In Dr. Thrasher's office; Sales Objective in the Action: As the new medical sales representative, you must develop rapport and build trust with Dr. Thrasher during this meeting."

The TLT substitute exercise allows students to understand and relate to personality types different from their own. In this exercise, students examine the wants, needs from the perspective of others. They also build rapport and trust by using a Myers-Briggs (MB) assessment instrument as a tool within a transformative learning exercise. Students ask questions from the customer's perspective, as opposed to from their personal viewpoints, as they work with different personality types. The MB exercise employs transformative learning theory techniques to generate disorienting dilemmas for the students to facilitate personal change, as well as to challenge students to think in creative, unconventional, and innovative new ways. Generating different ways of thinking encourages the development of an outward customer focus by expanding students' frames of reference and breaking down traditional boundaries that can limit building rapport and trust.

In the TLT exercise, students complete a Myers-Briggs assessment outside class and are then asked to review and bring their Myers-Briggs Type Indicators® report results for class discussion. In the initial class meeting, the students discuss their MB types and their personal assessment of the MB results. Students are paired in groups of two, ideally assigning the groups to comprise opposite personality types. Typically, most groups have individuals with two or three opposite personality assessments. Students will typically engage in debate over the accuracy and value of the MB measures, the questions, etc. The students are also asked to consider and discuss what it would be like to live as one of the other primary personality types.

At the end of the initial discussions, students are given the following assignment: for the next four days, each student must model what they believe the likely behaviors of four other Myers-Briggs personality types, one each on each of the upcoming four days. Students are not permitted to reveal to anyone that they are intentionally behaving in a manner completely opposite from their own usual Myers-Briggs profile. During the four-day MB personality period, students must write reflection papers describing their experiences with specific behaviors and their own reactions. They also are asked to explain why those behaviors model a different MB personality type. Finally, they describe whether their change in behavior provoked any reactions from others who know them well and how they felt about the MB personality experience (e.g. whether it was disorienting, liberating, humorous, stressful, etc.).

The next week after students have completed the four-day MB exercise, students reconvene in class to share their experiences of attempting to walk in the shoes of these other MB personality types. Some shared experiences include the example of one student who was typically rather introverted who attended a party with a friend at another university wearing unusually "loud" clothes and then made a point of talking to every person he met. He concluded that it was very stressful at first but liberating in many ways as well. His friend received many requests to bring this student to future parties. The student stated that he gained an appreciation of extroverted people, having previously believed they were

pushy and overbearing. Another student's mother thought she sounded very depressed and sent her money to do something nice for herself. She felt this was humorous in some ways, but it also made her feel a little guilty, so she called her mom at the end of the assignment to explain her behavior, but did keep the donated funds. She learned that people are observing one's behavior even when they were not aware and stated that observation of behavior is much more powerful than she previously realized. The entire MB exercise process takes one week to complete MB evaluations, the reflection paper, and the classroom debriefing discussion.

Students agreed that this assignment was "disorienting," and the in-class discussion centered on being able to "walk a mile in others' shoes." During the experience, students often spoke of feelings of confusion, guilt, liberation, or even gaining new insights regarding why certain friends or family members of a different Myers-Briggs category might exhibit certain patterns of behavior. Some spoke of having to try and "rewire" the way their thought processes worked to be able to play the "role" of another personality type. The class discussion also includes a process of literally trying to structure one's thoughts and priorities differently so that students can understand other perspectives and the ways someone else might analyze the same situations or problems.

The daily journaling process and the rounds of discussion at the end of the MB process help facilitate self-examination and critical reflection, the heart of transformative learning theory. The class discussions reflect "exploration of new roles, relationships, and actions" as encouraged in transformative learning theory, and seem to lead to an initial level of "re-assessment of one's previous epistemic, socio-cultural, or psychological assumptions" [Mezirow, 1995, p. 50; Taylor, 1998, p. 8].

Scenario 2: Uncovering and Satisfying Needs

This phase of the sales process requires the sales representative to ask good questions and be an effective listener. Students begin to build trust via questioning and active listening in this role-play scenario.

Here is the sales summary given to each student team: "Hostessing with Style is a relatively new entrant into the catering business. However, you and the other catering business owners have been well known locally for your innovative and creative baking and decorating styles. As you begin working in the local scene as a caterer, you have been targeting small-volume customers in order to ramp up your staff and facilities in preparation for larger catering events, such as awards banquets and board meetings. You were referred to the Vice President of Sales and Marketing, Mark Holcomb, by one of your neighbors, Marcia, whose anniversary party you recently catered.

As the account salesperson, you have assessed the situation and know that you will need to move the sales process forward by asking quality questions about Mark's needs. You have an appointment with Mark Holcomb. Characters: You,

the owner of Hostessing with Style, and Mark Holcomb, VP of Sales and Marketing; Scene Location: Mark Holcomb's Boston office; Sales Objective in the Action: You are making an initial call to Mark Holcomb for the purpose of identifying and detailing needs and expectations of (company name) for the catering business. The goal is to identify Mark's needs and initiate quality questioning about Mark's catering needs."

The TLT alternate exercise attempts to transition the students' focus from an inner locus to an external view of their customers' pain points. In this transformative learning pain point exercise, students uncover and satisfy personal and others' needs of target markets with different approaches. In this pain point exercise, students are challenged to develop nontraditional responses that will uncover personal issues and then to satisfy these issues or needs.

Students are randomly divided into groups of three or four, with each group generating a list of 10 business issues that greatly irritate them. There are no restrictions as to the scope and area of business issues. Students working in groups gradually narrow their pain point lists down to two issues that they believe can be addressed and resolved. In essence, while working in a small group, they are creating and developing a solution to each problem. The solutions are done extemporaneously with no research on the pain points. Upon accomplishing this task, students within their group do a cursory interview and debrief of the class to uncover how many other individuals also have these pain points.

During the information research process, teams will usually uncover a number of groups with reasonably similar problems. After the research debrief, each group then selects one issue with the greatest market or sales potential. If reasonably similar irritants or issues are not acquired in the research debrief, each team group builds a new list of 10 irritants. After similar issues are identified, each group develops an initial business model utilizing the Business Model Canvas (BMC) method. Finally, after completion of the BMC, each group gives a 2-minute presentation of the business model, followed by discussion and feedback from the class and instructor. This assignment is typically completed during one 90-minute lecture period.

Preliminary scenario 2 student learning outcomes include a group addressing the typical campus parking problem as their pain point. Their solution was to utilize a radio-frequency identification (RFID) system comprising a tag, a reader, and an antenna, similar to E-ZPass systems, to determine open parking spots. This group identified a fatal flaw in the model and pivoted to address servicing frequent customers through customer loyalty programs that franchises employ at drive-through service windows. This is an example of uncovering customer needs and implementing a creative thought process, resulting in a multistep solution journey.

Students agree that this exercise was "disorienting," as the starting point is merely a complaining session, leading to research and then discussion of an addressable market, all tackled within one class period. Typically, among classes composed of 5 to 7 groups, 3 or 4 ideas worth investigating are discovered. This

assignment is not designed to create complete business models but is focused on starting point to idea generation. The results typically conclude with a much more expedient method to parse viable ideas that is focused on specific markets and needs.

Scenario 3: Overcoming Objections

This is an important step in the selling process, as sales reps need to uncover underlying sales problem(s) and then propose solutions. Overcoming objections is probably one of the most important phases of the sales process.

The description of a role-play scenario places students in the role of Jeff Higgins: “Jeff Higgins sells for Segue Manufacturing. He has been calling on ACT Inc. for almost a year without obtaining a purchase order. Early in Jeff’s sales process, ACT’s engineers came for a site visit to see and test the quality of Segue’s products. Everything went well and the clients departed Segue very impressed with the company, products, and services. Jeff thinks he is very close to getting his first order. He knows that ACT Inc. is happy with its present supplier, but he is also aware that promised shipments have not arrived on time from his competitor. Marty Gonzalez, ACT’s senior buyer, has given strong signals that he not only likes Jeff’s products but also likes Jeff.

During Jeff’s most recent call, Marty told him that ACT Inc. needs a couple of weeks to go over Jeff’s latest proposal. Marty really did not have any major objections during the Segue company visit and presentation. Jeff knows his price, quality, and service are equal to or exceed ACT’s present supplier. Jeff Higgins from Segue Manufacturing is close to getting his first purchase order from ACT Inc. The buyer for ACT Inc., purchasing agent Marty Gonzalez, has indicated he is close to ordering from Jeff. Characters: Jeff Higgins, sales representative; Marty Gonzalez, senior buyer; Scene Location: Marty’s office; Action: Marty has just stated that he needs some time to go over Jeff’s proposal; Sales Objective in the Action: How Jeff should respond to Marty’s needing more time to think it over.”

The alternate exercise is a blindfolded follower transformative learning exercise in which students learn to overcome objections via effective listening skills. Students are randomly divided into groups of three. Three iterations of the exercise are executed, with each student taking a turn at three roles: leader, follower, and observer. This disorienting dilemma of being a blindfolded follower, leader of a blindfolded individual, and observing without talking or commenting in any manner accomplishes a focused listening activity.

The blindfolded follower is operationalized by showing students a different picture on the classroom screen at the start of each of 3 sessions during which the follower is blindfolded. Various colored markers and a sheet of paper are placed in front of the blindfolded student. The first picture is simple, with the degree of difficulty increasing with each image. The leader must verbally describe and guide the follower to draw the image on the paper. The leader can only communicate

verbally. Touching the follower, pens, or paper is prohibited. The follower draws the image based on the instructions of the leader. The observer can do nothing other than observe. No form of communication is allowed for the observer. The roles are shuffled for each of the 3 sessions, with each student participating as a leader, follower, and observer. Upon completion, a class discussion is held to review lessons learned and to provide feedback.

The difficulties of communication for both leader and follower are discussed in depth after this TLT exercise. Students find various aspects of this assignment challenging; almost all teams and students note the importance of clear verbal communications and clear use of descriptor words. Many students find the observer role the most difficult, since the observer cannot fix problems or help the group.

Some working examples include student leaders recognizing a mistake in the drawing, and the leader saying to the blindfolded follower, "You messed up." Students typically realize the importance of a leader taking responsibility for team results. Another common difficulty in communicating effectively occurs with a science major student as leader telling the follower "to draw a parallelogram." The follower retorted, "A parallel what?" The realization of need to communicate in a manner that all parties understand is critical for success. Students will instruct followers "Pick up the red marker," and then remember the follower is blindfolded. Not paying attention to the abilities and resources of team members is a common discussion point.

Students agree that this exercise is disorienting throughout the exercise, and subsequent class discussions highlight the value of communicating effectively and listening intently to the message. Another key takeaway for the observer is the ability to focus on key messages, as what is being said fosters recognition and deeper understanding of hidden issues.

Post Hoc Qualitative Feedback

To examine the longer-term impact of the TLT exercises, we conducted interviews in the fall semester with 10 marketing major seniors who had taken the personal selling class five months prior in the spring semester. We asked these respondents to remember and rank the top three exercises from their spring sales class. The students rated the first role-play exercise, "approach," as the top-ranked exercise. They ranked the three TLT exercises as the second, third, and fourth highest ranked exercises. The remaining three role-playing exercises, including the final presentation, were ranked lower in this unaided recall question. We asked what they liked about their top-rated sales class exercises. In the first role-play exercises, student uniformly recalled apprehension and nervousness presenting to a small team of students, as well as a feeling of personal accomplishment. In comparison, the TLT exercises were described as eye-opening for uncovering hidden objections and listening closely to others' communications. Several students noted a big difference between conducting a class role-play and being more

“people focused” with the TLT exercises. Finally, we asked about their perception of professional selling as a career choice. Most students stated they had mixed feelings about sales prior to taking the class. However, after completing the class, nine out of the ten respondents expressed an “interest” or “strong interest” and other positive attitudes toward the sales profession.

DISCUSSION AND CONCLUSIONS

Transformative learning pedagogies can be very different from what students typically experience in the classroom. Transformative learning allows students to examine and adjust their own perspectives based on opposed or unexpected social realities. Students must be willing and able to integrate critical reflection into their classroom experiences and their personal lives. Student communication during the exercises and debriefings can be fostered if instructors share their own viewpoint and personal experiences, as recommended by Mezirow [1997].

The TLT learning approach can be particularly useful when students are facing challenging situations, such as one on one sales interactions. If instructors encourage students to reconsider their viewpoint and grow their mindsets, they will be able to boost their motivation and performance [Dweck, 2015]. TLT exercises can be a method for educators to follow through on the promise of growth mindset in the classroom. Many of the recommended educator growth-mindset classroom phrases and behavior are very similar to Mezirow’s instructor participation recommendations [Mezirow, 1997]. The important elements of the transformative learning process are not the tips, tools, or tricks used by the instructor, but rather the participation of the instructor as also a transformative learner. For educators, this means that instructors also need to examine their underlying assumptions about teaching and learning, develop a critically reflective practice, and take an active role in their own professional development [Cranton, 1994]. Transformative pedagogies ask learners to take an active role in shaping their own educational process rather than depending primarily on an outside force to shape their learning environment. Transformative learning pedagogies can include open and frank discussion with students about the importance of their own role in the learning process. While the instructor may guide and facilitate the discussion, instructor and students alike must share the responsibility for rational discourse and constructive critical reflection within each learning group and for each exercise. If the class is not willing to collaborate, participate, and share the responsibility, the likelihood of fostering transformative learning is very low. In the final analysis, transformative learning is a collaborative process that requires the shared experiences and active engagement of all participants.

Transformative learning research has found that the instructor plays a very important role in catalyzing the transformative learning [Taylor, 2017]. It is up to instructors to foster transformative learning conditions such as facilitating a “disorienting dilemma” in the minds of students; encouraging students to reflect

on and actively share their feelings, ideas, and thoughts; being aware of body, mind, and spirit in the learning process; establishing an environment of trust; cultivating student self-awareness of alternate ways of discovering and learning; and helping students question reality, premises, and assumptions in ways that promote shifts in their worldview.

This research reinforces many prior transformative learning theory findings but extends TLT theory and processes into professional selling education. We relate research and findings from transformative learning theory to current professional selling exercises and role-playing scenarios within the sales pedagogy field. Our paper offers fresh insights regarding the relationship between transformative learning and professional selling education, thereby adding new perspectives to the body of knowledge that already exists within sales education and training literature.

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Applying Course Activities and Accessibility Standards to Online Business Course Design

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Instructors face many challenges when creating online courses. Changes in technology and learning styles of new student generations, as well as the continuous increase in students with disabilities, make the following two challenges particularly important: the creation of courses that (1) offer effective student engagement and (2) follow “universal design of instruction” (UDI) in order to maximize accessibility and usability for all learners. Two of the eight standards of the Quality Matters (QM) rubric address these important aspects of online classes. This article offers insights into the benefits of meeting these two standards and provides practical tools on how these standards can be successfully applied to online courses.

Keywords: Quality Matters, Online Course Design, Accessibility, UDI, UDL, Teaching Efficiency, Course Activities, Learner Interaction, Student Engagement

Disciplines of Interest: Multi-Discipline

INTRODUCTION

Online course enrollment continues to grow and outpace overall enrollment growth in higher education. However, only 29.1 percent of academic leaders report that their faculty accept the “value and legitimacy of online education” [Allen, 2016]. As the barriers to acceptance of online education remain, the assurance of quality in online courses is imperative. In addition, online courses add a level of complexity to the learning environment that can sometimes be daunting for instructors, who are often given little instruction on how to create effective online courses. It is, therefore, no surprise that educators are feeling an increase in complexity in the online learning environment [Hogan et al., 2006]

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and are reporting that heavy workloads make it difficult to find the time for online course evaluations and revisions [Roehrs et al., 2013].

This paper aims to help instructors effectively and efficiently improve the quality of their online courses and to improve the online learning experience for students, based on one of the most popular online course design rubrics, the Quality Matters (QM) rubric. Examples of how the eight standards of the QM rubric can be applied in business courses for improved course design are given by Schmidt and Stowell [2017]. However, this paper offers more detailed and specific guidelines and applications that help improve online courses based on two essential QM standards, the standards relating to course activities/learner interaction and to accessibility/usability. While all QM standards are important for a well-designed course, the two standards relating to student engagement and accessible design require particular attention. The need for student engagement and accessibility in online courses has become increasingly important with evolving technology, the need to adapt to different leaning styles of new student generations, and an increasing number of students with disabilities. Integrating these two standards into online course design at the same time can be challenging, as making engaging and interactive course activities accessible can be difficult. Course designers, therefore, have to be aware of both standards, which are deeply connected.

The objective of this paper is two-fold. First, it provides some basic information about the QM program, explains the importance of standards 5 and 8, and highlights the benefits of certifying courses through QM, which include quality assurance of the course, improved course design, national recognition, professional development for faculty, new ideas for improving online courses, and increased student engagement. Second, the paper explains specific steps that can be taken to meet the two QM standards relating to “Learning Activities and Learner Interaction” (QM standard 5) and “Accessibility and Usability” (QM standard 8).

This paper is laid out as follows: Section 1 describes the basics of the QM program and certification standards. The particular importance of standards 5 and 8 is explained in Section 2. Section 3 highlights how following QM standards can offer benefits to institutions, faculty members, and students. Section 4 depicts standard 5, “Learning Activities and Learner Interaction,” and presents specific examples and tools that can be used to meet this standard. Section 5 explains standard 8 and what is meant by a commitment to “Accessibility and Usability.” Specific tools are also discussed that can be applied to meet this standard. Finally, the article concludes with a summary and conclusion in section 6.

1. THE QM PROGRAM AND CERTIFICATION

The growth of online course offerings, along with the concerns of administrators and faculty about the quality and effectiveness of online education, has

caused the development of different standards that foster the quality of the online educational environment. While several systems have emerged, the one which has gained the most traction in the United States is QM [Varonis, 2014]. QM came about when a statewide consortium of institutions of higher education in Maryland, called MarylandOnline, wanted to ensure that students enrolled in any consortium course were enjoying comparable quality online experiences. In 2003, through a federal government grant sponsored by the Fund for the Improvement of Postsecondary Education (FIPSE), Maryland educators used research and accepted best practices and principles to develop a faculty-centered peer review process and training for online courses. This process is used by QM, a not-for-profit, nationally recognized, faculty-centered peer review program designed to certify online and hybrid/blended courses. It is used by member academic institutions for quality assurance and continuous improvement of online courses. The QM rubric is designed by faculty for faculty and is updated on a regular basis to stay current with instructional technology and pedagogical best practices. The program currently uses the 6th edition of the QM rubric.¹

The QM program reviews a course based on the following eight standards: (1) Course Overview and Introduction, (2) Learning Objectives (Competencies), (3) Assessment and Measurement, (4) Instructional Material, (5) Learning Activities and Learner Interaction, (6) Course Technology, (7) Learner Support, and (8) Accessibility and Usability. As of the 6th edition (the 2018 QM standards), along with the eight main standards, QM offers 42 specific review standards that evaluate the design of the course. QM provides explanations of the standards and a rubric with a scoring system to determine if a course meets the standards for QM certification. The maximum number of attainable points is 100. A minimum score of 85 points (85 percent), along with meeting all essential specific standards (these are the most important standards that count for 3 points each), is required for QM certification of a course. However, the instructor not only has to earn the minimum points, but also has to apply the concept of “alignment.” With alignment, all of the critical course components, including assessment and measurement, instructional materials, learner engagement, and course technology, are closely coupled together with the learning objectives so that students achieve the desired learning outcomes. When a course is aligned, each of the course components is directly tied to and supports the learning objectives [Quality Matters, 2018]. Once an instructor has acquired QM certification for a course, he/she has the right to place the QM logo on the course website.

2. THE IMPORTANCE OF STANDARD 5 AND STANDARD 8

All eight QM standards are the foundation of a high-quality online course. However, the standards relating to student engagement and accessible design are

¹More details about the QM program and rubric are provided at <https://www.qualitymatters.org/>.

the focus of this study, as they have been gaining in importance in online design with the advancements in technology, the changes in learning styles of new generations, and an increase in students with disabilities. These two standards pose particular challenges for the course designer and are also deeply intertwined. When creating student activities, course designers have to be aware of accessibility standards to make sure that the activities are usable and accessible for all learners.

The concepts of universal design of learning (UDL) are the basis for accessibility. UDL is not a new concept, as it has its roots in “inclusive pedagogy,” which started in the 1970s in the United States and as early as 1918 in the United Kingdom [Downs, 2019]. Inclusive pedagogy can be defined as a student-centered approach to teaching that pays attention to the varied backgrounds, learning styles, and abilities of all of the learners in front of you [Center for New Design in Learning and Scholarship, 2019]. While inclusive pedagogy has been an important part of education for decades, it has been gaining even more importance in recent years. The focus on inclusive pedagogy and accessibility in online design is particularly important to provide equal human development opportunities to those who have cognitive and physical disabilities and as technology advances (for example, Microsoft and Adobe products now have an “accessibility checker” feature). While the Centers for Disease Control and Prevention (“CDC”) reported in 2000 that the median disability prevalence was 17.1 percent across 11 states, by 2015, 22.2 percent of adults (18 and over) in the United States were identified as having a disability [CDC, 2015]. In addition, the National Center for Educational Statistics (NCES) [2013] reports that 11.1 percent of undergraduate students report a disability. There is also a corresponding increase in the number of types of disabilities among college students as federal definitions broaden, now including hearing, speech, orthopedic, learning, health-related, visual impairments, and other disability-related conditions [NCES, 2010]. Not only are the variety of disabilities and the number of students with learning disabilities continuing to increase, but students with learning disabilities also have lower enrollment and completion rates compared to those without learning disabilities [Lightfoot et al., 2018] Even though enrollments of students with disabilities are increasing, there are growing numbers who fail to graduate, which makes UDL, support services, and accommodations in higher education institutions particularly necessary for improved retention [Barnard-Brak, 2010; Higbee et al., 2010; Paul, 2000; Quick et al., 2003].

Improving teaching skills in accessibility and UDL has been shown by He [2014] to increase teacher confidence and self-efficacy [He, 2014] However, properly addressing accessibility and usability can be very challenging. As Ozdemir, Preast, and Duffy [2018] state, “[a]ccessibility initiatives often lose momentum and lack systematic design. In many cases, taking proper measures to improve accessibility in online courses still does not make these courses usable for the students.” Not surprisingly, in response to many requests for better access

to resources to assist in course design that reflects a commitment to accessibility and usability, QM has added an “Accessibility and Usability Resource Site,” which has been available to its members since 2018. It provides a central space that offers comprehensive information about this topic.

Accessibility, usability, and UDL are also intertwined with the concept of student engagement. Student engagement has also been an aspect of online design with increasing importance, especially with the arrival of the new student generations of Millennials and Gen Z (also referred to as iGen). El-Shamy [2004] states that younger learners need increased interaction and want to have more fun, which means they need to be more engaged. As the work by Rose and Mayer [2008] and He [2014] presents, the three overarching principles of effective UDL and accessibility are (1) presentation, which involves providing learners with various ways of acquiring information and knowledge, (2) action and expression, which provide students with various routes for demonstrating what they know, and (3) engagement and interaction, which enable the instructor to tap into students’ interests, challenge them appropriately, and motivate them to learn. Lancaster [2011] also stresses the importance of making a curriculum more readily available to students with a wide range of skills and abilities through multiple forms of learning and engagement. In a special issue report on student engagement and retention, Kahu and Lodge [2018] state that understanding and enhancing student engagement and retention has arguably never been as critical as it is now and that student engagement and student retention are strongly correlated.

Both QM standards 5, “Learning Activities and Learner Interaction,” and 8, “Accessibility and Usability,” include “specific standards” that are considered “essential” in the QM rubric. For a course to be QM certified, all essential standards have to be met. Three out of four specific standards for “Learning Activities and Learner Interaction” and three out of six specific standards for “Accessibility and Usability” are considered “essential”² [Quality Matters, 2018]. In the latest rubric update, one specific standard was added to standard 8, and one specific standard was upgraded to “essential,” indicating the increased importance of integrating accessibility and usability into online course design.

3. BENEFITS OF QM CERTIFICATION

The principles and standards used in the QM rubric and process are based on specific research indicating that certain elements of course design, if implemented correctly, will have positive effects on teaching and learning [Quality Matters, 2018]. Due to this premise, QM certification is, therefore, beneficial to teaching

²Specific standards can be thought of a group of sub-standards that fall under each main standard. One of the main changes from the 5th (2014) to the 6th (2018) edition QM Rubric was the increase of the number of “essential” specific standards for standard 8, “Accessibility and Usability.” In the 2014 edition, only 2 specific standards in this category were considered essential. In the new 6th edition of the QM Rubric, all images and text now have to be accessible to meet the need of diverse learners.

institutions, teachers, and—most importantly—students. This section discusses the benefits to the different stakeholders.

3a. Benefits to the Institution

If an institution follows QM standards, it demonstrates the university's commitment to excellence in teaching. This in turn will improve the institution's image and national recognition and will aid in obtaining accreditation and enrollment. Using the proven quality standards in the learning process also results in the efficient use of instructional resources. The institution will take a more centered approach to distributing resources as opposed to using a sort of shotgun approach, trying out certain approaches that may or may not work. Following the standards guarantees the integration of new technologies using sound online instructional design principles and research-based best practices, which, again, eliminates the wasteful funding of technologies that may be unsuccessful. Finally, by committing to the QM process, the organization commits to ongoing faculty development, which in turn continuously improves the quality of online and hybrid courses offered.

3b. Benefits to Teachers

Teachers who follow QM standards will improve the quality of their online courses by expanding student learning outcomes, creating fairer assessments, and increasing student knowledge and retention. Being part of a QM team will guarantee continuous improvement of courses and access to instructional design support from the instructional design staff. Teaching skills can be continuously improved through ongoing professional faculty development offered by QM. In addition, the QM certification process provides external quality assurance from peer reviewers and a validation tool for online teaching outside of student evaluations. The improvement of course quality will also deflect student complaints and help with internal annual evaluations and promotion and tenure applications. Finally, adding a QM course certification and/or QM peer reviewer experience to the curriculum vitae (CV) will improve the teaching portfolio.

3c. Benefits to Students

Most importantly, students also gain many benefits from the application of QM standards. Students are at the heart of the QM standards, as they were designed with student success in mind. QM standards lead to improvement in student learning and knowledge retention, as students receive better instructions and are assessed in a uniform way due to the use of rubrics. Students also tend to be less confused navigating through the course and are more satisfied with the class overall, which leads to fewer withdrawals. One example of how implementing QM standards in a course design affected student learning is demonstrated by Swan et al. [2012]. The authors demonstrate that the revision of a course based on

QM standards improved average student grades from 90 percent to 93 percent. [Swan, Matthews, Bogle, Boles, and Day, 2012] Another benefit for students is that they can use the knowledge about course QM certification in the selection process of courses.

4. QM STANDARD 5, “LEARNING ACTIVITIES AND LEARNER INTERACTION”

This section explains in more detail the requirements for standard 5 of the QM rubric. In addition, various specific tools are presented that help create effective course activities and learner interaction.

4a. Definition of Standard 5

Standard 5 of the QM rubric requires that course activities facilitate and support learner interaction and engagement. Course components promoting active learning will contribute to the learning process and, ultimately, to learner perseverance. In addition, the learning activities should promote the achievement of the learning objectives. How much students take away from a course will depend upon how much they have engaged in the course.

There are three main types of student engagement: (1) student-content, (2) student-student, and (3) student-instructor. In student-content engagement, course goals, activities, assignments, and assessments should motivate students to take on learning challenges. Examples include students engaging in the content of the course by reading, watching videos, researching, reflecting, exploring, and completing assignments. In student-student engagement (also called learner-to-learner engagement), students are establishing themselves with other students and trust is built [Stavredes, 2011]. When trust is established, students feel comfortable sharing thoughts and ideas. As interaction increases, a greater sense of community is built in the course. Here, students can engage with each other in group work/collaboration, class discussions, peer reviews, and information exchanges via chats and emails. Student-to-instructor engagement is crucial for learner satisfaction and lack thereof can have a negative impact on learner persistence in the course. The instructor can engage students through discussions, individual communications, online office hours, and personalized feedback on assignments.

4b. Specific Examples for Meeting Standard 5

The following specific tools show how course content can be added or modified in order to meet the four specific standards that make up standard 5:

4b.1. The Learning Activities Promote the Achievement of the Stated Learning Objectives or Competencies

Course learning activities should align with objectives of the course and engage students with the content of the course. In addition, the learning activities should be varied to provide mastery and reinforcement to accommodate different learning styles.

Examples of activities that promote the learning objective goals include exams, papers, projects, student presentations, class discussions, learning portfolios, case studies, role playing, and practice quizzes. To illustrate, students in an undergraduate business law class are given a court case on a topic discussed in the lecture and then asked to be the judge and decide the case.

Small group discussions are collaborative tools to engage students with the course content. Breaking the class into groups each week and providing, for example, a current event for discussion makes the grading reasonable for the instructor but also typically provides for a more in-depth discussion. It is recommended that the instructor change the groups each week so that students can work with other classmates and get different perspectives.

4b.2. Learning Activities Provide Opportunities for Interaction That Support Active Learning

To meet this standard, assignments should create interactions with the content, instructor, classmates, and technology [Quality Matters, 2018]. In addition, the interactions must be purposeful. For example, in one of the author's business law courses, an objective is to "evaluate the eminent domain process as interpreted by the U.S. Supreme Court." Taking this learning objective, the author asks students to research and read the eminent domain case of *Kelo v. City of New London*, (<https://www.law.cornell.edu/supct/html/04-108.ZS.html>), which was decided by the U.S. Supreme Court. After reading the case, the students are asked to answer questions regarding the case, whether they agree with the outcome of the U.S. Supreme Court, and what events have taken place in the United States since the decision.

Using video or audio, such as Camtasia and YouTube, to deliver course content facilitates active learning. Social presence can be encouraged via conversations, debates, and orientation activities. For instance, in one of the author's courses, as an introduction to the instructor and classmates, the students are asked to post a picture of what the law means to them, along with a brief description for the instructor and classmates to read.

Additional examples of activities that support active learning include kahoot.com (a free online game platform to create quizzes, polls, and discussions), Quizlet (flashcards and diagrams), Jeopardylabs.com (an online version of the *Jeopardy!* game), Mindomo (concept mapping), blogs and Twitter (for informa-

tion sharing), Google Hangouts (for Web-based meetings), and Google Docs (for file sharing).

4b.3. The Instructor's Plan for Classroom Response Time and Feedback on Assignments Is Clearly Stated

A clear plan for instructor response time should be stated clearly in the syllabus and the course homepage. A "Response Time" section example is as follows:

"I generally reply to email within 48 hours, except during holidays. Often, I will reply in less than 48 hours; however, due to my teaching schedule and university committee meetings, please don't count on a same-day reply. Please plan accordingly so you don't miss a deadline."

For assignments, a suggested example for the syllabus is as follows:

"I generally return assignments within one week of a discussion board due date or closing of an assignment. If you would like to chat or get help on an assignment ahead of the deadline, please email me. I am happy to help." It is also recommended that a "How to Contact Me" section is included in the syllabus and the course homepage. For example, "The best methods of contacting me are through the mail feature in Canvas, sending me an email directly, or calling my office. Please feel free to stop by my office during office hours, which are posted on the syllabus and Canvas. My contact information is as follows. . ."

The instructor may also want to consider adding a frequently asked questions discussion board for students. Not only can this reduce the number of emails sent to the instructor from students asking the same questions, it also encourages student-to-student interaction as students answer posts from their fellow classmates.

4b.4. The Requirements for Learner Interaction Are Clearly Stated

To help students plan and manage the class, it is important for instructors to provide a clear explanation of the requirements for learner interaction. This promotes learners' active involvement in the course and provides a basis for instructor evaluation of students. Clearly and specifically explaining the expectations for interaction within the course will make it easier for the student to meet the instructor's expectations. For example, the instructor can provide the students with a rubric (length, timeliness, quality of post) setting forth how a discussion board will be graded (see http://www.teach-nology.com/web_tools/rubrics/ for a free rubric-making resource). An example rubric for a discussion forum is provided in Figure 1. Instructors should keep rubrics simple to avoid any ambiguity and excessive time requirements in grading the assignment.

Rubrics help the instructor determine if the students are achieving the stated course objectives and provide for a consistent grading method.

Figure 1. Example Discussion Forum Rubric

<i>Discussion Measurement</i>	<i>Points Possible</i>	<i>Points Earned</i>
<i>Postings are on point and clearly written for the class to follow and understand.</i>	<i>2</i>	
<i>Postings advance the subject matter (a student can state "good idea" or "I agree" to another student's post but must provide additional, supporting comments).</i>	<i>2</i>	
<i>Postings reflect that the student is reading other student postings/discussions and class readings/assignments.</i>	<i>1</i>	
<i>Student missed both the Wednesday and Sunday deadline.</i>	<i>0</i>	

If the students are to respond to other students, specific information should be given on the timing of the response and quality of the response. Clear and specific requirements for interaction allow students to plan their time and manage class participation.

5. QM STANDARD 8, “ACCESSIBILITY AND USABILITY”

Many resources exist relating to accessibility standards. Ozdemir, Preast, and Duffy [2018], for example, describe a systematic, team-based approach to assuring proper accessibility and usability and give some examples of how a selected online course can be improved. Another resource is a study by Dell [2015], which offers helpful accessibility guidelines. This section, however, presents tools that are more specific and gives comprehensive and detailed explanations of how they are used in the context of QM certification. QM integrates accessibility and usability guidelines in its rubric through standard 8. QM has long recognized that accessibility not only takes an important place in online design but that its importance is growing. Consequently, QM has added one “essential” standard to the group of specific standards related to accessibility in its 6th and latest edition of the rubric. As mentioned above, the need for accessible courses is increasing as the prevalence of students with disabilities is increasing. This section explains what is meant by meeting standard 8 of the QM rubric. Various tools will be highlighted that can be applied to cater to an audience of diverse students. Specifically, example statements and module content on how to improve accessibility are explained in detail, as well as guidelines on how to make Word documents, PDF files, PowerPoint (PP) files, and multimedia files more usable for a diverse group of students.

5a. Definition of Standard 8

Standard 8 of the QM rubric requires that a course is designed with a commitment to “accessibility and usability” for *all* learners. Accessibility is the degree to which a course and its associated content can be accessed by individuals of all types of backgrounds. In other words, all types of learners should be able to take the course. A course that is designed in such a way follows what is called “universal design of instruction” (UDI) or “universal design of learning” (UDL). The National Center on Universal Design for Learning defines UDL as a set of principles for curriculum development that give all individuals equal opportunities to learn [National Center on Universal Design for Learning, 2018]. This means that all course content, materials, activities, and technology should be accessible to learners with diverse backgrounds.

Oftentimes, the term “accessibility” is mentioned in the context of and associated with “students with disabilities.” Keeping students with disabilities in mind during course design is very important. For example, by law, course design has to be accessible to learners with disabilities under sections 504 and 508 of the Rehabilitation Act of 1973 [deMaine, 2014]. Specifically, section 504 of the Rehabilitation Act of 1973 requires that all public institutions be accessible to persons with disabilities. To meet this requirement, electronic media and websites should give students with disabilities an experience comparable to that of other students. To that end, the Worldwide Web Consortium (W3C) has created “Web Content Accessibility Guidelines” (WCAG 2.0, Level AA) for all electronic online content of websites [USF, 2017].

However, the term content “accessibility” should not only be associated with students with disabilities. Content “accessibility” actually refers to a much broader spectrum of learners. This idea is reflected in the QM standard 8 guidelines. In order to meet standard 8, the course has to offer easy navigation, provide information about the accessibility of all technologies, use alternative means to access materials, display a course design that is easy to read, and use multimedia that is accessible to all students.

5b. Specific Examples for Meeting Standard 8

The following specific tools show how course content can be added or modified in order to meet standard 8:

5b.1. Diversity Statement

Accessibility refers to a diverse set of backgrounds and types of characteristics a student can have. These include a disability (physical or mental, such as attention-deficit disorder [DD], autism, Asperger syndrome, etc.), learning style, age, language, culture, career type, and family. All course content should be designed with these characteristics in mind. In addition, to show a commitment to

diversity and to establish a feeling of trust among students, the instructor may include a statement on his/her syllabus that encourages students to embrace diversity among fellow classmates.

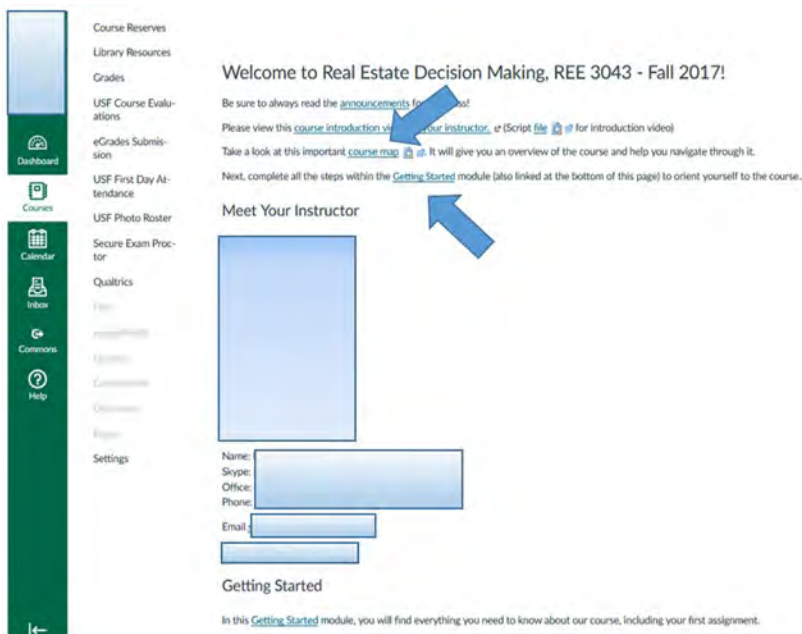
This is a diversity statement example:

“I want to acknowledge the richness of the commonalities and differences we all share as a learning community at ___University and in this course. Because a course environment in which we create respect for and appreciate all course participants—regardless of their unique characteristics and backgrounds—is strongly encouraged, any statements or actions that are contrary to this philosophy do not have any place in this class.”

5b.2. “Course Map”

The next example tool of meeting standard 8 relates to usability, or the student’s ability to interact with and access course content. The main learning management systems (LMS), including as Canvas, Blackboard, and Moodle, are based on a modular design. This helps with ease of navigation. On the home page (see Figure 2), a welcome statement, instructor information, and a “getting started” link should be provided, along with a “course map” that explains how the

Figure 2. Sample Homepage Showing a Link to Both a Course Map and a “Getting Started” Module



students can navigate through the course and where students can find which type of information.

5b.3. Accessibility Statement

As mentioned previously, Section 504 of the Rehabilitation Act of 1973 requires that all public institutions be accessible to persons with disabilities [DeMaine, 2014]. A teaching organization therefore has the legal obligation to not discriminate against people on the basis of their disability. To be in compliance with this law, the instructor has to provide a link to the LMS's accessibility statement. This statement is important for students with disabilities, as it explains how they can access the information posted on the LMS. For example, Canvas has an accessibility statement page (<https://www.canvaslms.com/accessibility>) that includes the following statement: "All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes. . . Instructure strives to ensure that all of Canvas is accessible without the use of a mouse." This functionality is important for students with physical disabilities. Canvas also "provides text descriptions, labels, etc., for images, form elements, and other items that blind and visually impaired users might find difficult to understand and/or use. In addition, Canvas allows course creators to add alternative text to content areas, such as adding alternative (alt) text attributes to images and captions to tables" (<https://www.canvaslms.com/accessibility>).

The instructor also has to keep in mind that links to the accessibility statements for other technologies used have to be posted as well. For example, if a quiz/assignment program that is designed by a publisher is used (for example, Connect by McGraw Hill or WileyPLUS by Wiley), a link to the accessibility statement from the publisher needs to be posted on the course website. One example of an important feature that quiz/assignment software has to have is flexibility with regards to time restrictions. Often, students with disabilities require additional time for the completion of exams, quizzes and homework assignments. The instructor has to be able to extend time limits set for students who require extra time.

5b.4. Alternative Means To Access Materials

This standard requires that when materials are posted, they are posted in different modalities so that students with different learning styles can benefit and experience a positive learning experience. As an example, in a typical chapter lecture in a Principles of Finance course, one of the authors provides the following instructional materials. First, the student is instructed to read the chapter in the book, and then to watch Camtasia-recorded screen capture videos, which are basically narrated PowerPoint presentations teaching the student the basics of a finance topic. The link to the video is provided (note: the video includes closed captioning (CC), which the student can turn off or on). The student can also

control the video, which means the video can be stopped, started, fast-forwarded, and rewind. The video is broken down into shorter videos of no more than a maximum of 15 minutes each. The reduced attention span of today's learners is a major challenge that teachers face. For example, in a survey conducted by Dearborn Real Estate Education (Dearborn) on online real estate schools, the findings suggest that a shrinking student attention span is among the top 8 most important challenges online real estate schools face in the future [Dearborn, 2017]. The corresponding PowerPoint files and transcript files in PDF format are also posted for students to download and take notes on. If the lecture materials contain Excel tutorial screen capture videos that show how financial functions are performed in Excel, both a link to the tutorial lecture videos (with CC) and the Excel file are provided.

5b.5. Word Doc Files

Generally speaking, it is not advisable to post Word doc files, unless there are special circumstances that make the use of Word doc files necessary. If Word doc files are used, they have to be designed so that “assistive technology” (such as screen readers) can easily read and properly convey the content. Issues with accessibility within a Word doc can be identified through the software's built-in Accessibility Checker.³ Accessibility Checker classifies issues as:

Error: content that makes a file very difficult or impossible for people with disabilities to understand.

Warning: content that in most, but not all, cases makes a file difficult for people with disabilities to understand.

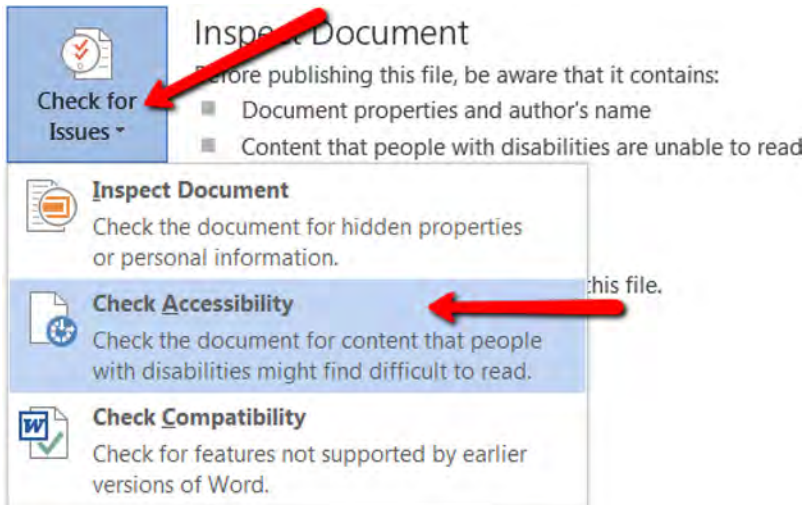
Tip: content that people with disabilities can understand but that might be better organized or presented in a way that would maximize their experience.

Accessibility Checker can be accessed as follows:

1. Select “File” from the main menu;
2. Select “Info;”
3. Under “Inspect Document” (see Figure 3), select “Check for Issues” (see Figure 3);
4. Select “Check Accessibility;”
5. Word automatically checks the document and opens the “Accessibility Checker” pane (see Figure 3);
6. The results will be listed in the task pane;
7. Here, a specific issue can be selected to see “Additional Information” (“Why to Fix and How to Fix”); and
8. Steps can now be followed to fix or revise the content.

³The accessibility feature is only available in the Windows versions of Word from 2010 and up.

Figure 3. Accessibility Checker in Word. Once “File” and “Info” are selected in Word, these selections occur. Click on “Check Accessibility” to open up the accessibility pane and find any issues in the document



Specific items that the course designer has to pay attention to in order to make a Word doc more accessible are text colors, style, and size. When formatting text, especially when the text is likely to be printed, try to:

- Use styles that are simple (use only one or two different font styles);
- Avoid too many and confusing colors. Remember that some students may be color blind;
- Use font sizes between 12 and 18 points for body text;
- Use fonts of normal weight, rather than bold or lightweight fonts. Only use bold fonts for emphasis, and use them sparingly;
- Use standard fonts. Sans serif fonts (e.g. Arial, Verdana) are easier to read than serif fonts (e.g. Times New Roman, Garamond);
- Use all capitals only sparingly, as uppercase and lowercase letters are easier to read;
- Use normal or expanded character spacing, rather than condensed spacing;
- Avoid animated or scrolling text; and
- Avoid using “return” to make space; instead use the “paragraph spacing” function in Word.

The use of Word “styles” and, in particular, “heading styles,” is recommended to identify headings in texts, which makes the text more straightforward to understand. Besides helping screen readers comprehend the content, heading

styles also help create an “automated table of content” (TOC) in lengthy documents. TOCs help students navigate more easily through lengthy texts.

When using headings, it is recommended to:

- Use the default headings styles provided (“Heading 1,” “Heading 2,” etc.);
- Not skip heading levels; and
- Use “Heading 1” only once in the document for the title.

To apply headings using “Styles”:

1. Select the text you want to be a heading; and
2. In the “Styles” section on the “Home” ribbon, select the appropriate heading level.

Note that to change the font and formatting of the individual styles, click the Styles fly-out (see Figure 4). This will open the Styles dialog box. Here, click on the “Manage Styles” icon (see Figure 5). Once you have changed the font, make sure you click on “New documents based on this template” to save this style in the Word template and keep it for future documents that are created.

Whenever images are inserted into a document, it is important to add a description for the image that can be read by screen readers, called an “alternative text.” This is different from a caption, as a caption is visible to all readers. Writing the appropriate alternative (alt) text can be difficult. Since a learner with a vision impairment may not be able to see the image, the teacher should ask the question, “What content am I trying to provide to the learner?” If the image is not used to provide any particular content or a function, then the alternative text can be left blank. Alternative text should be concise, and usually contains only one or two sentences at the most. If a longer description is required (e.g., for a chart or graph), provide a short description in the alternative text title and more detail in the description.

To add alternative text to images and graphical objects:

1. Right-click the image or object;
2. Select “Format Picture” (see Figure 6);
3. Select the “Layout and Properties” button; and
4. Fill in the “title” and the “description,” if needed.

Figure 4. Styles Section. It is best to use “heading styles” for headings, which can be selected in the “Styles” section under the “Home” ribbon



Figure 5. Styles Dialog Box. The “Manage Styles” icon in the Styles dialog box can be used to change the font and format of a style

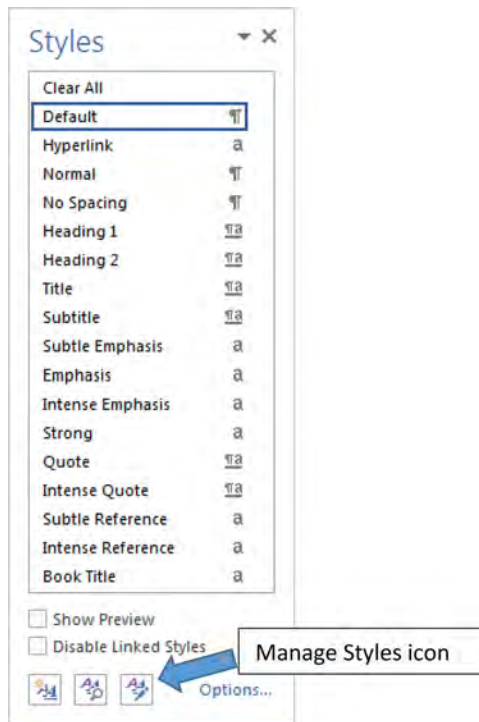
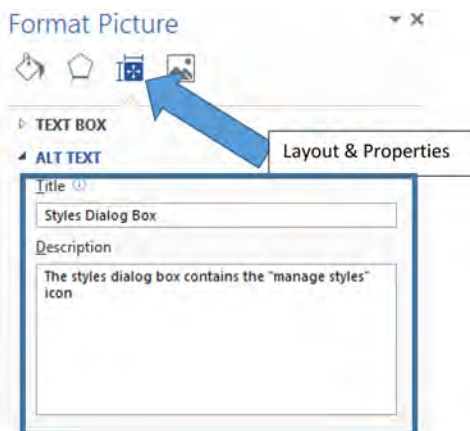


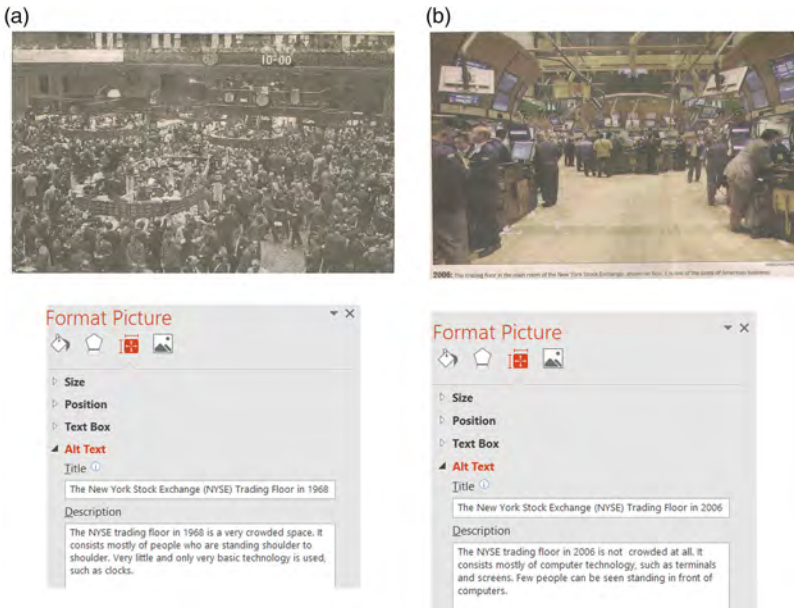
Figure 6. Format Picture Pane. In the “Layout and Properties” button of the Format Picture pane, under “alt text,” a title and description can be added.



In the Principles of Finance course, one of the authors uses pictures that compare the New York Stock Exchange (“NYSE”) trading floor in 1968 and 2006 to show the learner that progress in technology has dramatically changed the workings and look of the trading floor. Figure 7a shows the alt text information (title and description) for the picture displaying the NYSE trading floor in 1968. The important information that is conveyed to the learner is that, at the time, very little technology was used on the trading floors, while most activities occurred through human face-to-face interaction. In contrast, Figure 7b shows the alt text information for the picture of the trading floor in 2006. The emphasis in this description is on how the NYSE trading floor in 2006 differs from the one in 1968.

When inserting tables in Word, the instructor has to keep in mind that screen readers have to convey the information in a meaningful way. Therefore, when inserting tables, it is important to ensure they are clear and have the correct

Figure 7. (a) An example picture using alt text, The NYSE Trading Floor in 1968 (Source: Sarasota Herald Tribune, 18 February 2007, p. D1). (b) An example picture using alt text, The NYSE Trading Floor in 2006 (Source: Sarasota Herald Tribune, 18 February 2007, Page D1). In this example, the alt text “Title” and “Description” are added to describe to the student the important information that can be inferred from the picture. Here, the New York Stock Exchange (NYSE) trading floor is described in two different years. The instructor should ask him/herself, “Which content am I trying to convey to the learner?”



structure. Tables should only be used for data, not for formatting the page (e.g., into columns). The “Insert” and “Table” tools should be used to create a table; the tab key or the space bar should not be used to create a table, as these will not be recognized by assistive technology. Tables are best kept simple by avoiding merged cells. Also, complex data sets can be divided into separate smaller tables whenever possible. The header should show at the top of each page, and the table should break between rows instead of in the middle of a row (or, in other words, everything in each row should be on the same page). A caption for the table should explain what the data represents. Just like images, tables require alternative text.

To add a table with headings that repeat the header row and which shows everything in each row on the same page, do the following:

1. On the “Insert” ribbon, select “Table” and “Insert Table;”
2. Select the number of rows and columns you need for your table and click OK;
3. Then click on a cell within the table and the “Table Tools” menus will be highlighted;
4. Select the “Layout” menu (see Figure 8);
5. Highlight the first row of the table;
6. Select the “Repeat Header Rows” button under “Data” area;
7. Select all rows, and deselect “Allow row to break across pages,” under Properties in the “Layout” menu (see Figure 9).

When adding hyperlinks, it is important to recognize that screen readers only read the title of the hyperlink. Therefore, when adding a hyperlink, the “text to display” is not the hyperlink itself but a unique contextual name, such as the name of the website. For example, the link <https://finance.yahoo.com/quote/ibm?p=ibm>

Figure 8. The layout menu of the “Table Tools” Ribbon: Repeat Header Row. In the layout menu of “Table Tools,” it is important to select “Repeat Header Rows,” or the content of the table will not be conveyed in a meaningful way by a screen reader.

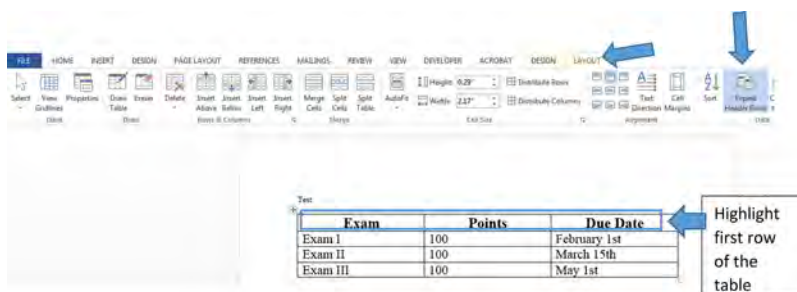
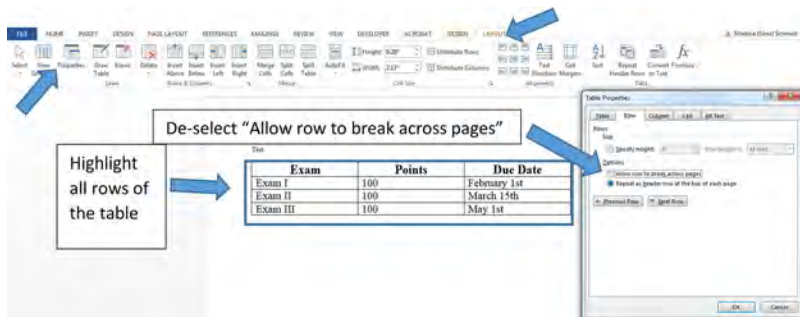


Figure 9. The layout menu of the “Table Tools” Ribbon: Properties. In the layout menu of “Table Tools,” under “Properties,” it is important to deselect “Allow row to break across pages,” or the content of the table will not be conveyed in a meaningful way by a screen reader.



should go into the hyperlink box, but the name of the link should be: “IBM stock quote in Yahoo” (see Figure 10).

To add a hyperlink, follow these steps:

1. Select the text in your document that you want to link and right click;
2. This opens up a window, where you select “Hyperlink;”
3. Once the “Hyperlink” panel opens up, enter a unique contextual name next to “Text to display;” and
4. Under “Address;” add the complete website address.

5b.6. PDF Files

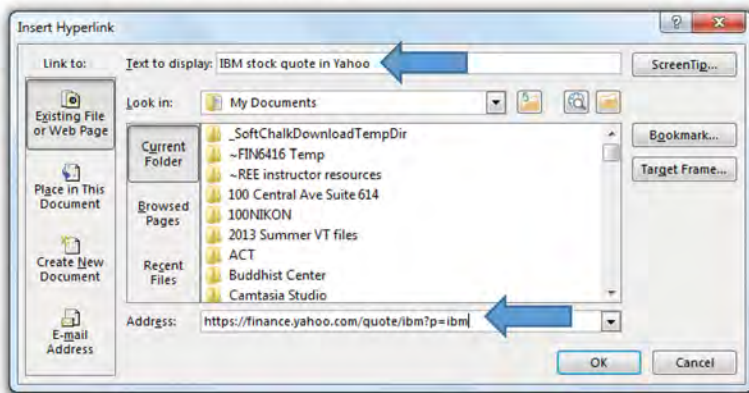
Accessible PDF files use “tags” to provide a hidden structured, textual representation of the PDF content that is presented to screen readers. The tags exist for accessibility purposes only and have no visible effect on the PDF file [WEBAim.org, 2018]. HTML and PDF tags often use similar tag names, but they are quite different. Just like HTML, creating PDF tags can be very challenging for the novice. Therefore, it is much easier to create an accessible Word doc file first and convert it into a PDF file, as opposed to trying to create or edit a PDF file to make it accessible. Therefore, PDF documents are often not created in Acrobat, but are first created in Word and then converted into a PDF file. Ideally, in order to create an accessible PDF file, an accessible Word doc is created first that works for screen readers and contains no errors under the Accessibility Checker. The Word doc is then saved as a PDF file (see Figure 11). It is noteworthy that creating PDF files by using the “Print” tool in Word *is not* recommended, as the accessibility features are lost.

As mentioned above, it is generally better to convert Word doc files into PDF format before posting them for students. PDF files have two main advantages.

Figure 10. Adding a Hyperlink in Word. To add a hyperlink, select the text to be linked, right-click to select “Hyperlink,” and add the “Text to display” and the “Address” of the website. The link will be indicated by a blue underline. The screen reader will only read the “Text to display.”



Take a look at this IBM stock quote in Yahoo.



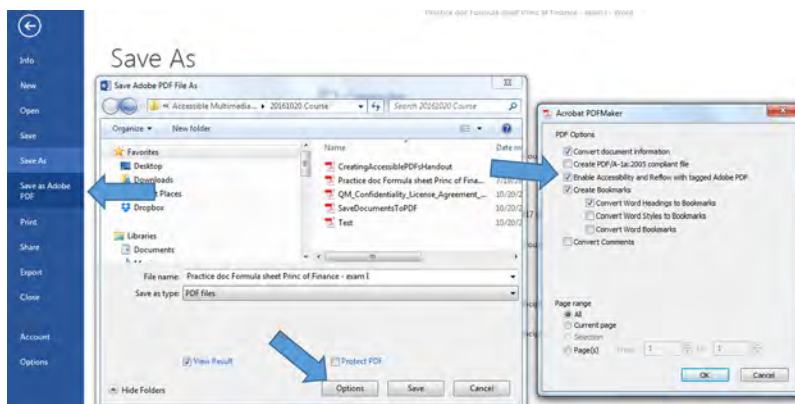
The result:

Take a look at this [IBM stock quote in Yahoo](https://finance.yahoo.com/quote/ibm?p=ibm).

Posting PDF files helps to avoid plagiarism and compatibility issues across different software versions or operating systems. For example, when one of the authors used to post the lecture transcript files in Word doc format, some students actually copied and pasted text from these transcript files into exam files containing essay questions that covered information from the lectures. Also, one of the authors used to post the formula sheets that students can use in a Principles of Finance course for exams in Word doc format. When these were printed by some students who use Apple computers, the “time value of money formulas” were often missing all together, distorted, or missing subscripts and superscripts (see Figure 12).

Adobe Acrobat also contains an Accessibility Checker (see Figure 13); however, it is not fully available with the free and non-Pro versions of Adobe

Figure 11. Creating an Accessible PDF File From a Word File. To make sure that an accessible PDF file is created from a Word file, the option “Enable Accessibility and Reflow with tagged Adobe PDF” has to be selected. This option can be found under File, Save as Adobe PDF, Options.



Acrobat. Just like Word files, PDF files should be checked for their degree of accessibility.

Once a full accessibility check is performed by Acrobat, the results will display on the left side of the screen. The instructor can then fix any errors within Acrobat. A typical error that occurs is that the document name is displayed as the document title. This means that a screen reader may not correctly identify the document title. In order to correct this error, change the following setting:

1. Select “File” from the main menu;
2. Then select “Properties” from the dropdown;
3. Select the “Initial View” tab (see Figure 14); and
4. Make sure that “Document Title” is selected next to “Show” under “Window Options.”

5b.7. PowerPoint Files

Some of the basics of creating accessible PowerPoint files include creating text with a minimum font size of 18 pt, using a font that is easy to read, and using alt text not only for images but also for shapes, charts, tables, and SmartArt. Creating accessible PowerPoints is easier when using a Microsoft predesigned PowerPoint template and/or “inserting” a new slide. The predesigned formats for slides that are available in PowerPoint specify the headings and main text on each slide. To insert a new slide into an existing PowerPoint presentation,

Figure 12. Financial Formulas in PC- vs. Apple-created Word Documents. The first image shows financial formulas created in a Word doc file and then printed from a PC. The second image shows the same formulas in the same file but printed from an Apple computer. The Apple computer does not correctly print the formulas. Instructors are therefore encouraged to create PDF files from Word files to avoid such incompatibilities.

IV. TIME VALUE OF MONEY CALCULATIONS

Symbols
 PV = present value
 FV_t = future value at time t
 r = interest rate, rate of return, or discount rate per period
 t = number of periods
 C = constant cash amount (Note: C starts at one period from today)

Future value formula **Present value formula**
 $FV_t = PV \times (1+r)^t$ $PV = FV_t / (1+r)^t$

Present value of annuity formula **Future value of annuity formula**

$$PV = \frac{C}{r} \left[1 - \frac{1}{(1+r)^t} \right]$$

←

→

$$FV_t = \frac{C}{r} [(1+r)^t - 1]$$

IV. TIME VALUE OF MONEY CALCULATIONS

Symbols
 PV = present value
 FV_t = future value at time t
 r = interest rate, rate of return, or discount rate per period
 t = number of periods
 C = constant cash amount (Note: C starts at one period from today)

Future value formula **Present value formula**
 $FV_t = PV \times (1+r)$ EMBED Equation.2 $PV = FV_t / (1+r)$

EMBED Equation.2

Present value of annuity formula **Future value of annuity formula**
 $PV =$ EMBED Equation.2 $FV_t =$ EMBED Equation.2

1. Select the “Home” ribbon from the main menu (see Figure 15);
2. Under the “Slides” section, select “New Slide;” and
3. Select the appropriate slide format from the dropdown list.

However, even when using predesigned slides, it is still possible to create slides in which a screen reader may have difficulty in properly conveying the shown information. The use of PowerPoint’s Accessibility Checker is, therefore, highly recommended. With the help of this checker, any issues can be identified and resolved.

To open the accessibility checker:

1. Select “File” from the main menu;

Figure 13. How to Access the Acrobat Accessibility Checker. To access the Accessibility Checker, select View, Tools, Accessibility, and Full Check. Any errors can now be corrected.

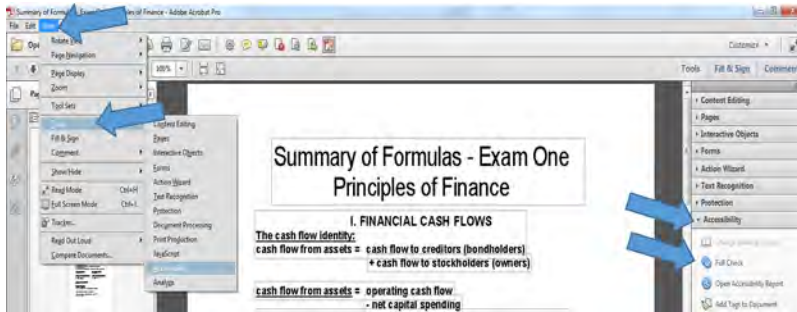
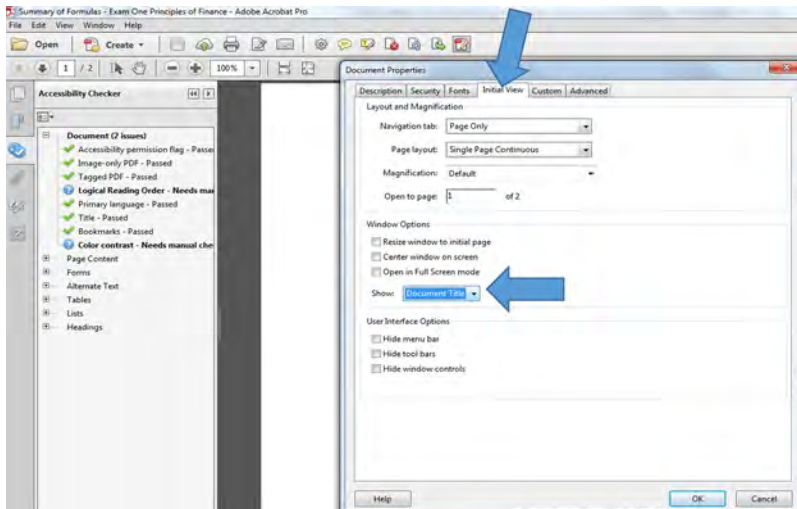


Figure 14. How to Change the “Show Document Title” Property in Acrobat. In order to avoid a screen reader identifying the document name as the title, go to File, Properties, Initial View, and select “Document Title” next to “Show.”



2. Select “Info” (see Figure 16); and
3. Under the “Check for Issues” dropdown list, select “Check Accessibility.” This opens up the checker on the right side of the screen.

The checker reports any errors (such as a missing slide title or a missing alt text for an image), any warnings (such as an unclear hyperlink text), and tips (such

Figure 15. Creating an Accessible PowerPoint (PP) File. An easy way to create an accessible PP file is to use a Microsoft template and to add a new slide by going to the Home ribbon and selecting one of the predesigned slide formats.

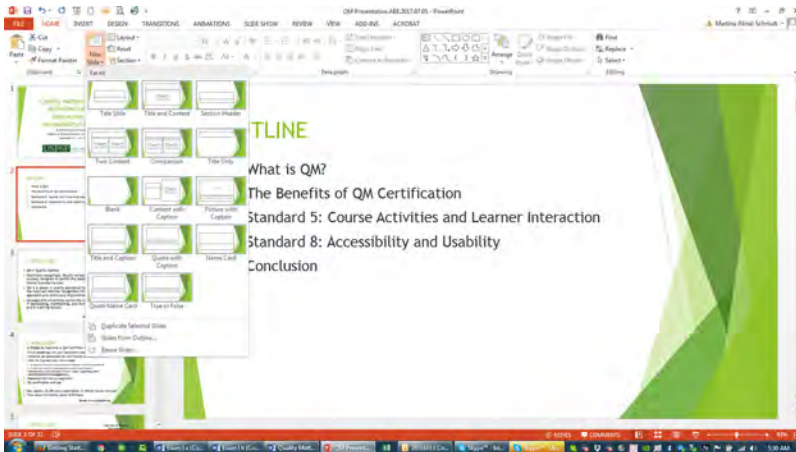


Figure 16. How to Access the PowerPoint Accessibility Checker. To access the Accessibility Checker in PP, select File, Info, Check for Issues, and Check Accessibility.



as the recommendation to change the reading order). For example, it can be quite surprising to see the reading order of the different elements on slides. The order of text can be easily arranged by going to the “Home” ribbon, selecting “Arrange”

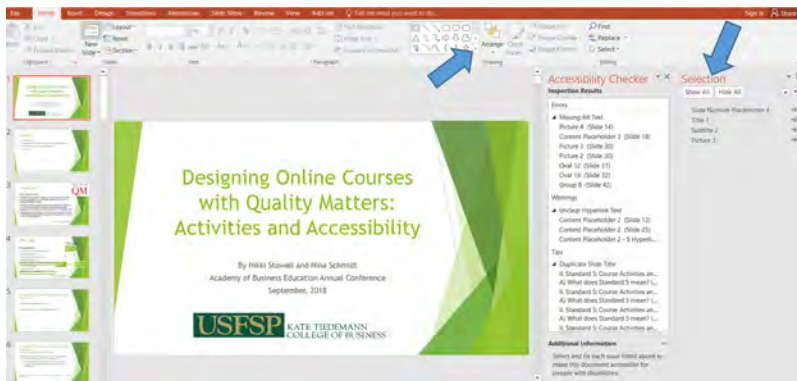
under the “Drawing” section, and selecting the “Selection Pane” (see Figure 17). In the Selection Pane, the different items can be moved around to create a more meaningful order.

5b.8. Multimedia Files

Multimedia refers to the simultaneous use of text, sounds, video, slideshow, animation, and images when conveying content in a course. Multimedia content can be a fun and effective way to convey information and improve the learning experience for students. With increased exposure to social media, students need to be exposed to multimedia content in order to hold their attention. However, creating accessible multimedia content can be time consuming and challenging. When using multimedia content, the instructor should keep accessibility rules in mind. Mayer [2009] lists some excellent principles of multimedia learning. The following list includes some basic design rules:

- The content illustrates ideas without causing distraction. If graphics or sounds are not adding to the understanding of the material, they should be avoided. For example, any background noises in a video recording should be eliminated.
- Use conversational style. While the instructor should talk slowly, the text should still flow, and the tone should be similar to a conversation.
- Videos should be short. Especially in today’s world of technology use, students have ever-decreasing attention spans and lose concentration

Figure 17. How to Correct Errors in the PowerPoint Accessibility Checker. The accessibility checker records errors, warnings, and tips. Any issues can be corrected here. For example, under “Arrange” in the “Home” Ribbon, in the “Selection Pane” the order of display of different parts of the slide can be easily changed.



quickly. Ideally, videos should only be a couple of minutes long. This is based on Mayer's "segmenting" principle [Mayer, 2009].

- Videos should be controlled. The student should be able to pause, rewind, or fast-forward videos. This is also based on Mayer's "segmenting" principle.
- According to Mayer's "spatial contiguity principle" [Mayer, 2009], corresponding words and pictures should be presented near rather than far from each other on the page or screen.
- According to Mayer's "temporal contiguity principle" [Mayer, 2009], corresponding words and pictures should be presented simultaneously rather than successively.
- In order to be compliant with section 504 of the Rehabilitation Act of 1973, all video lectures should include closed captioning (CC). CC is the process of displaying text with the purpose of describing all significant audio content. YouTube videos, for example, include automatic CC; however, just because a video includes CC does not mean it is necessarily compliant with section 504. In fact, the automatic CC used by YouTube often results in errors. Example programs that can alternatively be used to create CC are Amara and Camtasia. The following list includes some of the CC principles that should be followed when creating CC:
 - A larger font should be used so that the CC can be easily read, even by students with a vision impairment.
 - Two (2) to three (3) lines should be used at a maximum to make it easy for students to read the text.
 - The written word needs to be synchronized with the audio.
 - If sound effects occur in the audio, they need to also be described in the CC.
 - Italics are used for words that are emphasized.
 - If more than one speaker occurs in the audio, each speaker should be identified.
 - Many sources for multimedia content exist. For example, existing multimedia content can be found on websites, such as Merlot (<https://www.merlot.org/merlot/index.htm>), Internet Archive (<https://archive.org/index.php>), or YouTube (<https://www.youtube.com/>). Websites that not only contain existing content or content templates but also have the capability for video creation are Powtoon (<https://www.powtoon.com/edu-home/>) and Moovly (<https://www.moovly.com/>).

6. SUMMARY AND CONCLUSION

This paper highlighted basics of the QM program and the benefits of certifying courses through QM, which include quality assurance of the course, improved course design, national recognition, professional development for faculty,

new ideas for improving online courses, and increased student engagement. Ultimately, all stakeholders benefit from excellence in online design.

Two standards that are considered “essential” by QM are standard 5 on “Learning Activities and Learner Interaction” and standard 8 on “Accessibility and Usability.” This paper points out the importance of both standards, explains the basics behind them, and gives specific examples for how the instructor can ensure compliance with them and improve course quality.

Examples for standard 5 address course activities and learner interaction to support the stated learning objectives. Instructors should align learning activities with course objectives by including learning activities that actively engage the student with the content of the course. In addition, learning activities should be varied so that students can benefit from multiple ways of mastering the material.

Examples for standard 8 consist of the inclusion of a diversity statement, a course map and getting started module, an accessibility statement, a list of different ways to present the same content to accommodate students with different learning styles, and a description of how to make Word doc, PDF, PowerPoint, and multimedia files more accessible. For teachers, it is important to recognize that accessibility not only focuses on students with disabilities but also on students with diverse backgrounds.

In conclusion, the design of quality online courses can be complex and time consuming. While some design tools are difficult to learn and apply, others are quite simple and can easily be integrated. This paper presents several tools that can be integrated to improve online course design and, ideally, will create more awareness of student engagement and accessibility. As technologies and student characteristics constantly change, instructors of online courses should consider the design of a course as work in progress and continuously apply current design tools and best practices. Hopefully, this paper provides some food for thought and will motivate instructors to think of ways to improve their own course design.

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Do Instructor-Created Videos Improve Student Performance in the Introductory Accounting Course?

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Supplementary, educational videos are widely used in higher education; however, there is little evidence documenting their effect on student performance in the introductory financial accounting course. Moreover, there is no evidence regarding the differential effect of videos on the performance of achieving and low-achieving accounting students. In this paper, we address these two questions using a series of short, instructor-created videos embedded into the course management system (CMS) of an introductory financial accounting course. Our results show that supplementary videos do improve student performance and that greater improvement accrues to low-achieving students.

Keywords: Educational Videos, Student Performance, Low-Achieving Students

Disciplines of Interest: Accounting, Business

INTRODUCTION

An introductory financial accounting course is generally required of business and some nonbusiness students as part of their degree plan. The course is intended to equip students with the ability to understand and interpret accounting information in subsequent courses and careers [Warren and Young, 2012]. Yet, despite the fundamental content of the course, many students struggle with the analytical thinking process required of the discipline [Spiceland, Spiceland, and Schaeffer, 2015], and at some universities, as many as 35 to 45 percent either drop the classes or earn grades of C-minus or below [Doran, Bouillon, and Smith, 1991; Kealey, Holland, and Watson, 2005]. For some, this means changing majors and careers. For others, it means delaying graduation. The

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accounting academy, therefore, encourages educators to experiment with mechanisms for improving student performance in introductory courses [Pathways Commission, 2012].

Numerous course tools and technologies exist for enhancing the student experience, and many of these are adaptable to the introductory accounting course. In this paper, we focus on one popular technology—short, supplementary, instructor-created videos—to determine whether they improve student performance and, more specifically, whether they help low-achieving students gain a better understanding of core accounting concepts. We selected this learning supplement because prior research in analytical disciplines such as mathematics [Hegeman, 2015], engineering [Kinnari-Korpela, 2015], and chemistry [He, Swenson, and Lents, 2012] finds that instructor-created videos are effective at improving student performance. Additionally, research by Kolikant and Broza [2011] finds that short videos, when used in combination with other teaching interventions, are effective at helping low-achieving students understand mathematical concepts. We extend this line of inquiry by investigating the effect of short videos on the exam performance of achieving and low-achieving introductory accounting students.

We address our research questions by creating a series of short videos and embedding these in the course management system (CMS) of an introductory financial accounting course. Over the course of the semester, we encourage students to view the videos, but we provide no extrinsic reward or incentive for doing so and the content of the videos is similar to material covered in class.¹ The videos, however, offer several benefits documented in previous research. First, they are convenient in that they may be viewed at any time [Kinnari-Korpela, 2015]. Second, they are concise—no more than 20 minutes—and this allows for multiple, focused views [Duxbury, Gainor, and Trifts, 2016]. Third, they are recorded, which means they may be paused, repeated, or slowed [Chen and Wu, 2015]. Fourth, they are instructor-created and, as such, closely mirror the explanations provided in class [Hegeman, 2015].

Our results indicate that viewing the videos does improve performance, as measured by the change in scores between the first midterm exam and the cumulative final exam. We also find that greater improvement accrues to low-achieving students, defined as those with incoming GPAs in the lowest tercile.² Taken together, our results demonstrate that short, instructor-created videos are a valuable supplement to introductory financial accounting courses.

¹ No credit was provided for watching the videos because we wanted to ensure that the motivation for watching was to improve accounting knowledge, not simply earn course credit. Had credit been provided, some students, in an effort to earn credit, might have played the videos without actually watching them. This would have reduced the efficacy of the videos and diluted their effect on exam performance.

² Students in the lowest tercile had incoming GPAs of 2.75 or less; those in the middle tercile had incoming GPAs of 2.76 to 3.36; and those in the highest tercile had incoming GPAs of 3.67 or above.

The remainder of this paper is organized as follows. First, we review the literature and develop the hypotheses. Next, we explain the methodology and present the results. Finally, we provide some concluding remarks.

LITERATURE AND HYPOTHESES

For the past three decades, both the profession and joint practitioner-academic commissions have recommended changes in accounting education to reduce attrition and improve performance (e.g., AAA Committee on the Future Structure, Content, and Scope of Accounting Education, 1986; Arthur Andersen et al., 1989; Accounting Education Change Commission, 1990; Siegel and Sorensen, 1994; Carlozzi, 1998; AICPA, 1999, 2000, 2010; Albrecht and Sack, 2000; Bolt-Lee and Foster, 2003; Pathways Commission, 2012; Lawson et al., 2014). Most of these recommendations have called for greater focus on skills and technical competencies, as well as more integrative and active learning models.

In response to these calls, many accounting programs have redesigned their introductory accounting courses with the aim of improving retention and performance. Many have introduced event videos, adaptive learning software, in-class polling, interactive PowerPoint presentations, and/or interactive Excel spreadsheets [e.g. Holtzblatt and Tschakert, 2011; Phillips, 2015; Spiceland, Spiceland, and Schaeffer, 2015]. Yet, little empirical evidence exists regarding the impact of such learning technologies on student performance. In this paper, we investigate the effect of one of these learning technologies—short, supplementary, instructor-created videos—with the aim of providing empirical support for their use in introductory financial accounting courses.

The use of online video as a learning aid was first popularized in 2004, when Sal Khan recorded a video to help tutor his young cousin in math [Noer, 2012]. Today, Khan Academy delivers almost 7,000 video lectures to over 4.9 million YouTube subscribers [YouTube, 2018]. Khan's success has also inspired a rush of other online video education, including the CrashCourse channel, with over 9.6 million subscribers, and Vsauce, with over 14.6 million subscribers [YouTube, 2018].

The enormous popularity of educational videos has not gone unnoticed by university faculty. According to a survey by Pearson Learning Solutions and Babson College Survey Research Group, approximately 80 percent of faculty surveyed use some form of online videos in their classes [Moran, Seaman, and Tinti-Kane, 2011]. Most of these videos are clips prepared by publishers, the news media, and professional organizations. However, using simple tools such as PowerPoint, a touch-screen laptop, microphone, and stylus pen, any instructor can create their own educational videos.

Videos can be recorded in a number of different ways. One variation is lecture capture, which is a recording of the entire classroom session. Lecture

capture, however, suffers from two main weaknesses: it is generally too long and it lacks clearly identified learning goals [Settle, Dettori, and Davidson, 2011]. Far more popular than lecture capture are short, focused videos [Fish, Mun, and A’Jontue, 2016]. Typically, these videos supplement traditional face-to-face delivery, either by providing summaries of material covered previously or by adding additional material to broaden or deepen the student’s understanding. But, like all educational aids, the goal of supplemental videos is to gain students’ attention and move information into their working memory for later recall. As such, the power of supplementary videos resides primarily in their ability to reinforce ideas [e.g. Kozma, 1991].

Most studies of the use of supplementary videos report heightened satisfaction among students. For example, McElroy and Blount [2006] surveyed second-year accounting students and found that 75 percent agreed that videos enhanced their learning. But perceptions of enhanced learning are not necessarily indicative of improved academic performance. In a study of the usefulness of videos in flipped classrooms, Duxbury et al. [2016] found that, while a majority of their introductory accounting students felt that the video approach made learning easier, the approach did not significantly improve performance as measured by grades. Their results contrast sharply with those reported by researchers studying the effect of videos on learning by chemistry, engineering, and mathematics students [e.g. He, Swenson and Lents, 2012; Kinnari-Korpela, 2015; Hegeman, 2015]. In discussing their findings, Duxbury et al. [2016] noted that some of their videos were too long and that others were not clearly tied to key learning objectives. Based on student and instructor feedback, they consequently recommended the use of focused videos running between 15 and 20 minutes in length.

In sum, while prior research has studied the efficacy of videos, there has been no systematic study examining the effect of short, supplementary, instructor-created videos on accounting student performance. This is particularly surprising, given that many students must master introductory accounting concepts in order to succeed in college. Our aim in this paper, therefore, is to address this omission in the accounting education literature and provide empirical support for the use of supplementary videos. We posit that such videos will improve grade performance based on prior research showing the power of repetition for student learning [e.g. Clark, Lansford, and Dallenbach, 1960] and the ability of digital media to hold students’ attention and interest [e.g. Schmidt and Vandewater, 2008]. We also draw on the work of Kolikant and Broza [2011] regarding the efficacy of videos for low-achieving students and speculate that the benefits of videos will accrue more to low-achieving students than to other students. Our two research hypotheses are stated below.

H1: Viewing short, supplementary, instructor-created videos improves the exam scores of introductory financial accounting students.

H2: Viewing short, supplementary, instructor-created videos improves the exam scores of low-achieving students more than those of other students.

METHODOLOGY

Participants in our study were 826 students enrolled in three sections of an introductory financial accounting course.³ The financial accounting course is the first of a two-course sequence designed for freshman and sophomore students. The course is required of all business majors, as well as of many nonbusiness majors. All sections of the course were coordinated by the same instructor and were held on the campus of a large, public, doctoral degree-granting university having undergraduate enrollment of approximately 38,000 students and a diversity index of 0.74 (*U.S. News & World Report*, 2018).⁴ Students were provided with the textbook, publisher-created learning aids, and instructor-created lecture notes via the course CMS. They were also provided with supplementary instructor-created videos that were embedded into the CMS as material was covered in class. Although students were encouraged to view the videos, no reward or other inducement was given.

Over the duration of the semester, 10 videos were created to explain the following basic concepts: (1) the accounting equation and its expanded form; (2) debits, credits, journal entries, the general ledger, and the components of financial statements; (3) adjusting entries, closing entries, and the trial balance; (4) bank statement reconciliations; (5) accounts receivable and bad debts; (6) inventory; (7) fixed assets and depreciation; (8) short-term liabilities; (9) long-term liabilities, time value of money, and amortization of bond discount and premium; and (10) equities.

All videos were uploaded to the CMS shortly after the concepts were discussed in class. The length of each video ran between 15 and 20 minutes and included narration and handwriting in a style similar to that of an instructor giving a lecture while writing on a whiteboard. Although the recordings were prepared with a free PowerPoint add-on from Microsoft called Office Mix,⁵ similar results could have been obtained by using the slide show recording feature available in PowerPoint 2013 and higher. Alternatively, PowerPoint plug-ins such as Camtasia could have been used. Hardware requirements were minimal, as only a touch-screen laptop with a stylus pen and headset microphone were used. Average

³ Total enrollment at the beginning of the semester was 836 students. During the semester, 10 students withdrew from the course, 5 for academic reasons and 5 for medical reasons. Attrition, therefore, was less than 2 percent.

⁴ The diversity index of *U.S. News & World Report* ranges from 0 to 1, with 1 representing more diversity. For the 2016–2017 school year, the most diverse national university in the ranking had a diversity index of 0.75.

⁵ Shortly after we created our videos, Microsoft announced that it was making Office Mix part of PowerPoint, rather than a separate add-on.

creation time per video was generally less than two hours, including uploading to YouTube and linking to the CMS.⁶

The content of the videos was similar to material presented during class. Each video included a discussion of the learning objectives and step-by-step instructions on how to record certain financial transactions or perform various accounting calculations. Although no new material was introduced in the videos, each presentation was clearly narrated and legibly transcribed, without any of the distractions typically encountered in a large classroom or lecture hall. We chose instructor-created videos over those available from the publisher based on research showing that the former were preferred by freshman-level undergraduate students studying college mathematics [Hegeman, 2015].

The organization of each class meeting was similar. Typically, the instructor opened the class with a 10-minute recap of previous material. This was followed by the introduction of new material, examples, and workout exercises. To test student knowledge, several polling questions about the new and previously discussed material were asked.⁷ After class, students were expected to complete the assigned textbook reading and homework. The textbook for the course was McGraw-Hill's *Financial Accounting*, 4th ed. [Spiceland, Thomas, and Hermann, 2016]. Exam questions were drawn from the test banks provided by the publisher.

Because our research questions ask whether supplementary videos improve overall exam scores, as well as the scores of low-achieving students, our statistical analysis uses a two-way analysis of variance (ANOVA) with an interaction. The dependent variable is $\Delta Exam_Score$, which measures the difference between a student's scores on the cumulative final exam and the first midterm exam. The advantage of using a "change" measure as the dependent variable is that it allows each student to serve as his/her own control and, as such, it mitigates the role of unobservable factors that affect exam performance.

The explanatory variables in our analysis are *Video_Viewer* and *Low_Achiever*, as well as their interaction. Blackboard, the CMS at our university, records video viewing patterns when statistics tracking is enabled. Using this data, we created *Video_Viewer* as an indicator variable and coded it as 1 for a student who, after receiving feedback about performance on the first midterm exam, viewed two or more of the videos in the remaining weeks of the course.⁸ We chose to use an indicator variable over alternative measures of viewing habits because it is more representative of the relationship we are expecting to find—specifically, that improvements in exam performance accrue to students who supplement their learning by watching instructor-created videos. Using a continuous variable based on the number of videos viewed or the duration of each view

⁶ Alternatives to instructor-created videos are available from textbook publishers, on YouTube (e.g., Susan Crosson's Financial Accounting), and at educational websites (e.g., Larry Walther's www.principlesofaccounting.com and Daniel Dickson's www.freeaccountingschool.com).

⁷ Polling questions were conducted using TurningPoint Technologies' clickers.

⁸ Among the students viewing videos, none watched only one video. All viewers watched at least two videos.

Table 1. Descriptive Statistics^a

Statistic	Low-Achieving Students (Lowest GPA Tercile)	Mid-Achieving Students (Middle GPA Tercile)	High-Achieving Students (Highest GPA Tercile)
Mean incoming GPA	2.11	3.09	3.70
Range of incoming GPAs	2.00–2.75	2.76–3.36	3.37–4.00
Percentage viewing videos	40.29	47.39	52.67
First midterm exam score	20.07	21.90	24.53
Cumulative final exam score	28.46	30.67	36.01
Change in exam score for nonviewers	7.24	8.66	11.47
Change in exam score for video viewers	10.10	8.91	11.49
<i>N</i> (sample size)	278	268	281

^aThis table summarizes the incoming GPA and change in exam scores from the first midterm exam to the cumulative final exam for students in three sections of an introductory financial accounting course, classified into terciles based on incoming GPA.

would have been problematic for two reasons. First, it would have suggested a monotonic relation between viewing habits and improvements in exam performance—a relation that seems unlikely.⁹ Second, Blackboard does not track a student’s attention to a video. For example, some students viewed a particular video more than 15 times, and we are unable to ascertain whether these students experienced technical difficulties, interruptions, or other sources of attention interference. The use of an indicator variable alleviates these concerns.

Our second explanatory variable, *Low_Achiever*, is an indicator variable coded as 1 when a student’s incoming GPA falls in the lowest tercile of the total student GPA distribution (2.75 or lower). Grade point averages were calculated using a 5-point scale with A = 4 and F = 0). We chose to partition students on the basis of incoming GPA scores because we wanted a standardized metric of academic achievement that was unbiased by prior exposure to accounting concepts. We opted to classify students in the lowest third of the GPA distribution as low-achievers because prior work suggests that students in the tail of the normal grade distribution are the ones most in need of help [e.g. Doran et al., 1991]. Research also indicates that these students are more likely to drop out or take longer in completing their degrees [e.g. Duarte, Ramos-Pires, Goncalves, 2014]. The appendix provides a recap of the variable descriptions.

RESULTS

Table 1 presents the descriptive statistics of the students in our sample. Students with incoming GPAs in the lowest tercile (*Low_Achiever* = 1) had an average GPA of 2.11, which is almost a full letter grade below the average

⁹ For example, it seems unlikely that a student who views a video 10 times will exhibit a 10-fold improvement in exam performance relative to that of a student who views a video once.

Table 2. Effect of Video Viewing on Change in Exam Scores

Panel	Dependent Variable = $\Delta Exam_Score^b$					Error	Adjusted R^2
	df	Type III SS	Mean Square	F value	Significance		
Full panel (A)						821	0.075
<i>Low_Achiever</i>	2	1392.46	696.23	21.75	<0.0001		
<i>Video_Viewer</i>	1	220.76	220.76	6.90	0.0088		
<i>Low_Achiever</i> × <i>Video_Viewer</i>	2	335.78	167.89	5.24	0.0055		
Reduced panel (B)						542	0.030
<i>Low_Achiever</i>	1	1.71	1.71	0.05	0.8233		
<i>Video_Viewer</i>	1	321.86	321.86	9.42	0.0023		
<i>Low_Achiever</i> × <i>Video_Viewer</i>	1	227.92	227.92	6.67	0.0101		

^aThis table reports the results of 2×2 ANOVAs with main effects for *Low_Achiever* (students in the lowest tercile of incoming GPAs) and *Video_Viewer* (students viewing one or more supplementary, instructor-created videos after receiving feedback about performance on the first midterm exam) variables and their interaction. Panel A tests for the effect of video-viewing on $\Delta Exam_Score$ (change in exam scores) using the full sample (students in the lowest, middle, and highest terciles of incoming GPA). Panel B addresses concerns about a possible ceiling effect for students in the highest-GPA tercile by using a reduced sample that removes students in the highest GPA tercile and compares students in the lowest GPA tercile with those in the middle GPA tercile. Significance is based on two-sided tests. See the appendix for definition of the variables.

^bdf, degrees of freedom; SS, sum(s) of squares.

incoming GPA of students in the middle tercile (GPA of 3.09) and more than a full letter grade below the average incoming GPA of students in the highest tercile (GPA of 3.70). The change in exam scores from the first midterm exam to the cumulative final exam is, as expected, positively related to incoming GPA, with students in the highest GPA tercile exhibiting the greatest average increase. This result holds irrespective of whether these students viewed the supplementary videos (average increase in score of 11.49 points among those who viewed the videos and 11.47 points among those who did not). Likewise, the average increase in exam scores among students in the middle tercile was similar for both those who viewed the videos and those who did not (8.91 and 8.66 points, respectively). Among low-achieving students, however, the increase in exam scores is markedly different between those who viewed the videos and those who did not. Low-achieving students who viewed the videos exhibited an average increase in their final exam score of 10.10 points, while those who did not view the videos increased their final exam score, on average, by only 7.24 points.

Table 2 reports the results of two-way ANOVAs with *Low_Achiever* and *Video_Viewer* as the main effects, together with their interaction. The *F* statistic for *Low_Achiever* tests for the effect of incoming GPA on the change in exam scores after controlling for the effect of video viewing. The *F* statistic for *Video_Viewer* tests for the effect of viewing the supplementary videos on the

change in exam scores after controlling for the effect of incoming GPA. The *F* statistic for the interaction of *Low_Achiever* and *Video_Viewer* tests for the combined effect and indicates whether video viewing had a differential effect on the change in exam scores for low-achieving students as compared to other students.

As shown for panel A, Table 2, the main effects of *Low_Achiever* and *Video_Viewer* are significant, suggesting that both incoming GPA and video viewing impacted exam performance. The former result is not surprising, given that GPA is a standard measure of academic achievement. The latter result, however, suggests that when changes in exam scores are averaged over all students, those who viewed the supplementary videos exhibited larger increases in their exam scores relative to those who did not. This result supports H1. Also significant is the interaction of *Low_Achiever* and *Video_Viewer*, indicating that low-achieving students who watched the supplementary videos obtained a significantly larger increase in their exam scores than those who did not. This result supports H2.

One concern with the test reported for panel A of Table 2 is that students in the highest GPA tercile might have experienced a ceiling effect. Such an effect could arise because those who scored the maximum of 30 points on the first midterm exam could only increase their score by 20 points before reaching the maximum of 50 points on the cumulative final exam. Although few students achieved perfect 50-point scores on the cumulative final exam, we tested the robustness of our earlier finding by running a second ANOVA with a reduced sample that removed students in the highest GPA tercile. The ANOVA with this reduced sample tests for the effect of video viewing on the change in exam scores for students in the lowest and middle GPA terciles, none of whom obtained perfect scores on either of the two exams. We report the results of this test in panel B of Table 2.

As shown in panel B, the main effect of *Low_Achiever* is no longer significant. The lack of significance of this variable suggests that students in the lowest- and middle-GPA terciles exhibited similar changes in their exam scores between the first and final exams. The variable *Video_Viewer* and its interaction with *Low_Achiever*, however, remain significant. These findings again support H1 and H2 and indicate that supplementary videos are both an effective learning aid in introductory financial accounting courses and a valuable tool for helping low-achieving students realize their potential.

Another concern arises because three of the 11 videos were available to students before the first midterm exam, possibly affecting subsequent viewing habits and the change in scores between the first midterm exam and the final exam. Among low-achieving students, 16.19 percent watched one or more of the original three videos, and this percentage increased to 40.29 percent for videos after the first midterm exam. Similar increased viewing occurred among the other terciles: 18.28 percent of those in the moderately achieving tercile watched videos

prior to the first midterm exam, increasing to 47.39 percent after; 21.00 percent of those in the high-achieving tercile watched videos prior to the first midterm exam, increasing to 52.67 percent after. As expected, a chi-square test shows that there is an association between incoming GPA tercile and the proportion watching videos—the higher the incoming GPA tercile the greater the probability of watching videos. However, when we re-run our analyses and define *Video_Viewer* as 1 for a student who watched one or more of the original three videos (rather than using viewing that occurred after the first midterm exam) and zero otherwise, we find no significant relationship between watching versus not watching any of the initial three videos and the change in scores between the first and final exams. As such, it does not appear that our results are being driven by differences in the percentage watching the videos before and after the first midterm exam.

CONCLUSION

This paper addresses two questions. First, it asks whether short, supplementary, instructor-created videos improve overall accounting student performance. Second, it asks whether the benefit of such videos accrues more to low-achieving students than other students. We examine these questions within the context of an introductory financial accounting course—a class with broad enrollment and a variety of important accounting and business concepts.

We find that students who view supplementary videos show a significant and positive improvement in grade performance. We also find that this positive improvement is more pronounced among low-achieving students—a result that is robust even after controlling for a ceiling effect among high-achieving students.

The findings of this paper should be of interest to business school administrators and instructors who are faced with the task of improving graduation rates. Introductory accounting courses are often required of many students across a diverse range of majors. Yet, many of these students are poorly prepared for the analytical thinking required of the discipline [e.g. Kealey, Holland, and Watson, 2005]. Traditional methods of improving performance, such as tutoring, labs, and study sessions, are time consuming and expensive. This paper examines a low-cost alternative to these traditional methods and finds that short, supplementary instructor-created videos can improve exam performance in introductory financial accounting courses.

Because this study is exploratory in nature, it does not address why videos improve exam scores more for low-achieving students than others. The literature on this issue is sparse. In one of the few studies of the effect of videos on low-achieving students' academic performance, Kolikant and Broza [2011] found that math videos were effective only when they were context relevant and able to provide personal meaning to the struggling student. Related explanations, however, are also conceivable. Possibly, a greater number of these students are visual learners. Alternatively, some of these students may substitute videos for other

forms of study, such as participating in classroom exercises, reading the textbook, and working problems. For now, we leave the answer to this important question to future research.

Another limitation of our study is its failure to address whether videos increase the efficiency of students' study. During the semester, many high- and moderately achieving students commented on the usefulness of the videos in targeting their study and quickening the pace of their learning. Our study, however, does not measure this effect, focusing only on the change in exam scores. The study also does not examine effects related to students' video viewing habits or accounting background. For example, we do not address whether the frequency or duration of video viewing affects learning or exam performance. We also do not examine the effectiveness of supplementary videos in advanced accounting courses, where both the student audience and subject matter are more sophisticated. Our exploratory work in both of these areas suggests a more nuanced relationship than that examined in this paper, and we encourage future pedagogical research that investigates these and other related questions.

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APPENDIX: VARIABLE DESCRIPTIONS

Low_Achiever is an indicator variable equal to 1 if a student's incoming GPA (grade point average before any accounting courses, calculated using a 5-point scale where 4.0 = A) falls in the lowest tercile of the GPA distribution, and 0 otherwise.

Video_Viewer is an indicator variable equal to 1 if a student views one or more supplementary, instructor-created videos after receiving feedback about performance on the first midterm exam and before the cumulative final exam, and 0 otherwise.

$\Delta Exam_Score$ is the difference between a student's scores on the cumulative final exam (50 points possible) and the first midterm exam (30 points possible).

Using Student Drawings to Tap Students' Creative Thinking, Build Reflective Thinking, and Teach Targeting and Positioning

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This article describes a marketing education activity that is built on projective techniques similar to those that marketing researchers use to expose below-the-surface consumer motivations, beliefs, attitudes, and values. Through drawing pictures of typical customers of competing companies, students gain understanding of the subtleties and importance of targeting, branding, and strategic positioning. By engaging in the activity, students exercise important creative thinking and reflection skills. Students also grow to understand how research using this kind of a tool can be useful to marketers.

Keywords: Marketing, Activity, Segmentation, Targeting, Positioning

Disciplines of Interest: Marketing

INTRODUCTION

Effective segmenting, targeting, differentiating, and positioning are important to the strategic success of a company or organization, and establishing the appropriate brand position is a vital precedent to numerous marketing activities, such as development of communications, product modification, and brand extension. However, brand positioning is a component of marketing strategy that can challenge students, as they can be prone to underestimating the subtleties of different positioning strategies [Hooley et al., 2001]. Students often struggle to understand how companies that seem similar in terms of product offerings can be reaching quite different market segments. Also, students, like people in general, may be prone to viewing a product's customers in stereotypical ways [Munson and Spivey, 1981] that may not accurately reflect the customer target and company positioning.

The purpose of this article is to present an active learning-based approach to the teaching of segmentation, targeting, and brand positioning that requires students to exercise creative thinking and reflective thinking. More specifically,

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students are asked to draw pictures of customers of specific brands and then search for meaning in their own and classmates' drawings. While Bristow et al. [2013] have introduced an activity based on the concept of segmentation, the literature is lacking with regard to activities related more specifically to brand differentiation and positioning.

LITERATURE REVIEW

Creative and reflective skills are crucial to overall educational development [McCorkle et al., 2007; Resnick, 1987] and success in the workplace [Catterall et al., 2002; McIntyre et al., 2003; Ramocki, 1994]. Activities that employ these skills should be infused throughout the college curriculum [Ramocki, 1994]. Such learning activities not only build these capacities but also the students' confidence in their higher-order thinking skills [Anderson, 2006]. Today's students no longer respond well to many well-worn teaching approaches aimed at lower-order thinking skills that do not engage them or address hands-on skills development [Matulich et al., 2008].

Not surprisingly, university teaching has been shifting from a focus on lecture to a more active, collaborative interaction between faculty and students, as well as among students [Wright et al., 1994]. Not only is this approach more engaging for students, but it can also enhance learning outcomes [Hamer, 2000]. The importance of hands-on, engaging in-class and out-of-class exercises and activities is evidenced by the number of recently published articles in business pedagogy that describe these kinds of activities [see, e.g., Bristow et al., 2013; Dwyer, 2017; Rubens et al., 2016]. Of the many ways to actively engage students in the classroom, discussion is one of those most preferred by marketing students [Karns, 2005] and embraced by faculty [Dallimore et al., 2004]. Furthermore, carefully structured discussion processes can be far more effective than simply tossing a question out to a class [Frontczak, 1998; Sautter, 2007].

The activity described here develops student discussion through use of a projective technique that is similar to qualitative approaches often used by marketing researchers to expose below-the-surface consumer motivations, beliefs, attitudes, and values [Donoghue, 2000]. Projective techniques are designed to delve deeper than the typical surveys and focus groups, to which students tend to have much greater exposure. While basic research in marketing that employs a projective approach generally has as its purpose better understanding of consumers and their motivations, the purpose of the activity here is more learning centered.

Specifically, the activity here is designed to afford students the opportunity to reflect on their own perceptions and experiences, while also producing interesting visuals to help spur class discussion. It also allows students to employ creative thinking in a way that does not involve the written word, along the lines of activities introduced by Swanson and Wald [2013], who employ student-created

collage, and Machin [2016], who employs snapshots taken by students. The creative thinking component here consists of students devising a way to translate their thoughts and feelings about specific brands to a visual form that might be understood by others. Rather than the type of creative thinking that would be involved in developing a new-to-the-world product, the creative thinking here is more along the lines of that involved in developing a marketing mix or an advertising campaign [McCorkle et al., 2007].

For the activity presented here, students start out by making drawings. Through drawing, students are often able to express nuances of thought and meaning that can be difficult for some to express in words. Nevertheless, because drawing is a form of expression that marketing faculty do not generally ask students to employ, students may initially be thrown off guard and concerned about their perceived lack of drawing skills. However, given a small amount of reassurance, they can all draw something, even if rudimentary, and many can do quite well. Drawing is a different activity for students, and they typically enjoy doing it and seeing what their classmates have produced. The subjects of the student drawings are customers of particular companies, and differences among these drawings relate to the concepts of targeting, differentiation, and positioning.

ACTIVITY OVERVIEW AND BENEFITS

In general, the activity here consists of students drawing pictures of typical customers of competing companies and then, with the professor's guidance, analyzing what these pictures have to say, both explicitly and implicitly, about brands and positioning. Thus, to begin, students make two drawings, one being of a typical customer of a particular company, say Walmart, and the other being of a typical customer of a fairly closely competing company, say Target. These drawings are collected and viewed by the class as the basis for discussion. The discussion focuses on what can be learned by having customers express their perceptions in this way. Critical issues explored include differences in brand perception (both positive and negative), perceptual biases, and how an organization might use this approach as a research tool. Students generally find the activity to be thought provoking and a good learning experience.

This activity has various attractive features. First, it is a hands-on experiential activity that incorporates important learning-by-doing pedagogical techniques, which have been found to be both well received and effective [Frontczak, 1998; Karns, 2005]. Second, since students create the data for analysis in the activity, in contrast to working from external or instructor-generated content, they feel more connected to the discussion. Third, the activity is ideal for a marketing principles course, which is a frequently taught core course in most business programs. Like the marketing principles course itself, the activity bridges a number of marketing topics, including marketing research, branding, targeting, and positioning. Lastly, the activity requires students to think creatively and reflectively. The activity

described here adds to other creativity-centered activities that have begun to be published in marketing education outlets [Anderson, 2006; Machin, 2016; Lee and Hoffman, 2016; McIntyre, 1993; Swanson and Wald, 2013]. It encourages student reflection, as they consider their own thoughts, experiences, and creative outputs in the context of new information [Grossman, 2008; Peltier et al., 2005], with that new information being the drawings of their classmates.

SPECIFICS FOR IMPLEMENTING THE ACTIVITY

To take the pressure off students, they should be assured from the outset that points are given for completing the drawings and following instructions—not for drawing talent. Furthermore, while the class will be viewing the drawings, students can choose to keep their authorship anonymous to classmates.

While the drawing component of this activity can be assigned at any point during a marketing principles class, the start of the term is a particularly good time to do it, even if the drawn artifacts will not be discussed until later in the term. Assigning the drawings early on is a fairly easy way to get students to start thinking about marketing concepts at a time when they are generally not too busy. However, regardless of when they are initially assigned, the student drawings must be collected at least one class period prior to when they are used in class.

After collecting the drawings, the professor will scan them. To ensure that drawings can be uniformly scanned and easily compared, students should be given a paper form on which they will make their drawings. An 8 1/2 × 11 sheet of paper in landscape mode is an ideal size. Prior to distributing the forms, the professor should print a line down the middle of the page and a title on one side of the page indicating, for example, “Walmart customer,” with the other side titled, for example, “Target customer.” Half of the sheets of paper should have one brand named on the left side, and half should have the other brand on the left. This allows the professor the option of removing the titles and having students guess which drawing goes with which brand. At the bottom of the page, brief instructions can be included. For example, “Draw a typical product customer on each half of the sheet. You may include settings or multiple people, but do not include any slogans, logos, or products. No light pencil. Due XX/XX.”

The assignment does not require a lot of instruction. While the brief instructions on the bottom of the drawing form are largely sufficient, the following more elaborate instructions can be shared with the class orally or on the course’s learning management system:

- Use the form passed out in class, or get one directly from the professor.
- Do not show anything in the pictures that directly references the brand itself, such as logos, slogans, product colors, or products themselves. Avoid using any words at all.
- Do not draw in light pencil, although pencil is fine if you press down a bit.

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- Include your name—on the back if you prefer your drawings to remain anonymous.
 - This is not being graded on artistic ability. If all you can do is stick figures, that's OK, although they should be stick figures that represent typical customers in some way.
 - If a brand is foreign, draw a typical U.S. customer—no kimonos, lederhosen, or country flags.

Figure 1 shows some examples of the drawing form with real student drawings.

After the drawings have been collected from class members, the professor may choose to leave them in random order; however, ordering them from least elaborate to most elaborate can build excitement when they are viewed one-by-one as a class without explicitly suggesting that one drawing is “better” than another. The professor will scan the drawings, either once or twice, depending on whether the full class activity and/or small group activity is used—descriptions of activities to follow. If the set of drawings is scanned twice, the first scan will be of the drawings as turned in. The second scan of the drawings will be after the labels that designate the company or brand at the tops of the drawings have been removed or obscured. Prior to this latter scan, the professor may want to number each pair of drawings and write “A” on the left panel and “B” on the right panel for ease in referring to each drawing when being viewed by the class.

The professor can undertake either or both of the activities described below. If the professor chooses to do both, the full class activity is a good prelude to the small group activity.

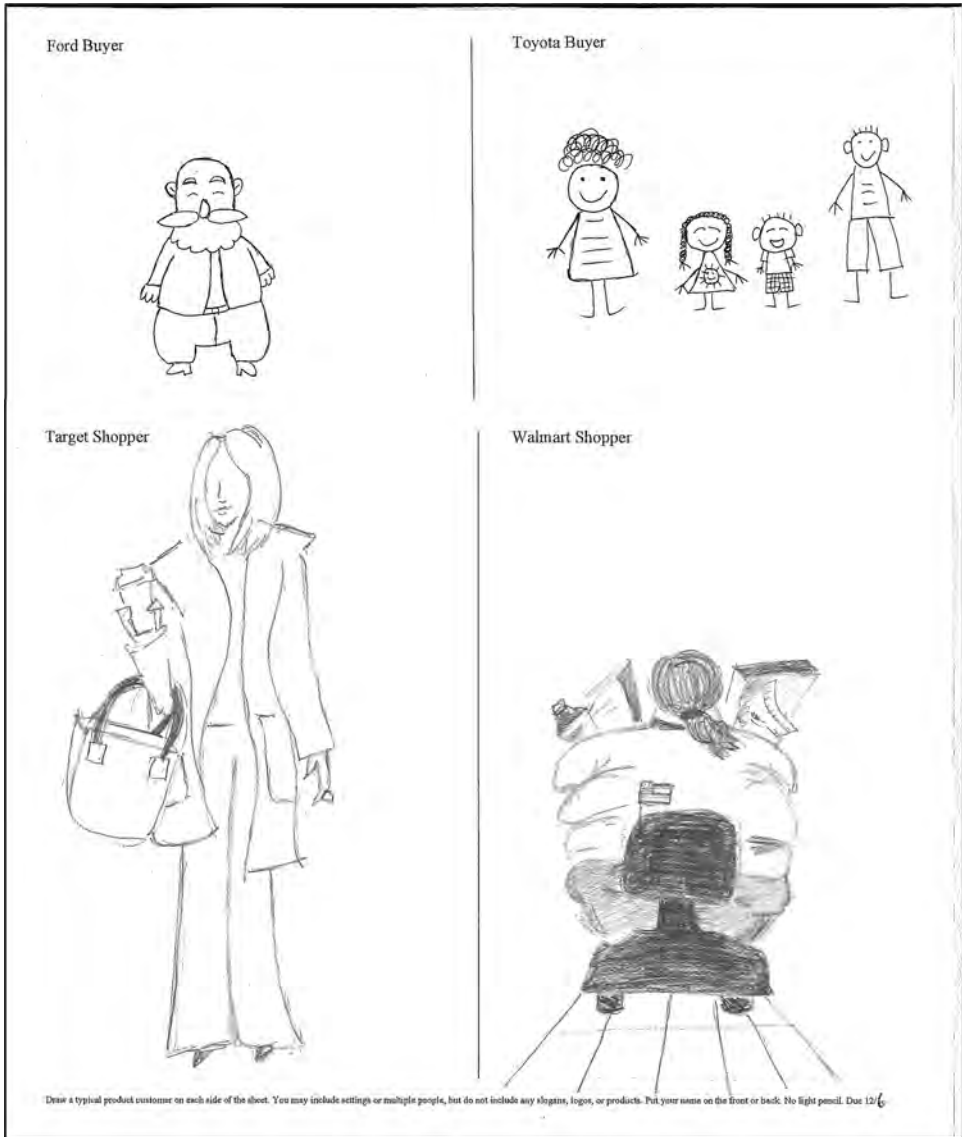
Full Class Activity

For the full class activity, the professor should use the scanned set of drawings with the brand titles removed or obscured. Before the pairs of drawings are shown to the class, the professor or the students themselves should make an answer blank with as many numbers as there are pairs of drawings. Then, before viewing the drawings, the professor should instruct students to, for example, “Write down the letter that you think corresponds with the Walmart customer.” Since half of the forms passed out originally had the Walmart customer on the right and half on the left, there should be about an equal number of Walmart customers who are A's and who are B's. After students have seen each pair of drawings, the professor can read out the correct answers, letting students score their own responses. The professor may then want to casually question students as to how well they think they did with the task.

The class can then spend some time discussing what they have learned from the activity. Some very general questions to discuss with the class might be as follows:

- How did you go about distinguishing the customers from the two companies?
- What can companies learn by conducting research such as this?

Figure 1. Example Drawing Forms with Student Drawings



In response to these questions, students often find clear differences in the customers of each brand. They also note that it is important for a company to know how it is perceived as compared to its competitors in judging the effectiveness of its marketing efforts.

Following this fairly brief general discussion, the class can carry out the small group activity, or the full class discussion can be expanded to include more in-depth questions, such as those suggested for the small group or those presented in the class discussion section below.

Small Group Activity

The small group activity may be carried out either immediately following the full class activity or in lieu of the full class activity. For this activity, groups of two to four students examine a set of drawings for deeper insights. For this activity, the scanned drawings with the names of the companies/brands at the tops of the pages should be used.

This activity requires that there be at least one computer available for each small group of students. The scanned set of pictures can be made available to the students, for example, through the class's learning management system. Student groups should be given a worksheet of questions to address in analyzing the drawings, with room for notes. Some questions might be:

1. Why might a company want to conduct research using a tool like this? What are the benefits?
2. What were the variables that the students who drew the pictures used here in distinguishing the one company's customers from the other company's customers? Consider as many demographic, psychographic, geographic, and behavioral variables as you can see in the drawings.
3. How do the pictures differentiate the two companies/brands or their customers?
4. As a group, what do you see as the overall brand meaning or positioning of each of the brands, as expressed by the company (regardless of how customers were drawn)?
5. How well do the drawings reflect these positions? Explain.
6. What can a company do if it doesn't like how its brand is perceived?

Class Discussion

The discussion following the full class or group activities should focus on what students experienced through making the drawings and learned through comparison of the drawings. A nice way to start the discussion is to ask what students thought or felt when they first got the assignment. Were they enthusiastic? Were they a bit concerned? Whether excited or worried or otherwise, what caused these feelings? Encouraging one or two students to start out the discussion will tend to help the rest of the class to realize that they were not alone in what they experienced and will thus encourage them to relate their own experiences.

Once students are comfortable, the discussion can focus on how they went about making their drawings. Generally, students will not have done any research

in preparation for the drawings, so their ideas will have been based on their existing perceptions of these companies. Where do they think these perceptions came from? How successful do they feel that they were in putting into the drawings what they wanted to express with the drawings?

To encourage students to reflect more on their drawings, they can be asked what they thought about the class's drawings overall. What were some drawing approaches taken by other students that were different from the approach they took themselves? What was able to be conveyed differently through these different approaches? What are some ideas the students saw that they hadn't thought about?

The discussion can then move to the topic of what the drawings seem to be conveying. What are the commonalities among class members' perceptions, and what are the divergences? These questions can spark discussion about brands and brand meaning. Regardless of what students drew, what do they think the marketer seems to want to be conveying about the brand, and how successful is the company with this? If there are negative aspects of a brand that come out in some of the drawings, the class may want to consider what this means for the marketer. Do the negative portrayals fairly portray peoples' issues with the brand, or are they exaggerations for the purpose of completing the assignment? People commonly have both positive and negative beliefs about a brand [Winchester and Romaniuk, 2008]. However, if biases, stereotypes, or prejudices predominate in the drawings, are these real perceptions that people have about the brand, and, if so, how might a company address this problem?

Grading the Activity

An activity like this comes with some grading challenges. First, the drawings themselves should not be graded, since students in a marketing class do not want to be graded on their artistic skill. Nor would a marketing professor necessarily have the ability to grade the quality of this kind of work. Nevertheless, a small number of points can be assigned to completing the drawings so as to motivate students to do them.

With regard to the in-class discussion or group activities, ordinary participation grading is probably the most effective approach. This kind of activity should be one that is enjoyable for students. It should be a way for them to learn in an engaging manner without the pressure to perform in a specifically designated way.

Potential Challenges with the Activity

A professor implementing this activity may encounter a number of other challenges. These may include choosing appropriate brands, dealing with students who don't really know the brands, addressing students who think they cannot draw, and tackling various logistical issues.

First and foremost, the companies/brands chosen for this activity must be brands with which the students are familiar. Some possible pairs not mentioned previously include McDonald's/Wendy's, Coke/Pepsi, Ford/Toyota, and Lowe's/Home Depot. If the professor is giving different brand pairs to different students in a particular class, the professor may mention this when explaining the assignment and passing out the drawing forms. He or she may then ask if there are any students who don't feel that they know the companies in one of the pairs very well. The problem may be solved in this case by assigning those students the brand pair with which they are more familiar. Some students, including international students, may not be very familiar with any of the brands. The professor should encourage any student who feels this way to come talk with the professor. In discussion with the student, the student can be asked to do the assignment with two competing brands or companies with which the student is more familiar. Those drawings, like any drawings turned in that do not really fit the assignment, will not become a part of the ensuing in-class activity.

Some brand pairs present their own particular challenges and opportunities. For example, when Ford and Toyota drawings are compared, one might often see more cowboys and male construction workers on the one hand and more professional people, including women and families, on the other hand. In fact, each company has a number of different brands in the form of different lines and models, and both companies are trying to reach an array of market segments. Yet, there are particular products and customers that seem more representative of each company. Why this might be the case can lead to an interesting class discussion. Another interesting company pair is Coke/Pepsi. These companies make very similar products, but tend to have highly loyal customers. Students may tend to draw customers of their own preferred beverage as hip and cool, while they demonize drinkers of the competing soda in some way. A discussion addressing these drawings can emphasize how this relates to brand loyalty.

Regardless of what brands' customers they are asked to draw, some students may feel that they are not up to the task—that they simply cannot draw. However, the problem here is more one of perception than reality. Students need to be assured that drawing skill is not an issue here. They have been drawing since at least kindergarten, and virtually all should be capable of drawing at least at the level of stick figures. The more difficult challenge tends to be articulating what they want to communicate in terms of their perceptions of customer differences. This kind of creative thinking is part of what the activity is designed to encourage.

Finally, there may be some logistical issues with the activity, although most should be fairly easily addressed with a bit of planning. First, the drawings need to be collected at least one class period before they are discussed. Second, the professor will generally want to have access to scanning technology to create a file or files of the drawings that can be projected to the class or made available to students digitally. For group activities in class, students should have both access to computers and access to the internet. If projection or student computers are not

available in the classroom, photocopied sets of groups of student drawings can be made available to students in class for group consideration. Third, since some students may not want other students to know which drawings were theirs, safeguards need to be put into place to see that their privacy in this regard is respected.

OUTCOMES FROM EMPLOYING THE ACTIVITY

To evaluate the activity's effectiveness, feedback from two principles of marketing classes at a small private college was examined. In both classes, half of the students drew Walmart/Target customers and the other half drew Ford/Toyota customers. Responses from the two classes did not significantly differ, so the 47 total responses were combined.

First, group written responses addressing the five questions listed at the end of the description of the small group activity were collected and qualitatively evaluated. Second, students responded individually and anonymously to quantitative and qualitative measures about what they liked about the activity and what they felt they learned by doing it.

With regard to how a company could benefit from using this type of approach, student groups mentioned how an activity like this could help a company with its branding, specifically by understanding consumer perceptions. Students often referenced targeting and segmentation. One group wrote, "Understanding who their customers are and who to target. Seeing where their brands stand and how people perceive their brand." Groups also noted strategic implications, such as "[t]o see. . . what needs to change about [perceptions]," and to "[c]reate better advertisements."

Students were able to identify a large variety of segmentation variables evidenced in the drawings. These included family size/structure differences; geographic differences, such as urban/rural; lifestyle factors; gender; race/ethnicity; age; social class indicators; and body shape and appearance differences. The drawings ended up being notably rich in this regard.

Students felt that while the drawings did somewhat reflect what they perceived as the intended positions or customers of the brands, sometimes the drawings also reflected negative stereotypes that would not likely be well received by the company. Most groups suggested that if the company were not happy with customer perceptions, the solution should involve rebranding or repositioning, often recognizing that this might not be easy. One group wrote, "Change brand image through marketing campaigns and advertising. The two companies are fairly similar, so most of the efforts to change how its brand is perceived falls on how it is marketed."

Following the activities, students responded anonymously to three seven-point Likert scales addressing what they thought the drawings portrayed. In response, students felt most strongly that the drawings reflected stereotypes (mean = 6.34); secondarily, that they reflected real customer differences (mean =

5.57); and thirdly, that they reflected company advertising portrayals of customers (mean = 4.57). Means were on the positive end of the scale and significantly different from each other (P value <0.01).

Then, students responded to four seven-point Likert scales addressing their perceptions of the activity overall. In response, students indicated that they perceived the activity to be fun (mean = 6.43), thought provoking (mean = 5.84), and an aid to their learning (mean = 5.23). They did not agree with a statement describing the activity as a waste of time (mean = 2.50). Each of these measures was also significantly different from the others (P value <0.01).

Finally, in qualitative responses to the assignment, students expressed how they liked reflecting on their own perceptions and comparing them with others' perceptions. One student wrote that the assignment was "creative, fun, interactive, reflective." Many students mentioned having learned about branding and the power of stereotypes. Students also gained a deeper understanding of marketing concepts surrounding segmentation, targeting, differentiation, and positioning. They further saw the value of this type of activity as a possible strategic research tool for a company to employ.

DISCUSSION

Principles classes in business can be challenging with regard to student engagement, because many students in the class may feel that this class is not relevant to them and what they want to do career-wise [Taylor et al., 2011]. However, one positive aspect of teaching the principles of marketing class is that students are surrounded by marketing in their day-to-day lives, which can be leveraged to make the class feel more relevant to students. The activity described herein is one way to help students tap into their own experiences with companies and their own observations as to how those companies target customers and position themselves in the marketplace.

In creating this connection between real-world experience and theoretical concepts, a visual approach can constitute an effective change of pace. Many students have a learning style that is more visually than verbally oriented. While most university-level learning materials tend to be verbal in nature, the addition of visual materials can be an aid to overall student learning [Clark et al., 2006]. The activity described here goes one step further by giving students the experience of actually creating the visual materials that form the basis for analysis and reflection.

Examining pictorial representations of customers allows for a deeper dive into perceptions of brand positioning. For example, a first look at Walmart and Target customers may suggest that Target customers are more sophisticated than Walmart customers. But how is that portrayed? Differences may show up in clothing and hair styles, levels of personal grooming, and so forth. A more careful examination may evidence differences related to gender, age, ethnicity, preferred activities, levels of

physical health or fitness, family structures, and so on. Customers can differ in many ways, and contemplation of those differences raises multiple issues for discussion. To what extent are representations genuinely reflective of customer differences, as planned through company targeting and positioning strategies, and to what extent might they be based on stereotypes or exaggerations? If stereotypes or exaggerations, where might those have come from?

An examination of perceptions of a brand's customers can sometimes reveal a brand that is broken or underperforming in some way. Hartley and Claycomb [2013] have been telling the stories for years of large, well-funded organizations that make dumb marketing moves; no organization is immune from marketing mistakes. Once problems with the way a brand is perceived have been identified, the next question becomes what could be done to address the problem or problems. A more dynamic picture of brands and brand positioning can emerge from student consideration of this question.

CONCLUSIONS

Teaching tools and strategies that test and stretch students' ways of thinking are important in today's educational environment. Most students want more than to be talked at; they want to be engaged in innovative ways with concepts to be learned. The activity addressed here gives students an opportunity to express themselves in a manner that is seldom used in the business school setting. It also gives them an opportunity to learn from their own and classmates' perceptions with regard to perceived brand differences.

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NPV Analysis: Should ABR Buy and Restart the St. Croix Refinery?

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Atlantic Basin Refining, Inc. (ABR) went through a tumultuous legal battle for the right to purchase and reopen an oil refining complex in St. Croix [U.S. Virgin Islands (USVI)], once the largest refinery in the world, which had fallen on hard times and closed in 2012. Having been offered a settlement that could make reopening the refinery possible, ABR must consider whether it should still pursue purchasing and reopening it. ABR is faced with considerable uncertainty, such as how much the restart will cost, how long it will take, and what oil prices will be in the future.

KEYWORDS: Probabilistic NPV Analysis, Monte Carlo Simulation, Oil Refining

Disciplines of Interest: Business Analytics, Management, Finance

INTRODUCTION

The CEO of Atlantic Basin Refining, Inc. (ABR) felt euphoric as he ended the phone call with ABR's lawyer. For five years he and his partners had dedicated their lives to ABR's proposition to purchase, reconfigure, reopen, and operate the old oil refining complex in St. Croix. The facility was once the largest refiner in the world but had fallen on hard times and closed in 2012. In 2014, ABR came very close to receiving an affirmative vote from the U.S. Virgin Islands (USVI) Senate on an ambitious deal to purchase the refinery for \$200 million and reconfigure it for an additional \$1.2 billion. The CEO recalled the frustration that he felt when in late 2014 the Senate rejected the agreement they had worked hard to negotiate, citing concerns about ABR's potential inability to meet its financial obligations. Without the government agreement, the purchase could not be completed. Years of work and, with it, the hope of resurrecting the facility and bringing thousands of jobs back to an economically depressed area, were squashed by politicians.

ABR was determined not to give up and continued to pursue the site through 2015, this time with a committed partner, Arclight, to alleviate the Senate's

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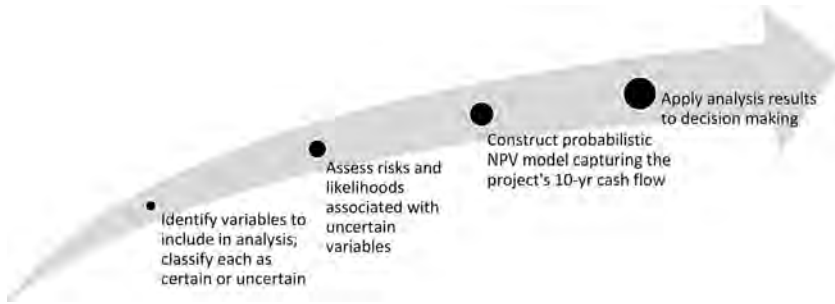
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concerns about ABR's financial ability. Early in 2015, Arclight signed a letter of financial support, which ABR used in its negotiations with the former owners and the government. What happened next was an even bigger blindside than the failed Senate vote: Arclight attempted to change the agreement to one in which it would take sole title of the facility's storage and shipping terminal assets without ABR. Worse, Arclight threatened to withdraw its funding commitment unless ABR complied with its demands, knowing that at that late date, ABR would be unlikely to find another financial partner. Then, through a subsidiary, Limetree Bay Holdings LLC (LBH), Arclight negotiated with the former owners directly to purchase on its own the terminal and storage assets, not the refinery itself, and ultimately did so in a bankruptcy transaction known as a "stalking horse" agreement. Without the terminal and storage assets, the refinery no longer possessed critical infrastructure and immediate cash streams that made purchasing, reconfiguring, and restarting the refinery feasible. Thus, Arclight's purchase of the terminal and storage assets brought ABR's efforts to purchase the refinery to an end [ABR v. Arclight, 2015]. In late December 2015, ABR's CEO watched in utter disbelief as the USVI Senate ratified Arclight's operating agreement [Gilbert, 2015].

ABR believed Arclight stole the deal [Blackburn, 2015]. In November 2015, ABR filed a lawsuit that, among other things, claimed that Arclight's involvement with the refinery started only when it was brought in as a partner in the terminal and storage assets of the complex. ABR further claimed that Arclight negotiated the letter of financial support under false pretenses to gain access to ABR's preferred negotiating position, business ideas, government contacts, and knowledge of the facility. ABR lost the profit streams from the terminal and storage assets estimated in the millions of dollars per year and worse, lost the refinery profits, estimated in hundreds of millions per year. Charges included tortious interference with business relationships, unjust enrichment, and misappropriation [ABR v. Arclight, 2015].

Almost two years after filing the lawsuit, ABR finally had an answer in a phone call from its lawyer. Arclight had agreed to a settlement that among other stipulations provided an opportunity to lease the use of the marine terminal and a portion of the storage assets for \$3 million per year. If ABR leased those assets, it might make reopening the refinery feasible. The CEO reflected on the roller-coasterlike journey of the previous five years and was thrilled that ABR was vindicated with the settlement. Next, he needed to decide if the company should lease the terminal and storage assets and still try to purchase the old refinery, which, having sat dormant for a couple of years, would require even more money to restart than originally planned. In addition, because ABR would not own the storage and terminal assets, there would be no income source during the years it would take to restart the old refinery. There was tremendous uncertainty, such as how much money the restart would cost, how long it would take to arrive at the

Figure 1. Depiction of Analysis Process



Source: adapted from Westney, R. [2011]

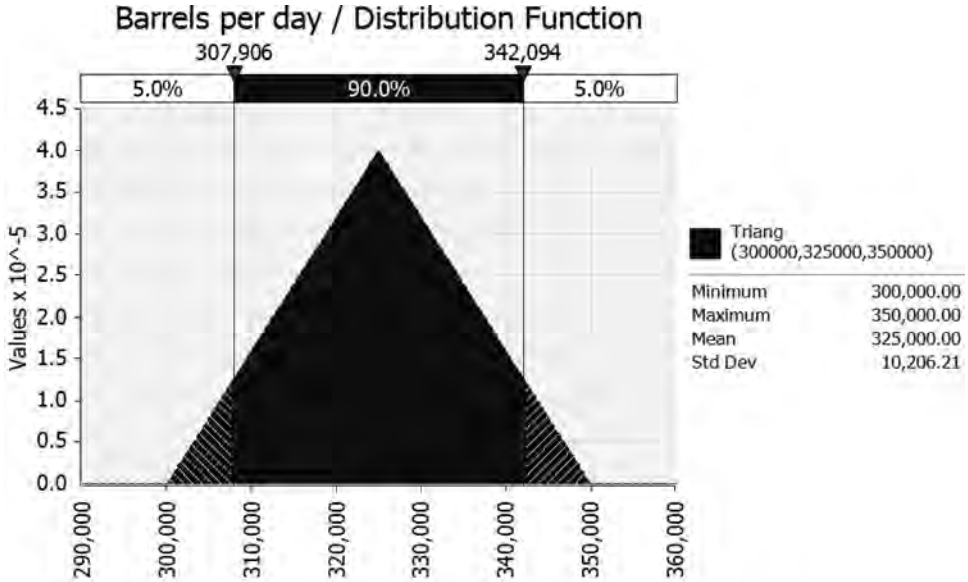
restart, and how oil prices might change in a couple years. ABR needed to conduct a comprehensive analysis to support its decision.

DECISION PROCESS

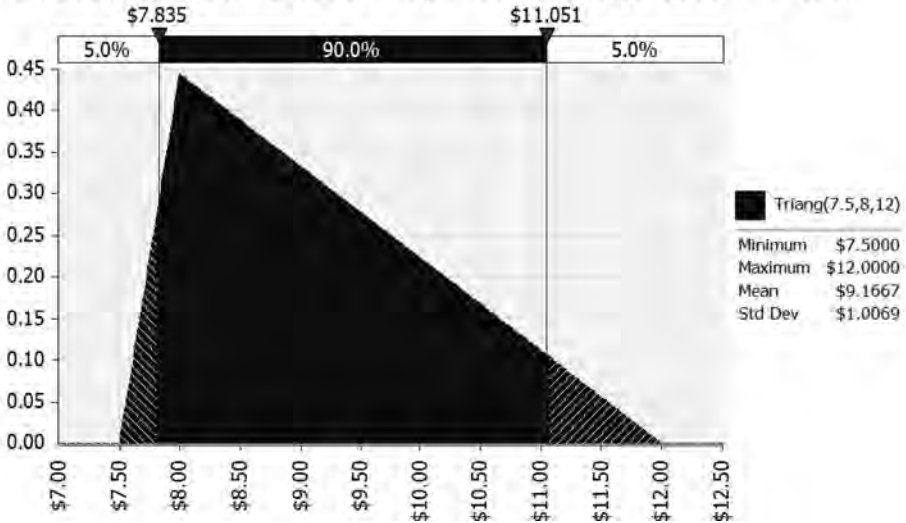
ABR's CEO contacted the only business analyst he trusted for a decision of this magnitude: Veronica Bell. Veronica had worked on several prior projects with the CEO and had years of project finance experience in the oil and gas industry. After discussing the St. Croix refinery and agreeing to lead the analysis, Veronica set out to develop a model that included factors such as the cost of the refinery, the time required to complete reconfiguration, and the time to achieve full production. The model would have to address key concerns, including length of time to achieve positive cash flow, the maximum cash impairment, and likelihood that the project would create value. With the considerable uncertainty present in the project, Veronica knew the answers to these concerns would be based on likelihoods, not absolutes. Veronica planned to follow the process depicted in Figure 1 to create a 10-year project analysis, the timeframe requested by ABR.

Veronica first had to identify the variables to include in the analysis and determine if the variables were fixed or uncertain. For example, refinery purchase price was a set figure, but reconfiguration cost was uncertain. Next, she would assess uncertainties and risks. Uncertainties might be associated with costs (e.g., the price of crude oil) or timing (e.g., duration of the reconfiguration process). Risks might include supplier failures, natural disasters, and oil shortages. Veronica decided to focus on uncertainties for ABR's model. Thus, for each uncertain variable, she would have to include a range of possible values and a distribution that reflected likelihoods of values. She reasoned that she would find these by relying heavily on her experience, ABR's projections, market indicators, and industry reports. With those resources, Veronica decided to use the triangular

Exhibit A: Example Triangular Distributions

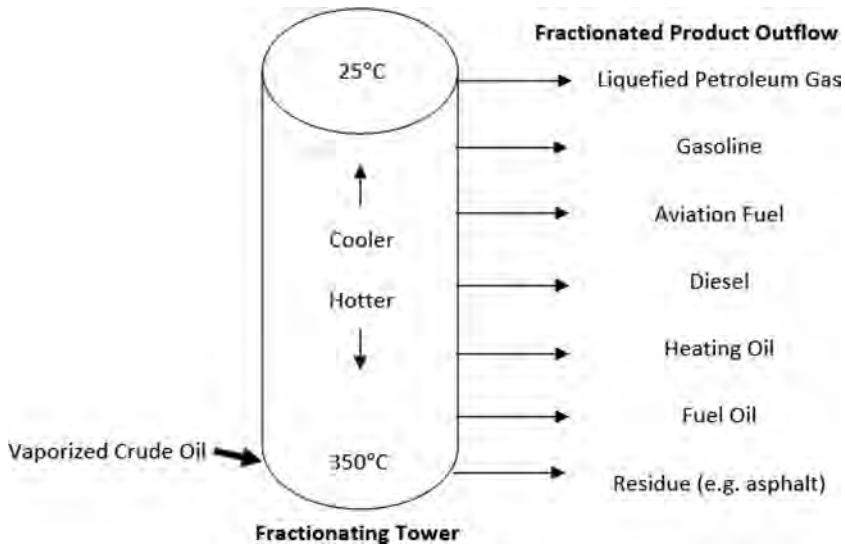


Crack Spread (Gulf Coast 3-2-1 per barrel) / Distribution Function



distribution, a preferred distribution when the best insights available are educated guesses about *minimum*, *most likely*, and *maximum* values (see Exhibit A for examples of the triangular distribution).

Figure 2. Depiction of Distillation Process



See Freudenrich [2017] for more information

Third, Veronica would construct a probabilistic Net Present Value (NPV) Model, which instead of resulting in a single value, arrives at a distribution of possible outcomes by simulating trials using different values for the uncertain variables. This type of model would allow ABR to delve deeply into questions such as the likelihood of achieving a positive NPV and the most influential variables in the analysis. Veronica now had to use her model to guide ABR through the decision's nuances, its risk–reward profile, and the realism of the simplifying assumptions. Having decided on this strategy, Veronica was confident she could help ABR move forward with its decision and proceeded with a deeper analysis of the refining business and the St. Croix refinery.

THE REFINING INDUSTRY AND PROCESS

The St. Croix refining facility was built in 1966 to refine crude oil and was subsequently expanded to become the largest refinery in the world [Sider, 2014]. Refineries transformed crude oil into products, such as gasoline, aviation fuel, and heating oil, that were sold to a variety of industries and customers, including manufacturers, militaries, and gasoline stations. In the \$518 billion–revenue U.S. refining industry, gasoline accounted for a 51 percent share, followed by diesel fuel with a 24 percent share [Kalyani, 2017]. Refining worked by heating crude oil into vapor and pumping the vapor into a distillation tower. The vapor cooled as it rose in the tower and condensed into distinct liquids based on boiling point

[Freudenrich, 2017]. Lighter fractions such as liquefied petroleum gas rose to the top of the tower, and heavier liquids such as asphalt collected at the bottom. Figure 2 depicts a simplified model of fractional distillation.

Crude oil differs in molecular characteristics, such as density and sulfur content. For example, “light sweet” oil is low in density and sulfur; “heavy sour” oil is high in these factors. There are over 100 oils that differ in density, sulfur content, and price, with the main three being Brent Crude, West Texas Intermediate (WTI), and Dubai Crude [petroleum.co.uk, 2015]. The crude oil that a refinery used results in different mixes of refined products: the lighter the crude, the lighter the fractionated products naturally produced. [Encyclopedia of Earth, 2013].

Light-fraction products enjoyed greater demand and/or commanded higher prices than heavy-fraction products, so refineries often employed upgrading units to reprocess heavier fractions remaining after distillation into more desirable products [Encyclopedia of Earth, 2013]. For instance, Veronica reviewed information on catalytic crackers that convert heavy distillates into diesel or gasoline, and on cokers that transform heavy output into lighter feedstock. She found these units were expensive to purchase, install, and operate, but they allowed a refiner to produce higher-end products from a broader range of crude oils, yielding greater input flexibility [Kalyani, 2017]. Ultimately, refiners analyzed price differentials between crude oils and refined products and made their purchasing, refining, and logistics decisions on the differentials. In recent years, lower domestic crude oil prices (WTI) than international crude oil prices allowed U.S. refiners with access to this cheaper oil source to improve profit margins (Table 1). In fact, ABR’s original plan to buy the St. Croix refinery partially turned on the opportunity to partake in this price differential, but Veronica found that difference was all but closed by 2017. Her research yielded that U.S. refining industry revenue was projected to grow at steady but slow rates for the next five years.

Purchase Price and Reconfiguration of St. Croix Refining Facility

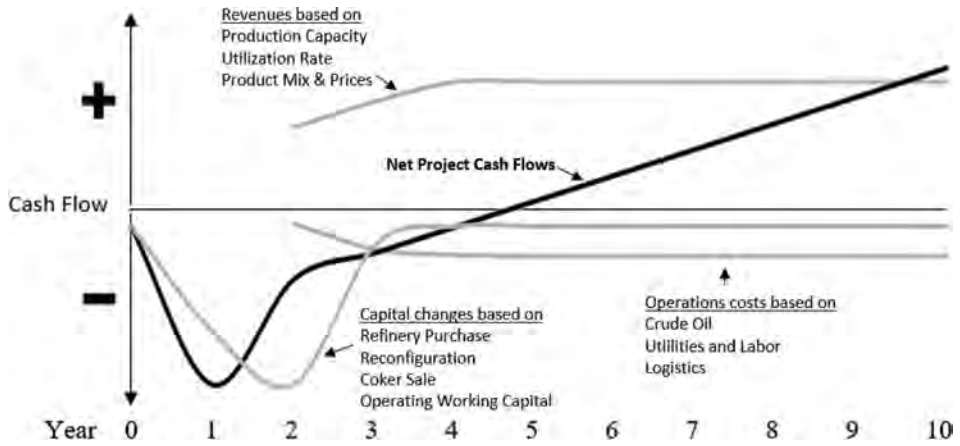
Veronica reviewed the history of the St. Croix refinery, which she learned had been very successful but had experienced a rapid decline. At one point, the refinery was one of a few that could process Venezuelan crude, a heavy and sour oil, so the refinery could obtain crude relatively cheaply. Over the years, additional refineries with the same capability were built, so Venezuelan crude suppliers no longer had to sell the heavy oil to St. Croix at discounted prices [Shea, 2012]. Processing the heavy crude required use of upgrading units, both a coker and a cracker, which were energy intensive; therefore, the facility burned about 5 percent of the refined fuels it produced to generate power—skimming off a couple hundred million dollars in potential profits. Other negative factors included a drop in global demand for refined products, and new refineries, with economies of scale, were built in developing countries, creating a capacity glut. Marginal facilities and those with substantial capital requirements were targeted for closure.

Table 1. Key Industry Statistics (2008–2016)

Year	Revenue (\$mil.)	Establishments (# of refineries in U.S.)	Employment	Exports (\$mil)	Imports (\$mil)	Brent Crude (\$ per barrel)	Dubai Crude (\$ per barrel)	WTI Crude (\$ per barrel)
2008	838592.5	311	66945	66138.1	149548.5	97.64	93.78	99.56
2009	523680.1	303	65249	46777.4	85193.7	61.86	61.75	61.65
2010	659638	291	63551	67956.9	114419.3	79.64	78.06	79.43
2011	871333	296	62982	110385.5	154931.2	110.94	106.03	95.05
2012	865812.9	297	62542	118453.6	146008.7	111.97	108.9	94.16
2013	856244.2	303	61663	125229.4	131795.9	108.86	105.43	97.94
2014	774350.7	290	64363	120905.1	117859.4	98.94	96.66	93.11
2015	479428.7	256	64431	79550.6	69862.6	52.37	51.18	48.71
2016	438913.6	254	60964	68717.2	55915.7	44.05	41.2	43.19

See *IBISWorld Report* [Kalyani, 2017].

Figure 3. Conceptualization of ABR Refinery Project



Source: adapted from Westney, R. [2011]

The St. Croix facility faced such a capital requirement with a \$700 million investment for new pollution controls because of the heavy sulfur crude oil it processed [Blackburn, 2014]. With mounting losses and the impending pollution control investment, the refinery ceased refining oil in early 2012. The refinery’s president stated, “It is configured in a way that is not conducive to this economic environment” [Shea, 2012].

ABR incorporated in November 2013 with the intention to purchase and operate the shuttered St. Croix refinery. Even though the refinery had closed, ABR knew that environmental and community concerns in the United States made building a new refinery prohibitive; if ABR wanted to enter the refining business, it would have to purchase an existing facility. Veronica’s discussions with the CEO informed her that ABR proposed to purchase the refinery for \$200 million in 2013 and pay the former owners a portion of the proceeds if the coker and cracker were sold. ABR planned to return the site to profitability by radically altering how it operated and would weather the period until restart by capturing cash flows from the storage tanks and shipping terminals. From a facility standpoint, instead of buying the less expensive but heavy and sour crude oil, ABR would spend \$1.2 billion and two years to reconfigure the facility to process light, sweet crude from the United States to capitalize on the cheaper price of WTI oil. The facility could then naturally produce light-fraction refined products, which would eliminate the need for upgrade units, reducing the energy requirements to run the facility by more than 80 percent. Doing so would also reduce pollution and negate the anticipated investments for pollution control equipment.

If ABR were to negotiate a purchase in late 2017, it would not bid \$200 million because it would not get the cash streams associated with the storage and

Table 2. Refinery Variables and Estimated Values

Variable	Minimum	Most Likely	Maximum
Refinery Purchase		\$110M	
Coker Sale	\$300M	\$325M	\$350M
Reconfiguration	\$1.2B	\$1.25B	\$1.3B
Ramp Up Operations	75%	80%	85%
Operating Levels (barrels per day)	300,000	325,000	350,000
Utilization Rate (days per year)	75%	80%	85%

terminal assets now owned by Arlight. Veronica drafted a new plan for the project that incorporated recent developments and dynamics (Figure 3). Next, she delved into the specifics for each variable.

ABR planned to tender a bid for the refinery of \$110 million in 2017 (Year 0 in Figure 3). ABR did not believe it would need the coker unit in a reconfigured refinery. Instead, ABR hoped to sell it in 2018 for \$325 million, with 30 percent of the proceeds going to the former owner. ABR planned to keep the cracker unit to maintain some input and output flexibility. Otherwise, its plans for reconfiguration remained the same, but due to further deterioration of the facility during the interim period of the lawsuit, the estimate for reconfiguring and restart (including engineering, construction, and training) was now \$1.25 billion, with ABR likely to incur 60 percent of that cost in 2018 and the remainder in 2019. As shown in Table 2, Veronica formed her estimates using the triangular distribution for the uncertain variables.

ABR hoped to start refining operations in 2020, but first-year ramp-up operations might only achieve about 80 percent of sustained crude refining operating levels, which were estimated at 325,000 barrels per day. Veronica found refineries typically operated about 80 percent of the calendar year, although the rate fluctuated depending on conditions.

Margin Projections

Veronica's research identified that petroleum refining was a mature industry with a moderate level of market share concentration, significant capital intensity, and heavy environmental regulations. As shown in Table 1, revenues exhibited dramatic fluctuations, declining from a high of \$871 billion in 2011 to \$479 billion in 2015 due to lower international demand and reduced oil prices. Oil prices also exhibited dramatic volatility, plummeting from \$104 in 2011 to \$43.3 in 2016. From a regulatory standpoint, refiners had continually been burdened with heavy environmental regulations, such as the Energy Independence and Security Act, that mandated renewable fuel mixes. Furthermore, consumers' and regulators' push for fuel-efficient and alternative-fuel vehicles were projected to slowly erode gasoline demand [Kalyani, 2017].

The cost structure of refinery operators depended on economies of scale, technology, and access to inputs, with larger producers achieving lower production costs [Kalyani, 2017]. Capital costs were high, both for facilities and to contract for crude oil. Across the industry, net profit was about 5 percent of revenue; the primary cost driver was the price of crude oil at 80 percent of revenue. Stand-alone refiners who did not own crude supplies—ABR’s plan—were more exposed to profit fluctuations because they often bought crude at spot market prices, meaning the cost of the primary input could vary widely [Geyfman & Grandzol, 2017].

Veronica’s conversations with ABR’s CEO revealed that a key premise of its original bid was to buy WTI crude for cheaper prices and sell refined products at market rates, which expanded the potential margin. Further, ABR had planned to hedge WTI to Brent Crude for a lengthy period. Thus, even if WTI prices achieved parity with Brent Crude, ABR could continue to buy WTI at cheaper prices. Given the price convergence of the two crudes by 2017, the hedge opportunity was no longer a feasible option. Thus, Veronica decided to estimate the price of crude oil over the next decade using industry projections for the average price per barrel of WTI, Brent, and Dubai crudes, with a plus/minus estimate around the projection. Veronica reasoned that she should expand the estimate farther on the “plus” side because industry trends pointed to more upward price movement than lower price movement. She also expanded the ranges for more distant projections because she believed the far-term estimates were less likely to be realized (see Table 3).

Veronica used an industry measure called crack spread to estimate revenue. Crack spread is the difference between the revenue generated from refined products and the cost of the crude oil used to create those products. Veronica could derive the product mix of the St. Croix refinery because ABR planned to buy WTI crude and refine it into products using basic fractionating. Thus, for every three barrels of WTI crude refined, the refinery would make two barrels of 87-octane gasoline and one barrel of U.S. Gulf No. 2 heating oil, a mix called Gulf Coast 3-2-1. Veronica calculated that if ABR bought 3 barrels of WTI crude oil for \$58.80 each (\$176.40 total), it would produce 2 barrels of 87-octane gasoline that might sell wholesale for \$68.88 each and 1 barrel of U.S. Gulf No. 2 heating oil that might sell wholesale for \$62.58. Thus, ABR would achieve a crack spread of \$8 per barrel of crude oil purchased $[(\$68.88 + \$68.88 + \$62.58 - \$176.40) / 3 \text{ barrels}]$. This spread was key to profitability, so Veronica vigorously investigated crack spreads and found projections for Gulf Coast 3-2-1 crack spreads to be \$8. Further, even if the price of crude increased, refiners typically passed costs on to distributors so the spread would not decline much, if at all. On the other hand, crack spreads exhibited large upward swings in the past, so Veronica derived the estimates found in Table 4 [Rayborn & Arno, 2014].

In addition to crude oil costs, Veronica estimated operating expenses, including utilities, labor, and logistics (see Table 4). These estimates were lower than

Table 3. World Crude Oil Price Forecasts

Year	Average \$ Per Barrel of Brent, WTI, and Dubai Crude Oil	Minimum Estimate	Maximum Estimate
2011	104.01		
2012	105.01		
2013	104.08		
2014	96.24		
2015	50.75		
2016	42.81		
2017*	54.80		
2018	58.00	-5%	+7%
2019	58.30	-5%	+7%
2020	58.80	-5%	+7%
2021	59.80	-7%	+10%
2022	60.50	-7%	+10%
2023**	61.00	-7%	+10%
2024	61.70	-10%	+15%
2025	62.30	-10%	+15%
2026	63.00	-10%	+15%
2027	63.70	-10%	+15%

*Forecasted figures [Kalyani, 2017].

**Projections based on trend benchmarks for 2017–2022.

Table 4. Margin Variables and Estimated Values

Variable	Minimum	Most Likely	Maximum
Gulf Coast 3-2-1 Crack Spread	\$7.5	\$8	\$12
Operating Expenses (of sales)	7%	7.5%	8.0%
Miscellaneous Expenses (of sales)	1%	1.5%	1.8%

industry averages, but Veronica believed they were accurate because of two factors. First, the reconfiguration would eliminate the use of the upgrading units; thus, energy costs would be lower than the industry average. Second, ABR's transportation costs would be lower because the U.S. market would be cheaper to ship to or from, owing to the USVI's territory status, which meant ABR would not need to comply with the Jones Act section of the Merchant Marine Act of 1920. That Act required that ships engaging in coastwise (U.S. port to U.S. port) trade must be U.S. built, crewed, owned, and operated under U.S. laws [Maritime Law Center, 2017], requirements that substantially raised the cost of shipping. Without

Table 5. Other Expense Obligations

Variable	Annual (2020-2027)	Annual (2018-2023)	Annual (2024-2027)
Storage and terminal lease	\$3M		
Fixed payment to USVI		\$8M	\$15M
Variable payment to USVI			
% of EBIT if EBIT is <\$0			0%
% of EBIT if EBIT is >\$0			10%

the Jones Act requirement, ABR could use foreign-flagged vessels at much lower costs—likely a couple dollars cheaper per barrel than typical for U.S. refiners [Rayborn & Arno, 2014]. Veronica also estimated miscellaneous expenses as shown in Table 4.

Veronica reviewed the lawsuit settlement offered to ABR and noted that ABR could lease use of the marine terminals and a portion of the site’s storage for \$3 million a year, starting as late as 2020. If ABR successfully purchased and reconfigured the refinery, the soonest it would need the storage and shipping terminals would, in fact, be in 2020. A final expense would be ABR’s payments to the USVI, as specified in the company’s operating agreement with the territory. ABR’s original operating agreement—the one the USVI Senate did not ratify—was complex and included both fixed and variable annual payments. ABR’s CEO wanted a simplified operating agreement and believed ABR could agree to the obligations contained in Table 5. Veronica subtracted fixed payments prior to Earnings Before Interest and Taxes (EBIT) because these payments classify as operating expenses. On the other hand, variable payments, in lieu of taxes, are taken after EBIT. Figure 4 depicts the project timeline for various cash flows.

Cash Flow Projection Adjustments

Veronica next incorporated adjustments to the project’s cash flows. First, ABR planned to capitalize the investment in the refinery and its reconfiguration; thus, Veronica added depreciation to the NPV analysis. Veronica started the depreciation in 2020, the year the refinery would be substantially complete and used a 10-year accelerated schedule because ABR believed the reconfigured facility would become progressively obsolete in about 10 years (see Exhibit B for rates; IRS, 2016).

ABR would also need working capital to support operations. Veronica considered changes in cash deployment necessary to operate a refinery. ABR would hold inventory of crude oil and finished products and offer payment terms to incentivize customer purchases. These current assets would be offset by accounts payable, the money owed to suppliers. Veronica’s review of the refinery industry

Figure 4. ABR Refinery Project Timeline



Exhibit B: MACRS Depreciation Rates Half Year Convention

Year	10-Year Recovery Period Rates
1	10.00%
2	18.00%
3	14.40%
4	11.52%
5	9.22%
6	7.37%
7	6.55%
8	6.55%
9	6.56%
10	6.55%
11	3.28%

revealed that receivables and payables tended to be about equal, so working capital requirements would be composed mostly of inventory [Kalyani, 2017]. Given industry averages for inventory turnover, Veronica estimated working capital requirements to be 4.5 percent of sales, deployed the year prior to restart as ABR begins crude oil purchases. Veronica also knew that inventory levels fluctuated for a variety of reasons. For example, sometimes refiners sold refined products immediately, whereas at other times refiners held products in anticipation of higher prices. Thus, she estimated the minimum working capital to be 4 percent of sales and the maximum to be 5 percent.

Taxes and Cost of Capital

Operating in the USVI brought significant tax advantages. In an effort to stimulate economic development, the United States offered a variety of tax

incentives for doing business in the territories [Browning, 2014]. For ABR, Veronica believed the biggest impact would come from a tax credit for taxes paid to foreign jurisdictions, which included the USVI [Lowry, 2016]. ABR's variable payments resulting from its operating agreement would reduce its federal tax burden. Considering this issue and other nuances, Veronica decided to set the refinery project's tax rate at the low value of 10 percent. ABR had several projects in addition to the St. Croix opportunity, so Veronica allowed negative taxes in her model to serve as a shelter for other taxable income.

Veronica's final consideration was the cost of capital to apply to the project. She knew the value must cover the rate of return required by investors, and she also wanted to explore a higher rate because of ABR's short history and the riskiness of the project. She used 8.37 percent for the base rate, the average cost of capital for the U.S. Oil/Gas Production and Exploration sector, and 10.2 percent as a stress-test rate [Damodaran, 2015].

CONCLUSION

Veronica was ready to meet with ABR's CEO to review the results of the NPV model. Veronica needed to be prepared for discerning questions, such as the time to achieve positive cash flows, the maximum capital impairment, and the value created by the project. Additionally, Veronica would need to address alternative scenarios and which variables had the largest impact on NPV. Ultimately, Veronica must help ABR decide if it should lease the storage and shipping terminals and buy, reconfigure, and operate the old St. Croix refinery.

Note: A teaching note and Excel versions of a discounted cash flow model and a probabilistic NPV model, are available from the authors at no charge.

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NPV Analysis: Should ABR Buy and Restart the St. Croix Refinery? Teaching Note

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Keywords: Probabilistic NPV Analysis, Monte Carlo Simulation, Oil Refining

Disciplines of Interest: Business Analysis, Management, Finance

CASE OVERVIEW

Atlantic Basin Refining, Inc. (ABR) went through a tumultuous legal battle for the right to purchase and reopen an oil refining complex in St. Croix (U.S. Virgin Islands), once the largest refinery in the world, which had fallen on hard times and closed in 2012. Having been offered a settlement that could make reopening the refinery possible, ABR must consider whether it should still pursue purchasing and reopening it. There was tremendous uncertainty, such as how much money the restart would cost, how long it would take to arrive at the restart, and what oil prices would be in a couple years. The case draws on literature related to capital budgeting and management. The case is most appropriate for upper-level undergraduate courses in business analytics, management, and finance, in which intermediate and advanced capital budgeting decisions are analyzed.

RESEARCH METHODS

The case was researched using public sources, government and court records, and trade publications covering the oil refining industry. The case describes an actual situation in a real organization without disguise. For discretion, the names of specific persons were omitted and the court settlement was formulated by the authors.

LEARNING OBJECTIVES

By completing this assignment, students should be able to:

1. Perform a discounted cash flow analysis.
2. Construct and perform an analysis of a probabilistic NPV model, which

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requires students to identify uncertain variables, assess their risks, and apply the analysis to decision-making.

3. Perform sensitivity analysis using Monte Carlo simulation and determine how uncertainty of variables may affect decision-making.
4. Communicate results of the above analyses with company stakeholders.

SUGGESTED TEACHING APPROACHES

This case can be used in advanced undergraduate business-decision, management, finance, or other courses in which capital budgeting techniques are applied. The students are placed in the role of a consultant, Veronica Bell, who must advise the CEO of ABR on whether the company should attempt to purchase and restart a dormant refinery, based on financial considerations provided in the case. Students in introductory courses can be asked to develop the discounted cash flow (DCF) model in Excel using crude-oil price estimates and production details in Tables 2 through 5 of the case. In addition to DCF, students in more advanced business-decision courses may be asked to develop probabilistic sensitivity NPV models and to apply the results to a business decision. For courses in which students have relatively less prior experience with finance and Monte Carlo simulations, it is recommended that instructors select sections relevant to their course's learning objectives. Excel versions of the DCF model and the probabilistic NPV model are available from the authors at no charge.

DISCUSSION QUESTIONS

1. Summarize the legal dispute and describe ABR's decision to purchase and restart the refinery. Discuss basic financial criteria used to evaluate the decision.
2. How should ABR evaluate feasibility and profitability of the project? Develop the discounted cash flow model, and capture the advantages and disadvantages of this methodology.
3. Conduct a probabilistic NPV analysis:
 - a. Identify uncertain variables and define their probability distributions.
 - b. Construct a probabilistic NPV model and apply the analysis results to decision making.
 - c. Discuss its merits over deterministic analysis.
4. Create graphical results of Monte Carlo simulations of the "top influencers" and communicate the findings to stakeholders in the case. Which of the variables had the biggest impact on NPV results?
5. Evaluate how the analysis would change under various scenarios. Discuss

the qualitative analysis associated with real options and the factors affecting this analysis.

EXAMPLE ANSWERS TO DISCUSSION QUESTIONS

1. Summarize the legal dispute and describe ABR's decision to purchase and restart the refinery. Discuss basic financial criteria used to evaluate these choices.

The case presents the saga of the legal dispute between ABR and its former financial partner in the quest to purchase, reconfigure, and restart the defunct oil refinery in St. Croix, USVI territory. The case returns students to 2012 when the refinery once a successful leader in the refining business fell victim to the global economic recession of 2007–2009, technological changes, and rising pollution control costs. Recognizing the importance of the refinery to the island's economy and seeing an opportunity to exploit an imbalance in the prices of crude oils, ABR incorporated and proposed a deal to purchase the refinery. However, the USVI Senate did not approve the deal, citing ABR's suspect financial ability.

ABR continued to negotiate and brought in a partner, Arclight, in 2015. The case describes the soured relationship, the ensuing legal battle, and the settlement offer. Students find ABR's CEO in the middle of 2017, faced with deciding whether ABR should lease the terminal and storage assets and try to purchase and restart the dormant refinery. The instructor may direct students to create a timeline for the case. Depending on class objectives, the students may research and discuss the economy of USVI, legal challenges in contract negotiations, and the consequences if such contracts fail. For example, the class may discuss the main tenets of successful business partnership contracts, which carefully offer systematic approaches for creating and capturing value from the partnership [Gomes-Casseres, 2015]. Specifically, successful business partnerships should lead to diversification and value creation for involved parties, and contracts should clearly specify how such benefits will be distributed among partners. The latter is important, as the value earned by both parties should motivate them to contribute to the venture [Gomes-Casseres, 2015]. It appears that the second component might have been missing in the ABR–Arclight relationship.

This question is also a good starting point to review the oil-refining process and the main features of refinery economics. The instructor may start the discussion by referencing Figure 2 (Refining Process), emphasizing that crude oil is the major cost factor for refineries. As such, maximizing crack spread (a metric that captures the difference between the revenue generated from refined products and the price of the crude oil used to create the product) is critical to earnings. Review the Gulf Coast 3-2-1 example calculation offered in the case, and ask students to predict what happens to crack spreads in scenarios such as whether crude oil prices increase, but product prices hold constant. Oil refining is also a capital-intensive business, so the instructor must emphasize that evaluating the attrac-

tiveness of refinery investment opportunities requires a careful analysis of the costs of the facility (engineering, construction, and startup), timing requirements (time to achieve full production), and the likelihood of financial success in terms of operating margins and returns [Westney, 2011]. The instructor should have students brainstorm variables required to evaluate the restarting decision and answer the most important question of the decision maker, i.e., will the project create value for stakeholders?

2. How should ABR evaluate feasibility and profitability of the project? Develop the discounted cash flow model, and capture the advantages and disadvantages of this methodology.

This question can be addressed through class discussion or as an outside assignment prior to classroom presentation, depending on the course level and/or timing of the case. Suggested preparation materials include chapters associated with capital budgeting in Brigham and Daves [2014], Brealey, Myers, and Allen [2008], Brigham and Houston [2015], Damodaran [2011], Ross, Westerfield, and Jordan [2017], and similar corporate finance textbooks. The theoretical basis for this question is to answer the question, What long-term investments should the company make? The oil and gas industry is capital-intensive, and the decisions made in the capital budgeting process will affect the firm for a long time. Thus, value creation for stakeholders is particularly important as is the speed to capital recovery. Payback period, the expected number of years required to recover initial investment, is one of the simplest capital budgeting decision criteria. Payback is used widely by oil and gas industry practitioners, but it suffers drawbacks because it does not consider cash flows after the initial investment is recouped and it ignores the time value of money.

Discounted cash flows (DCF) provide the best measures of true returns on projects because DCFs capture the entire stream of cash flows and consider time value of money. The Net Present Value (NPV) method provides a useful, industry-accepted measure of project performance.

$$\text{Net Present Value (NPV)} = \sum_{t=0}^n \frac{CF_t}{(1+r)^t}$$

The basic NPV process involves calculating present values of all cash inflows and outflows, discounted at the project's cost of capital. Adding these DCFs results in the NPV measure. If NPV is greater than zero, the project generates value for the firm; if NPV is less than zero, the project should be rejected because it destroys value. If two projects are mutually exclusive, the one with the higher NPV should be chosen [Brigham & Daves, 2014; Brigham & Houston, 2015].

The most challenging aspect of NPV calculations is ensuring that all relevant incremental cash flows are considered, i.e., those cash flows that consist of any and all changes in the firm's future cash flows that are a direct consequence of accepting the project [Ross, Westerfield, & Jordan, 2017]. In doing so, the analyst

excludes sunk costs but accounts for opportunity costs, externalities (positive and negative), and tax consequences of the proposed project. In the case, ABR's CEO directs Veronica, the consultant, to perform a 10-year NPV analysis. The choice of 10 years presents an opportunity for the instructor to review with students how long the analysis time horizon should be. For example, is 10 years the correct length to examine, just because the CEO believes it is? Might the consultant want to convince the CEO to examine a longer or shorter horizon?

The inputs for the model are provided in Tables 2 through 5 in the case. The class can set up a template for NPV deterministic calculations and recalibrate the results with the introduction of the probabilistic NPV model in question 3. In a deterministic model, single-point estimates are used, and the analyst may assign values for discrete scenarios such as the worst-case, most-likely case, and best-case scenario. The instructor can provide the basic deterministic model for the most-likely scenario in Excel (Deterministic Model_TN.xlsx) and ask students to modify it for the worst case or best case.

The students must prepare a pro forma financial statement. To do so, they will use the estimates of barrels per day, the number of production days per year, variable costs, and fixed costs. Students will need to include the investment required, including reconfiguration expenses and investments in net working capital. Table TN-1 presents estimation results for the base-case (most likely) scenario of production of 325,000 barrels per day, utilization level of 80 percent (292 days a year), and crack spread of \$8 per barrel, which is added to the base oil prices in Table 3 in the case. Although world crude oil prices (the average of Brent, WTI, and Dubai prices) decreased significantly around 2015–2016, it is expected that prices will rise over the next decade [Kalayani, 2017]. The cost of crude oil purchases for 2020 is calculated as the price of a barrel of oil \times the number of barrels per day \times the number of days per year, adjusted for ramp-up capacity ($\$58.8 \times 325,000 \times 292 \times 80$ percent = \$4.46 billion). Revenue for 2020 is calculated to be \$5.07 billion (adds \$8 crack spread to the \$58.8 crude oil prices), and once the production is at full capacity in 2021, revenue will be \$6.43 billion (see Table TN-1).

Per agreement, ABR will pay \$3 million annually starting in 2020 to lease access to the marine terminals and a portion of the site's storage. The payments for the right to use the assets are accounted for as a lease in accordance with the guidance in International Accounting Standards (IAS) 17. Operating expenses, including utilities, labor, and logistics, account for 7.5 percent of total sales, and miscellaneous expenses account for 1.5 percent of total sales. The next item is fixed payments to USVI. The case distinguishes these from variable or excise taxes because they are paid regardless of the revenue or production. One can think of these as the government's share of the exploited natural resources. According to the mock Operating Agreement between ABR and the USVI, the company will pay fixed payments of \$8 million between 2018 and 2023 and \$15 million annually starting in 2024. The variable payments to USVI are income-based and

should be recognized when the revenue is recognized [IAS 18 “Revenue”, paragraph 8]. These taxes are most often described as excise taxes. They are measured in accordance with relevant tax legislation, and in our case are 10 percent of total income.

In terms of depreciation, downstream-phase assets, such as refineries, gas treatment installations, chemical plants, distribution networks, and other infrastructures, are depreciated using a method that reflects the pattern in which the asset’s future economic benefits are expected to be consumed. In other words, depreciation is allocated on a systematic basis over an asset’s useful life. The case uses the Accelerated Cost Recovery System (ACRS) and assumes a 10-year asset life, which is consistent with asset class 13.3 of the IRS [Publication 946, B-Table 2, p. 101]. However, some companies choose to depreciate based on a straight-line basis. Although the case provides modified ACRS (MACRS) in Case Exhibit A and in Excel, an instructor can have students try both methods to observe relatively minor differences in NPV outcomes. The depreciation base consists of the purchase price, \$110 million, and reconfiguration costs of approximately \$1.25 billion, with 60 percent of these costs (around \$750 million) incurred in 2018 and the remainder in 2019. Depreciation would commence in 2020, when the refinery is substantially ready for its purpose. To simplify calculations, the case ignores the possibility of sale of the facility at the end of 2027, thus ignoring the possibility of capital gains due to the difference between book and market values, but also the possibility of capital losses due to abandonment costs. For a detailed discussion of accounting treatment of these issues, an instructor can engage students in a discussion of capital gains taxes and abandonment values (the latter is computed by subtracting the residual value of an asset post depreciation, about 16.4 percent or \$223,000, from ABR’s EBIT in the final year. Remind the students that according to IRS rules, when disposing of property that was depreciated using MACRS, any gain on the disposition generally is recaptured as ordinary income up to the amount of the depreciation previously allowed or allowable for the property). After students calculate EBIT, they can compute net operating profit after taxes by subtracting taxes and variable payments to the USVI. Finally, students calculate the operating cash flows by adding back depreciation, subtracting changes in net working capital, and accounting for capital investments as such:

$$\begin{aligned} \text{Total Cash Flows} &= \text{Operating Cash Flows} - \text{Changes in NWC} \\ &\quad - \text{Capital Investment} \end{aligned}$$

Recall from the case that the NWC requirement was calculated as 4.5 percent of the next year’s sales to account for purchases beginning prior to restart of the refinery. Because the case provides neither the information on the capital structure of ABR nor required rates of return on its various capital components, the case uses the cost of capital from Damodaran [2015] for the Oil/Gas Production and Exploration sector of 8.37 percent (base-case) and Oil/Gas Integrated cost of

10.20 percent (as a stress-test rate). Note that an analyst could use a different cost of capital for the delayed costs of reconfiguration in years 2018 and 2019 because these costs are known in advance and are less risky than future cash flows. Some researchers suggest using a lower-rate cost of capital, such as the risk-free rate, for these “delayed decision” cases [Luehrman, 1998a]. Students may experiment with changing the cost of capital to confirm the results. Finally, according to the results of this model, the NPV for the most-likely scenario is about $-\$454$ million (WACC = 8.37 percent) and $-\$509.6$ million (WACC = 10.20 percent), indicating that ABR should not undertake the project.

The worst-case scenario (Table TN-2) uses the largest reconfiguring investment ($\$1.3$ billion), and the highest operating expenses (8 percent), miscellaneous expenses (1.8 percent), and NWC as a percent of sales (5 percent). This scenario involves the lowest production levels (300,000 barrels per day), utilization rates (274 days), proceeds from the sale of coker ($\$300$ million), and crack spread ($\$7.50$). In this case, the NPV result is $-\$931$ million at 8.37 percent cost of capital and $-\$942$ million at 10.20 percent cost of capital.

For the best-case scenario (Table TN-3), the model assumes the highest production levels and spreads at lowest levels of costs. The NPV is approximately $\$1.59$ billion at 8.37 percent cost of capital and $\$1.34$ billion at 10.20 percent cost of capital. Unlike the previous two results, payback period can be computed as a relatively quick 5.03 years. Note that IRR was not calculated in this analysis because the investment contains nonconventional cash flows; thus, NPV provides more reliable results [Ross, Westerfield, & Jordan, 2017].

There are several downsides to using deterministic NPV analysis. First, it considers a few discrete outcomes, ignoring possibilities that may arise in complicated, real-world business situations. Second, it gives equal weight to each outcome, i.e., it does not incorporate the likelihood of each outcome. As an example, it is highly unlikely that all worst-case projections occur, making the worst-case scenario suspect. Finally, this deterministic analysis ignores possible interdependence between inputs, thus oversimplifying the model. Despite these drawbacks, many companies use deterministic models because they are intuitive and easy to use [Palisades, 2017].

3. Conduct a probabilistic NPV analysis.

This question provides an opportunity for students to perform a Monte Carlo simulation. Question 2 discussed drawbacks of deterministic models arising from its simplification assumptions in regard to the uncertainty of inputs, their riskiness, and their interdependence. Probabilistic NPV models follow the decision process presented in Figure 1 of the case and involve assessing inputs, assigning probabilities of occurrence and associated values, and ultimately making decisions on value creation. Introducing uncertainty involves replacing input values with a range, or more properly, a distribution of possible values.

a. Identify uncertain variables and define their probability distributions.

The increasing complexity of the capital-intensive oil and gas industry makes it particularly important to have a complete understanding of risks when making

Table TN-2: Worst-Case Scenario

	Worst Case	Most Likely	Incurred in 2018	Year	High Projection																		
					Low Projection	Price	2023	2024	2025	2026	2027	2028	2029	2030									
Reconfiguring investment	\$1,300,000,000	\$1,250,000,000	60%	2018	-5%	\$58.00	7%																
Barrels per day	300,000	325,000		2019	-5%	\$58.30	7%																
Days of production	274	292		2020	-5%	\$58.80	7%																
Ramp up production	75%	80%	Proceeds Due to ABR	2021	-7%	\$59.80	10%																
Coker sale	\$300,000,000	\$325,000,000	70%	2022	-7%	\$60.50	10%																
Operating Expenses (of sales)	8.0%	7.5%		2023	-7%	\$61.00	10%																
Miscellaneous expenses (of sales)	1.8%	1.5%		2024	-10%	\$61.70	15%																
Crack Spread (Gulf Coast 3-2-1 per barrel)	7.5	8.0		2025	-10%	\$62.30	15%																
Net Working Capital (of sales)	5.0%	4.5%		2026	-10%	\$63.00	15%																
				2027	-10%	\$63.70	15%																
								Depreciation Schedule															
10-year MACRS				2020	18.00%	14.40%	11.52%	9.22%	7.37%	6.55%	6.55%	6.55%	6.55%	6.55%	6.55%	6.55%	6.55%	6.55%	6.55%	6.55%			
ABR Cash Flows and Performance Measures	2017 (end half)	2018	2019	2	3	4	5	6	7	8	9	10											
Sales revenue (Gulf Coast 3-2-1)		4,087,395,000	5,532,060,000	5,589,600,000	5,630,700,000	5,688,240,000	5,737,560,000	5,795,100,000	5,852,640,000	5,910,380,000	5,968,220,000	6,026,160,000	6,084,100,000	6,142,040,000	6,200,000,000	6,257,960,000	6,315,920,000	6,373,880,000	6,431,840,000	6,489,800,000			
Crude oil purchases		3,625,020,000	4,915,560,000	4,973,100,000	5,014,200,000	5,071,740,000	5,121,060,000	5,178,600,000	5,236,140,000	5,293,680,000	5,351,220,000	5,408,760,000	5,466,300,000	5,523,840,000	5,581,380,000	5,638,920,000	5,696,460,000	5,754,000,000	5,811,540,000	5,869,080,000			
Storage and terminal lease		3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000			
Operating expenses		326,991,600	442,564,800	447,168,000	450,456,000	455,059,200	459,662,400	464,265,600	468,868,800	473,472,000	478,075,200	482,678,400	487,281,600	491,884,800	496,488,000	501,091,200	505,694,400	510,297,600	514,900,800	519,504,000			
Miscellaneous expenses		73,573,110	99,577,080	100,612,800	101,352,600	102,388,320	103,276,080	104,311,800	105,347,520	106,383,240	107,418,960	108,454,680	109,490,400	110,526,120	111,561,840	112,597,560	113,633,280	114,669,000	115,704,720	116,740,440			
Fixed payment to USVI		8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000			
Depreciation		141,000,000	253,800,000	203,040,000	162,432,000	130,002,000	103,917,000	82,832,000	67,747,000	56,662,000	47,577,000	39,492,000	32,407,000	26,322,000	21,237,000	17,152,000	13,067,000	9,982,000	7,897,000	6,212,000			
Earnings before interest and taxes (EBIT)		(190,441,880)	(148,320,800)	(108,740,600)	(88,949,520)	(71,978,400)	(58,987,320)	(47,996,240)	(38,005,160)	(29,014,080)	(21,023,000)	(14,031,920)	(8,040,840)	(3,050,760)	1,940,320	7,953,280	14,966,240	22,979,200	30,992,160	38,005,120			
Variable payment to USVI		(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)	(8,000,000)			
Taxes on operating profit		(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)	(800,000)			
Net operating profit after taxes		(7,200,000)	(1,700,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)	(7,200,000)			
Add back depreciation					141,000,000	253,800,000	203,040,000	162,432,000	130,002,000	103,917,000	82,832,000	67,747,000	56,662,000	47,577,000	39,492,000	32,407,000	26,322,000	21,237,000	17,152,000	13,067,000			
Refinery purchase		(110,000,000)																					
Reconfiguring cost		(780,000,000)																					
Coker sale		210,000,000																					
Cash flow due to tax on coker sale		(21,000,000)																					
Net working capital			183,932,775	248,942,700	251,532,000	253,381,500	255,970,800	258,190,200	260,779,500	263,368,800	265,958,100	268,547,400	271,136,700	273,726,000	276,315,300	278,904,600	281,493,900	284,083,200	286,672,500	289,261,800			
Cash flow due to change in working capital			(183,932,775)	(65,009,925)	(2,589,300)	(1,849,500)	(2,589,300)	(2,219,400)	(2,589,300)	(2,589,300)	(2,589,300)	(2,589,300)	(2,589,300)	(2,589,300)	(2,589,300)	(2,589,300)	(2,589,300)	(2,589,300)	(2,589,300)	(2,589,300)			
Net cash flows		(110,000,000)	(598,200,000)	(518,066,644)	(451,854,664)	(385,642,684)	(319,430,704)	(253,218,724)	(187,006,744)	(120,794,764)	(54,582,784)	12,629,200	80,817,220	149,014,240	217,211,260	285,408,280	353,605,300	421,802,320	490,000,340	558,197,360			
Discounted net cash flows		(110,000,000)	(551,997,785)	(460,525,655)	(379,053,525)	(307,581,395)	(236,109,265)	(164,637,135)	(93,165,005)	(21,692,875)	49,779,255	121,307,385	192,835,515	264,363,645	335,891,775	407,419,905	478,948,035	550,476,165	622,004,295	693,532,425			
Cumulative discounted net cash flows		(110,000,000)	(661,997,785)	(1,122,523,441)	(1,583,057,097)	(2,043,590,753)	(2,504,124,409)	(2,964,658,065)	(3,425,191,721)	(3,885,725,377)	(4,346,259,033)	(4,806,792,689)	(5,267,326,345)	(5,727,859,001)	(6,188,392,657)	(6,648,926,313)	(7,109,459,969)	(7,570,000,625)	(8,030,541,281)	(8,491,076,937)			
Net Present Value		(893,1289,014.48)																					
NPV at cost of capital of 10.2%		(941,521,475.50)																					

Table TN-3: Best-Case Scenario

	Most Likely	Best-case	Incurred in 2018	Year	Low Projection	Avg. Crude Oil Price	High Projection												
	2017 (2nd half)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027								
Reconfiguring investment	\$1,250,000,000	\$1,200,000,000	60%	2018	-5%	\$58.00	7%												
Barrels per day	325,000	350,000		2019	-5%	\$58.30	7%												
Days of production	292	310		2020	-5%	\$58.80	7%												
Ramp up production	80%	85%	Proceeds Due to ABR	2021	-7%	\$59.80	10%												
Coker sale	\$325,000,000	\$350,000,000	70%	2022	-7%	\$60.50	10%												
Operating Expenses (of sales)	7.5%	7.0%		2023	-7%	\$61.00	10%												
Miscellaneous expenses (of sales)	1.5%	1.0%		2024	-10%	\$61.70	15%												
Crack Spread (Gulf Coast 3-2-1 per barrel)	8.0	12.0		2025	-10%	\$62.30	15%												
Net Working Capital (of sales)	4.5%	4.0%		2026	-10%	\$63.00	15%												
				2027	-10%	\$63.70	15%												
								Depreciation Schedule											
10-year MACRS				10.00%	18.00%	14.40%	9.22%	7.37%	6.55%	6.55%									
ABR Cash Flows and Performance Measures	2017 (2nd half)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027								
Sales revenue (Gulf Coast 3-2-1)	0	1	2	3	4	5	6	7	8	9	10								
Crude oil purchases				6,529,530,000	7,790,300,000	7,866,250,000	7,920,500,000	7,996,450,000	8,061,550,000	8,137,500,000	8,213,450,000								
Storage and terminal lease				5,422,830,000	6,488,300,000	6,564,250,000	6,618,500,000	6,694,450,000	6,759,550,000	6,835,500,000	6,911,450,000								
Operating expenses				3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000								
Miscellaneous expenses				457,067,100	545,321,000	550,637,500	554,435,000	559,751,500	564,308,500	569,625,000	574,941,500								
Fixed payment to USVI		8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000								
Depreciation		(8,000,000)	(8,000,000)	131,000,000	235,800,000	188,640,000	150,912,000	120,782,000	96,547,000	73,500,000	54,111,900								
Earnings before interest and taxes (EBIT)		(8,000,000)	(8,000,000)	442,337,600	431,976,000	473,060,000	506,448,000	523,502,000	542,529,000	547,195,000	541,119,000								
Variable payment to USVI		(800,000)	(800,000)	44,233,760	43,197,600	47,306,000	50,644,800	52,350,200	54,252,900	54,119,500	54,111,900								
Taxes on operating profit		(7,200,000)	(7,200,000)	398,103,840	388,778,400	425,754,000	455,803,200	418,801,600	434,023,200	437,756,000	432,895,200								
Net operating profit after taxes		-	-	131,000,000	235,800,000	188,640,000	150,912,000	120,782,000	96,547,000	73,500,000	54,111,900								
Add back depreciation		(110,000,000)																	
Refinery purchase																			
Reconfiguring cost		(720,000,000)	(480,000,000)																
Coker sale		245,000,000																	
Cash flow due to tax on coker sale		(24,500,000)																	
Net working capital			293,828,850	350,563,500	353,981,250	356,422,500	359,840,250	362,769,750	366,187,500	369,605,250	373,025,000								
Cash flow due to change in working capital			(293,828,850)	(66,734,650)	(3,417,750)	(2,441,250)	(3,417,750)	(2,929,500)	(3,417,750)	(3,417,750)	(3,417,750)								
Net cash flows	(110,000,000)	(506,700,000)	(781,028,850)	472,369,190	621,160,650	611,952,750	603,297,450	536,654,100	527,152,450	520,143,250	513,607,250								
Discounted net cash flows	(110,000,000)	(467,564,824)	(665,041,780)	371,154,169	450,368,122	409,424,271	372,457,779	305,724,989	277,117,302	252,313,976	239,623,087								
Cumulative discounted net cash flows	(110,000,000)	(577,564,824)	(1,242,606,604)	(871,452,435)	(421,084,313)	(11,661,042)	360,796,737	666,521,726	943,639,029	1,195,953,004	1,593,576,091								
Net Present Value	\$1,593,576,091.35																		
NPV at 10.2%	1,342,224,811.02																		

investment decisions [Westney, 2011]. Thus, the first step is to identify uncertain variables. The uncertain variables presented in the case are:

- Future crude oil prices
- Daily oil production (number of barrels per day)
- The number of production days per year (utilization rate)
- Ramp-up production rate
- The proceeds from sale of coker
- Operating expenses as a percent of sales
- Miscellaneous expenses as a percent of sales
- Crack spread
- Net working capital as a percent of sales

A proper start to risk analysis requires investing time in the design of the model, which involves developing assumptions, identifying key input distributions, and screening variables. Once uncertain variables are identified, an analyst can use probability distributions to account for realistic risk considerations. In the case, Veronica decided to use the triangular distribution, which defines minimum, most likely, and maximum values. Typically, this distribution is used if input data are derived from subject matter experts or from professional trade publications. Subject matter experts find it easier to address questions regarding most-likely, worst-case, and best-case scenarios than, e.g., deriving a mean and standard deviation as in the case of the normal distribution. Sometimes, analysts will perform a simple adjustment to the most likely (such as ± 10 percent) to derive the minimum and maximum values. This procedure was not performed here; instead, the information was derived from the subject matter expert, who provided realistic parameters. Another way to derive the distributions would be to “fit” historical data when possible, which can be mentioned to students, but was beyond the scope of this case. For the oil and gas industry, the following questions are examples used to derive the key parameters for the triangular distribution: What is the worst-case amount of time required to complete construction, commissioning, and startup? What would be the best-case amount of time? What would be the most likely?

Example plots of the triangular distribution are provided in Exhibit B of the case. An effective approach to help students understand the distribution is to examine the plots and ask students to interpret results and then ask them how the analysis changes when they switch from deterministic to probabilistic models. For example, Exhibit B shows that the 90 percent interval range of the number of barrels per day lies between 307,906 and 342,094. This range was derived from a triangular distribution with a minimum of 300,000 barrels per day, maximum of 350,000, and the most likely estimate of 325,000 barrels per day. The students should notice that the chances of the minimum or maximum values occurring for this individual variable are very small. Intuition, or mathematics if the instructor wishes to show the students, will tell students that the chances of values at the

extremes occurring across multiple variables in the best-case and worst-case scenarios are even more remote. Thus, the best-case and worst-case scenarios developed in the deterministic models are highly unrealistic. The probabilistic model, on the other hand, uses combinations of the uncertain variables drawn from their respective distributions, yielding both what could occur and the likelihood of that outcome.

b. Construct a probabilistic NPV model and apply the analysis results to decision-making.

This analysis uses @Risk version 7.5 from Palisades to perform Monte Carlo simulation. For general discussion of Monte Carlo simulation, see Albright and Winston [2016] and instructional manuals for @Risk. Once the probability distributions are determined, @Risk runs iterations (the case used 1,000 to ensure sufficient iteration size) to calculate NPV, each time using a different set of random values from the input probability distributions. The uncertain variables are listed in Table TN-4 with the “Distribution Function” columns showing the values used for each variable in iterations. The instructor can use the probabilistic model provided in Excel (Simulation Model_TN.xlsx) but note that the file requires @Risk to function properly.

Figure TN-1 depicts the simulated distribution of NPV outcomes and the associated statistics using the base-case cost of capital of 8.37 percent.

The consultant can report to ABR that the project’s mean NPV is expected to be about $-\$62.7$ million, with a range of $-\$723$ million to just over $\$1$ billion. The distribution shows a 90 percent probability that NPV will be between $-\$545$ million and $\$596$ million. Figure TN-2 shows there is a 39.6 percent probability that NPV will be positive. Recall that the project could be accepted if NPV is greater than 0.

Figure TN-3 shows the Monte-Carlo simulation results for the base-case cost of capital (8.37 percent) with an overlay of the stress-case cost of capital NPV distribution (10.20 percent). The mean NPV for the stress case is $-\$156$ million, with a 31 percent probability of a positive value.

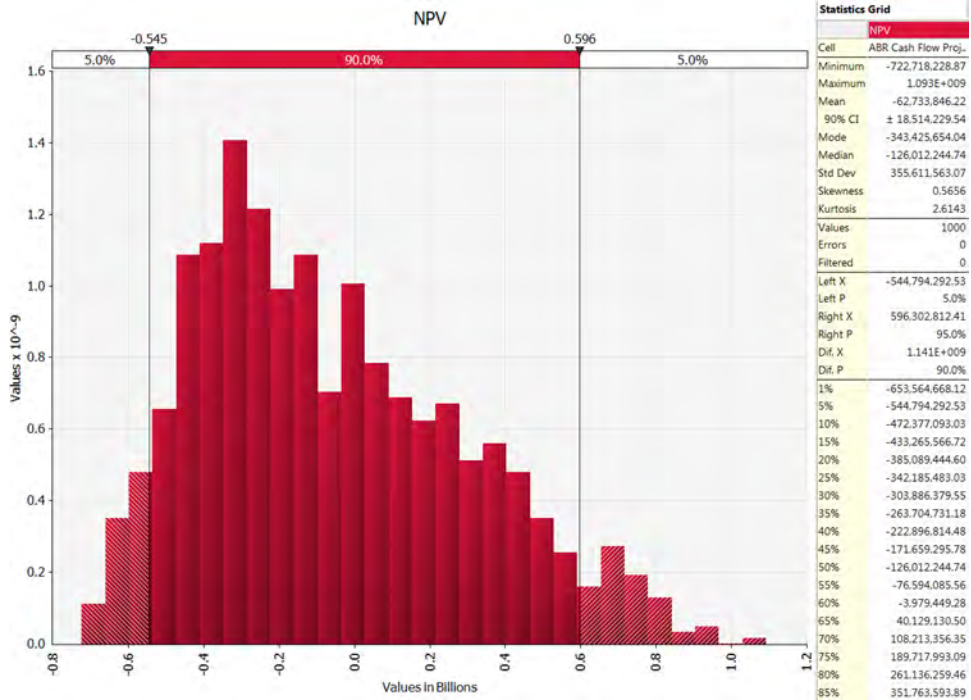
The instructor should open discussion for whether students would advise ABR to proceed with the refinery purchase and restart. Hopefully, there will be some differences of opinion, which the instructor can then use to form a debate as the method to explore this question. If there are too few students on either side, the instructor should balance the sides by assigning students to argue for or against even if that was not their initial decision. Host the debate by giving the two groups five minutes to form their opening arguments and determine who will present them. Then have the “yes” group open its argument followed by the “no” group response. After both arguments are presented, the instructor should facilitate a question-and-response exchange between the two groups.

After hosting the debate, the instructor should delve into questions such as the following: What criteria did the students use for their decision? Did they miss any important factors? Did the students weigh factors differently? Were factors that contradicted the students’ initial proclivity evaluated? Did differences in personal

Table TN-4: Uncertain Variables

	Min	Most Likely	Max	Distribution Function	Incurred in 2018	Year	Low Projection	Avg. Crude Oil Price	High Pro jection	Distribution Function
Reconfiguring investment	\$1,200,000,000	\$1,250,000,000	\$1,300,000,000	\$1,238,352,431	60%	Crude, 2018	-5%	\$58.00	7%	\$56.54
Barrels per day	300,000	325,000	350,000	334,282		Crude, 2019	-5%	\$58.30	7%	\$58.93
Days of production	274	292	310	290		Crude, 2020	-5%	\$58.80	7%	\$59.86
Ramp up production	75%	80%	85%	82.3%	Proceeds Due to ABR	Crude 2021	-7%	\$59.80	10%	\$64.23
Coker sale	\$300,000,000	\$325,000,000	\$350,000,000	\$323,932,905	70%	Crude 2022	-7%	\$60.50	10%	\$62.82
Operating Expenses (of sales)	7.0%	7.5%	8.0%	7.4%		Crude 2023	-7%	\$61.00	10%	\$64.94
Miscellaneous expenses (of sales)	1.0%	1.5%	1.8%	1.4%		Crude 2024	-10%	\$61.70	15%	\$60.41
Crack Spread (Gulf Coast 3-2-1 per barrel)	\$7.50	\$8.00	\$12.00	\$7.78		Crude 2025	-10%	\$62.30	15%	\$67.12
Net Working Capital (of sales)	4.0%	4.5%	5.0%	4.5%		Crude 2026	-10%	\$63.00	15%	\$58.87
						Crude 2027	-10%	\$63.70	15%	\$65.72

Figure TN-1: Base Case NPV Distribution



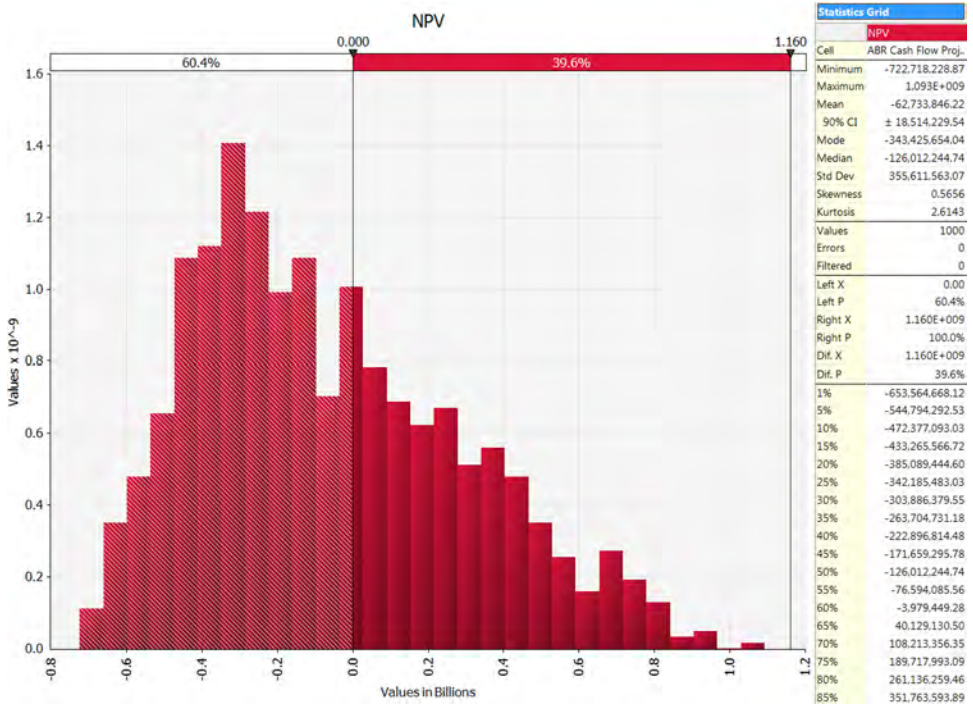
risk tolerance affect the decision? Did any student change her decision as a result of hearing the arguments? What information is missing, and what further analysis is required to come to a final decision?

Instructors should remind students that ABR’s initial investment bids (the one that failed in the USVI Senate and the one that failed due to Arclight’s misappropriation) included cash flows from the storage and terminal assets and the exploitation of cheaper WTI prices in comparison with other international crudes, which ABR planned to hedge to “lock in” the positive differential. Ask students how these factors might have changed the outcomes of the analysis.

c. Discuss the merits of a probabilistic model over a deterministic one.

Palisades [2017] provides information on the merits of probabilistic models over single-point estimates. The Monte Carlo procedure shows not only what could happen, but also how likely each outcome is. The process generates graphical representations and summary statistics, which make the presentation of findings easier to communicate. It also provides sensitivity analysis and shows the “top influencers” in the analysis. Finally, Monte Carlo simulation forces the analyst to integrate uncertainty and possible interdependencies between input variables. Once the model is established, it is not difficult to analyze the principal

Figure TN-2: Base Case NPV Distribution Showing Chances NPV Will Be Positive

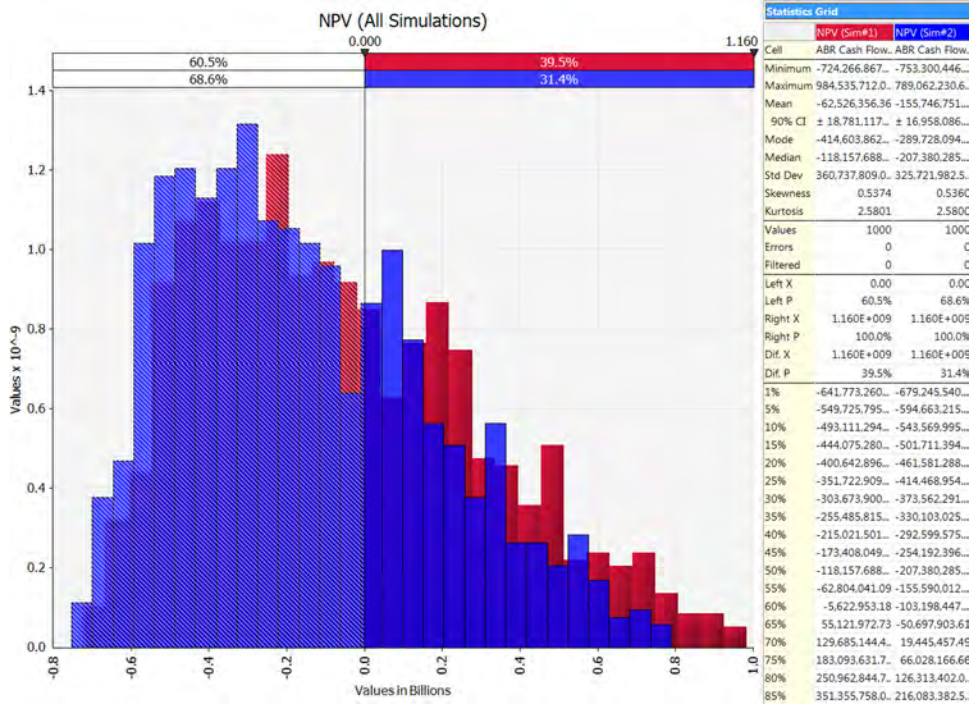


sources of uncertainty in the cash flows and to see how much a decision maker could reduce this uncertainty by improving the forecasts of sales and costs. It also allows exploring the effects of possible modifications to the project.

4. Create graphical results of Monte Carlo simulations of the “top influencers” and communicate the findings to stakeholders in this case. Which of the variables had the biggest impact on NPV results?

The tornado diagram for the effect on output mean (base-case cost of capital) is presented in Figure TN-4. By far, the most important variable is crack spread. This variable is consistent with the reality of the industry, where the crack spread is a key indicator of refinery margins and profitability. Numerous market, political, regulatory, supply, and natural (e.g., weather) factors affect crude oil and refined product prices, affecting refiners’ margins. The 2017 hurricane season reminded us how sensitive the crude oil industry can be to weather factors and how reliant our economy is on oil refineries. When Hurricane Harvey struck the Texas coast in late August 2017, as much as a quarter of Gulf of Mexico oil production ceased on the day after the hurricane, and the region’s refinery capacity was down by about 22 percent [Bureau of Safety and Environmental

Figure TN-3: Base and Stress Case NPV Distributions



Enforcement, 2017]. This damage resulted in shortages of gasoline in some areas and higher prices for distillates, jet fuel, and gasoline.

Other factors, such as variable costs (operating and miscellaneous expenses) and the amount of production, are not as important, according to Figure TN-4. These statements do not mean that they are not important, but that they are less important, given the input distribution. As an example, the amount of production is not as important, given how much it might vary; specifying a lower minimum and a higher maximum for its distribution would increase its relative importance to the NPV distribution.

Figure TN-5 shows another depiction of sensitivity called a spider diagram. The steepness of the crack spread line again shows that it has the most drastic influence on the NPV result. When crack spread was close to its lower limit, \$7.50, the NPV was -\$540 million, whereas when it was close to the upper limit, \$12.00, the NPV was \$618 million. The NPV profile is positive if crack spreads are at least at the 60th percentile. Thus, if ABR's projections for crack spread are off even a minor amount, ABR could make a drastically incorrect decision, such as not buying the refinery when it should. Perhaps ABR should spend additional effort generating more precise and nuanced forecasts for crack spreads over the

Figure TN-4: Tornado Diagram Sensitivity Analysis

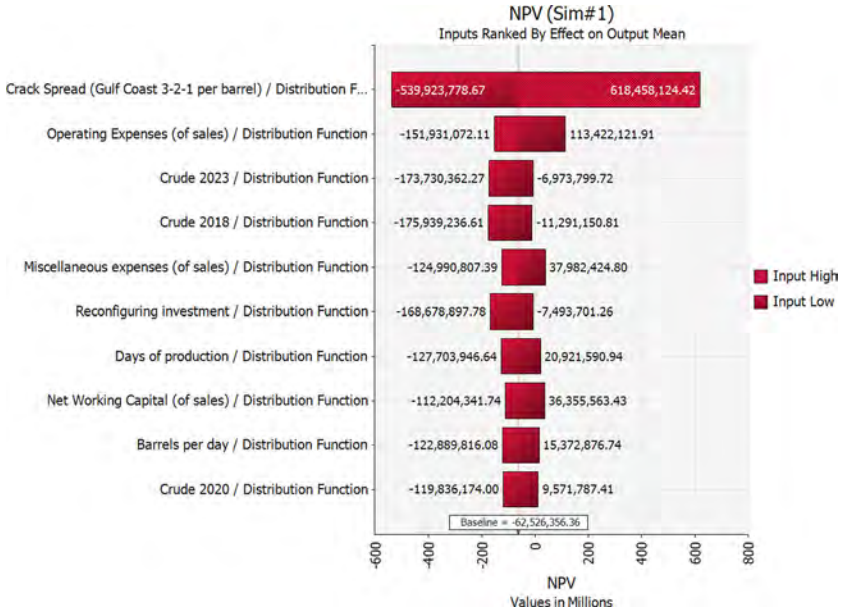
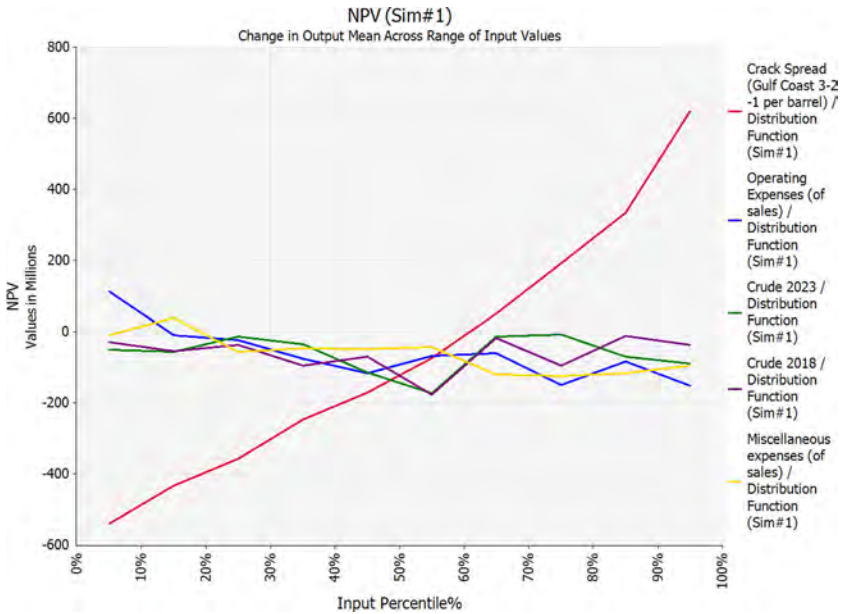


Figure TN-5: Spider Diagram Sensitivity Analysis



life of the investment. This single model improvement would yield substantial value for the decision maker.

Sensitivity analysis is subject to optimistic or pessimistic projections that form the parameters for triangular distribution. Thus, sensitivity analyses may yield somewhat ambiguous results [Brealey, Myers, & Allen, 2008]. To address this problem, an analyst can estimate probabilities for each possible value of an input variable, but this task would be difficult, if not impossible, to complete.

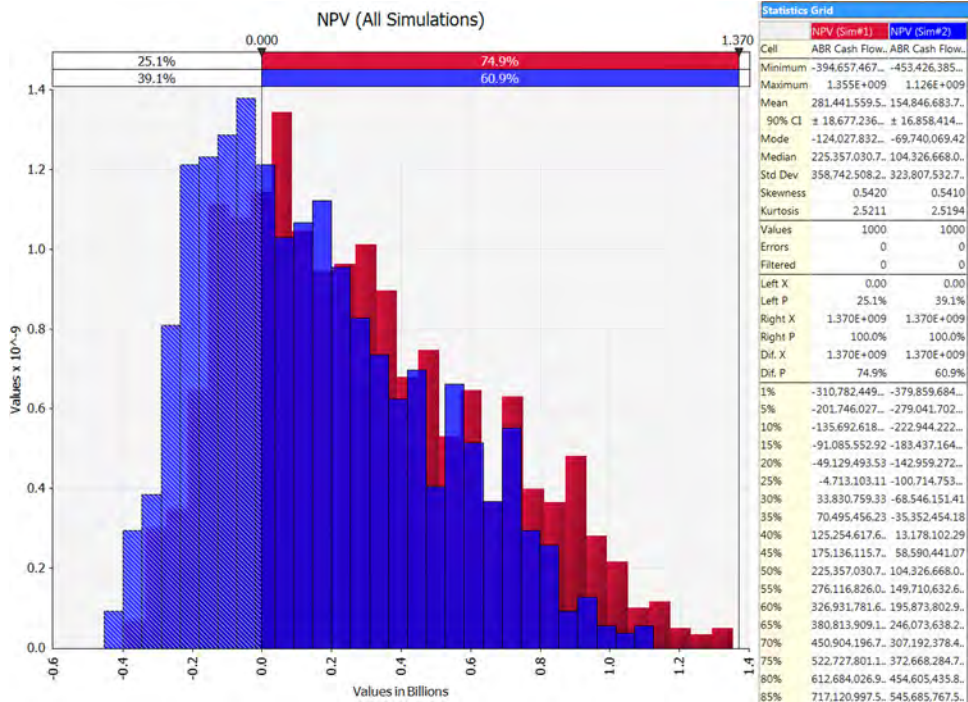
Interdependencies among the inputs are an issue beyond the scope of this case. As is, the model allows all uncertain inputs to “float” independently, but this is unlikely to happen in practice. For example, it is likely that there is a relationship between crack spread and the price of the coker. Perhaps a higher crack spread is associated with a higher coker sale price, so the model should not simulate situations of high crack spread and low coker price if such a scenario is unrealistic. As another example, fluctuations in oil prices are likely to be correlated from year to year, which may result in trended, nonstationary series (auto-correlation). Integrating the directions and strengths of the underlying relationships will simulate a more realistic and likely tighter NPV distribution. Instructors introducing students to probabilistic modeling should, at the minimum, lead a discussion explaining that the model would be improved if correlations among the inputs were derived. This technique presenting a model that can be improved is a good way to have students not only learn, but also contribute to, better analysis. Instructors with more advanced students can experiment with the model by defining at least a few correlations among the uncertain variables. The instructors can then lead the students through an analysis that includes how sensitive the model is to changes in the correlations.

Risk was also introduced early in the case but was beyond the analyst’s scope. Risk might include events such as oil shortages, natural disasters, inability to sell the coker, major delay during reconfiguration, and labor disruptions. As was the case for interdependencies, the instructor should lead a brief discussion of how the model could be improved by including these risks. For example, the model could employ a risk register for factors that, if they occur, alter the estimates. The analyst could use functions (e.g. Bernoulli, Poisson, Triangle, PERT) to specify the probabilities that the coker does not sell, the number of natural disasters to strike the facility each year (the USVI is in an active hurricane zone after all), and the severity of each disaster (e.g., lost production days). Students should be able to articulate how these inclusions would improve the model’s accuracy.

5. Evaluate how the analysis would change under various scenarios. Discuss the qualitative analysis associated with real options and the factors affecting this analysis.

The instructor can ask students to discuss other possible scenarios, such as the possibility of a shorter reconfiguration period and earlier restart dates, for example, from 2020 to 2018. In this case, the NPV continues to remain

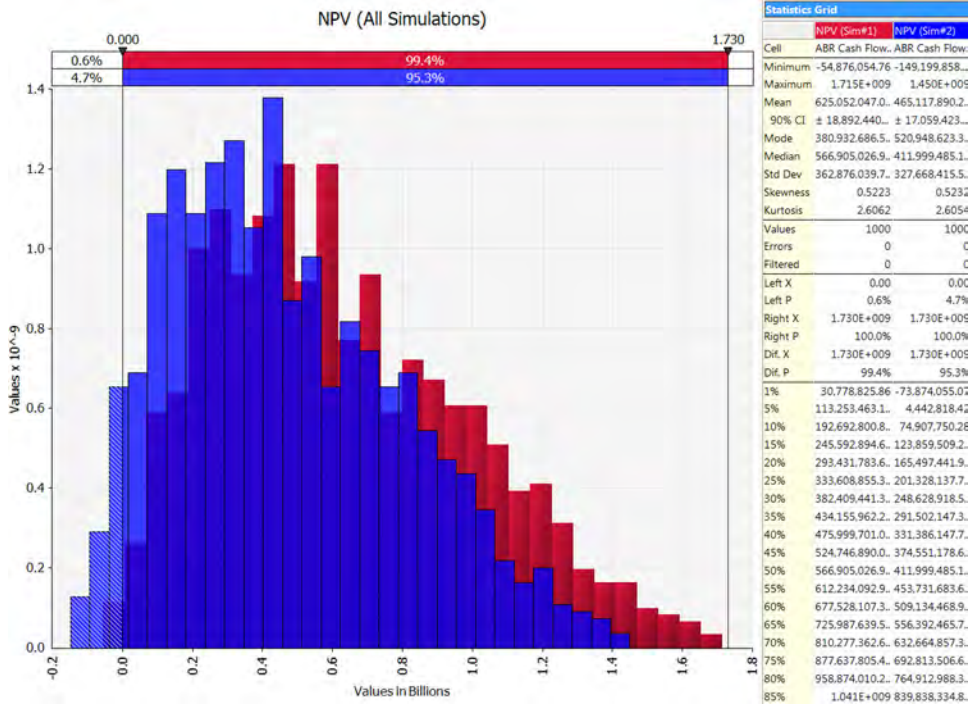
Figure TN-6: NPV Distributions if Crack Spread is \$1 Higher



negative (see Scenario_2018.xlsx). Another alternative worth exploring is the influence of crack spread. Recall that ABR originally planned to generate larger crack spreads than average by paying less than market rates for crude oil (buying WTI and hedging it) and selling the refined products at market rates. If ABR were able to increase crack spreads by \$1, would that have made much difference? How about \$2? Figures TN-6 and TN-7 show the results of the probabilistic NPV analysis if the parameters for crack spread are (\$8.50, \$9, \$13) and (\$9.50, \$10, \$14), respectively. Both profiles are much more palatable; in particular, the \$2 higher-than-average crack spreads (Figure TN-7) show significant potential for substantial value generation even at the stress-case cost of capital.

To this point, NPV was calculated based on the assumption that ABR will passively manage the facility without adapting to market conditions. However, if things go well (e.g., if the crack spread increases), the project may be expanded or the timing of reconfiguration may be expedited to take advantage of better market opportunities. On the other hand, if things go badly (lower crack spread, lower production levels, etc.), the project may be cut back or abandoned. This juncture is a good opportunity to discuss the topic of real

Figure TN-7: NPV Distributions if Crack Spread is \$2 Higher



options, which occur when managers can influence the size and risk of a project's cash flows by taking actions during the project's life. Such options provide opportunities to respond to changing market conditions, and thus real options are also referred to as strategic or embedded options [Brealey, Myers, & Allen, 2008; Brigham & Daves, 2015].

Using the simple DCF model in Question 2, the derived NPV was negative in the worst cases and most likely cases. However, the DCF analysis ignores the potentially valuable timing or abandonment options discussed above. These options do not commit the company to any real change, but they give it the flexibility to change. Any project that expands the firm's set of opportunities has positive option value. To value real options, an analyst can amend the DCF analysis with qualitative assessment. Students can create a decision tree with decision outcomes and probabilities of occurrence to understand embedded real options in capital investment projects. The instructor can engage the students in a discussion of alternative settings for the decision trees for ABR, which may include the probability of high demand, low demand, high prices, and low prices. However, the actual calculation of values of real options is beyond the scope of this case. In theory, to value real options, one

can use existing financial option techniques to match them to real option scenarios. Alternatively, if no standard financial options are available, analysts can create a new financial product with the help of financial engineering that matches it to a particular real option problem [Brigham & Daves, 2014].

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