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Introduction

Welcome to this issue of the ***Business Education Innovation Journal***.

The purpose of this journal is to assemble researched and documented ideas that help drive successful learning and motivate business students to learn. The intention is to draw ideas from across both methods and disciplines and to create a refereed body of knowledge on innovation in business education. As a result, the primary audience includes business education faculty, curriculum directors, and practitioners who are dedicated to providing effective and exciting education.

We invite you to read about innovations published and apply in your classroom. We also encourage you to develop your original creative ideas, prepare an article, and submit for review.

This particular issue includes a number of interesting classroom innovations in diverse areas.

Peter J. Billington
Editor

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Quality Does Matter in Your University Online Course

Debra Westerfelt, Ph.D., Ashland University, Ashland, Ohio USA

ABSTRACT

The purpose of this study was to examine student satisfaction with the Quality Matters design process that was incorporated into an online MBA organizational behavior class at a Midwestern private university.

Quality Matters (QM) is a nationally recognized, research based, peer-review process designed to certify the quality of online and hybrid courses. For an online course to qualify as a QM course, it must contain specific components in its overall design.

Four research questions were examined in this study:

1. Which QM design components did students find most useful in the course?
2. Was it easy to access assignments in the QM format?
3. Did students feel a sense of community with other students in the course?
4. How did the course compare to other courses that did not use the QM format?

The author's underlying purpose in doing this research was to determine whether this design process was effective and which specific aspects of the design were deemed as most and least useful to students.

Keywords: MBA students, online education, Quality Matters certification

INTRODUCTION

As online programs continue to grow in popularity at colleges and universities across the country, there needs to be standards which offer quality assurance for those courses. This past year, the Higher Learning Commission approved a full-online MBA Program for a Midwestern private university. In so doing, the administration and faculty wished to ensure that the experience would be one of quality and uniformity for its students. After thorough investigation of programs that could facilitate this process, it was the decision of all concerned to implement Quality Matters standards to the program. The Organizational Behavior class that participated in this study was among the first three courses offered with this format in the MBA program.

Quality Matters (QM) is a nationally recognized, research based, peer-review process designed to certify the quality of online and hybrid courses. Started in 2003 as a Fund for the Improvement of Postsecondary Education (FIPSE) grant, QM has since become a not-for-profit, subscription-based service.

Faculty members use the QM rubric as a framework for the design of their online or hybrid courses. The rubric is a set of standards that research has shown contribute to the quality of an online or hybrid course. The rubric is then tested by a team of three trained peer reviewers to evaluate the design of the online or hybrid course.

QM is a continuous improvement model. Upon review, the course either will or will not yet meet expectations. If a course meets expectations, it is recognized on the QM website and permitted to display the QM logo. If a course does not yet meet expectations, the faculty member receives detailed feedback from the review team and has the opportunity to revise the course so that it does meet expectations.

The Quality Matters Program Mission is dedicated to promoting and improving the quality of online education and student learning through development of research-supported, best practice-based quality standards and appropriate evaluation tools and procedures. In addition to fostering institution acceptance and integration of QM standards into organizational effectiveness efforts, it provides faculty development training in the use of QM rubrics and other quality practices to improve the quality of online/hybrid courses (Quality Matters Program, 2011).

The Quality Matters Rubric and processes are as follows:

Continuous

- The Quality Matters process is designed to ensure that all reviewed courses will eventually meet expectations. The process is integral to a continuous quality improvement process.

Centered

- On research: The development of the rubric is based in national standards of best practice, the research literature, and instructional design principles.
- On student learning: The rubric and process are designed to promote student learning.
- On quality: The review sets a quality goal at the 85% level or better (courses do not have to be perfect but better than average).

Collegial

- A Quality Matters review is part of a faculty-driven, peer review process. The review process is intended to be diagnostic and collegial, not evaluative and judgmental.

Collaborative

- The review is based on collaboratively identified evidence found in the course rather than the personal preference of an individual reviewer.
- The review is flexible and not prescriptive (with many ways to meet each standard).
- The review team consists of three experienced online instructors as reviewers along with the course faculty developer. (Quality Matters Program, 2011)

REVIEW OF LITERATURE

Online education is one of the most exciting enhancements to contemporary education. In response to enrollment demands, many institutions have been working on strategic plans to implement quality online programs (Kim & Bonk, 2006).

Computer-based learning studies have attempted to address the issue of quality in online learning. One of the largest studies dedicated to this topic was *Quality on the Line: Benchmarks for Success in Internet-Based Distance Education*, commissioned by the National Education Association, the nation's largest professional association of higher education faculty, and Blackboard, a leading Internet education company (Phipps & Merisotis, 1999). The study examined case studies of six colleges/universities that provided Internet-based degree programs. After a thorough review of current literature was conducted, twenty-four benchmarks were identified that assessed the role of institution, administration, faculty, and students that are essential to quality distance education (McGorry, 2003).

In the mid-1990s, The Alfred P. Sloan Foundation Consortium suggested five pillars for a framework of measuring and improving an online program within an institution. The pillars were: Learning effectiveness, student satisfaction, faculty satisfaction, cost effectiveness, and access (Lorenzo & Moore, 2002).

In addition, two leaders in distance education, The American Distance Education Consortium (1999) and Pennsylvania State University also developed guidelines for online courses based upon the premise that the principles that govern face-to-face instruction are similar to Web-based environments.

Penn State faculty suggested the following recommendations and assessment factors: Enabling students to self-monitor progress, giving regular feedback to students, supporting peer learning and assessment, and designing self-assessment practices (McLoughlin & Luca, 2001).

There need to be specific objectives, outcomes, learner engagement, problem- and knowledge-based learning in quality online education. (McGorry, 2003).

Student satisfaction and learning were tied to quality in a study by Arbaugh (2000). The areas of perceived usefulness of the course, flexibility, interaction, student experience, and engagement were addressed in that study.

In a 2006 study by Shea, Li, and Pickett, it was suggested that “teaching presence and community” were two important ingredients to quality online education.

It should be noted that design elements are very important in the success of an online course. In a study by Zemsky and Massey (2004), it was stated that faculty often use standard PowerPoint slides and canned course management systems, which may not be the most effective or engaging ways to interact with students (Norton & Hathaway 2008). The design of the course and the assessment of that design are of paramount importance to the success of the course and the program.

In a survey conducted by Kim and Bonk (2006) regarding the predictions of how the quality of online learning would be measured in the future, it was found that the majority of the respondents felt that the best measure was a comparison of student achievement to similar classes in a F2F setting, while a much lesser percentage felt the course evaluation was the best measurement of quality in the course.

Traditionally, the evaluation has been positioned at the end of the course. In online teaching, however, the level of understanding that teachers, learners, and developers have can impact the ultimate effectiveness of the product. Therefore, a proactive evaluative system should be in place that will identify critical online learning factors that will better inform the planning, design, and development of resources (Sims, Dobbs, Hand, 2002). In doing so, planning activities are assessed against evaluation criteria that would normally be applied during “formative assessment.”

A plethora of performance assessments should be instituted by instructors for quality online instruction. The assessments should be aligned with course objectives and subject aims, and should enhance students’ vocational and disciplinary skills (Zheng & Smaldino, 2003). Assessment tools should include quality assignments, collaborative assignments, testing, etc. Learning outcomes should be measured through grades, deep learning, higher order thinking, critical thinking, or problem-solving skills (Yang & Cornelius, 2005).

RESEARCH QUESTIONS

The research questions examined in this study included:

1. Which QM design components did students find most useful in the course?
2. Was it easy to access assignments in the QM format?
3. Did students feel a sense of community with other students in the course?
4. How did the course compare to other courses that did not use the QM format?

Data Sample

Eighteen MBA students were enrolled in an organizational behavior online course. The survey was administered to 18 students, of which 16 students responded. Age and gender variables were not studied, because the focus of this study was the QM format itself and how effective it was for all students, regardless of age or gender. It should be noted, however, that the results of the study reflect a nontraditional audience. The MBA student population consists of predominantly working adults.

Methodology and Procedure

The author implemented the QM components in an online MBA course in Organizational Behavior in the Spring of 2011. The learning management system that housed the course was ANGEL.

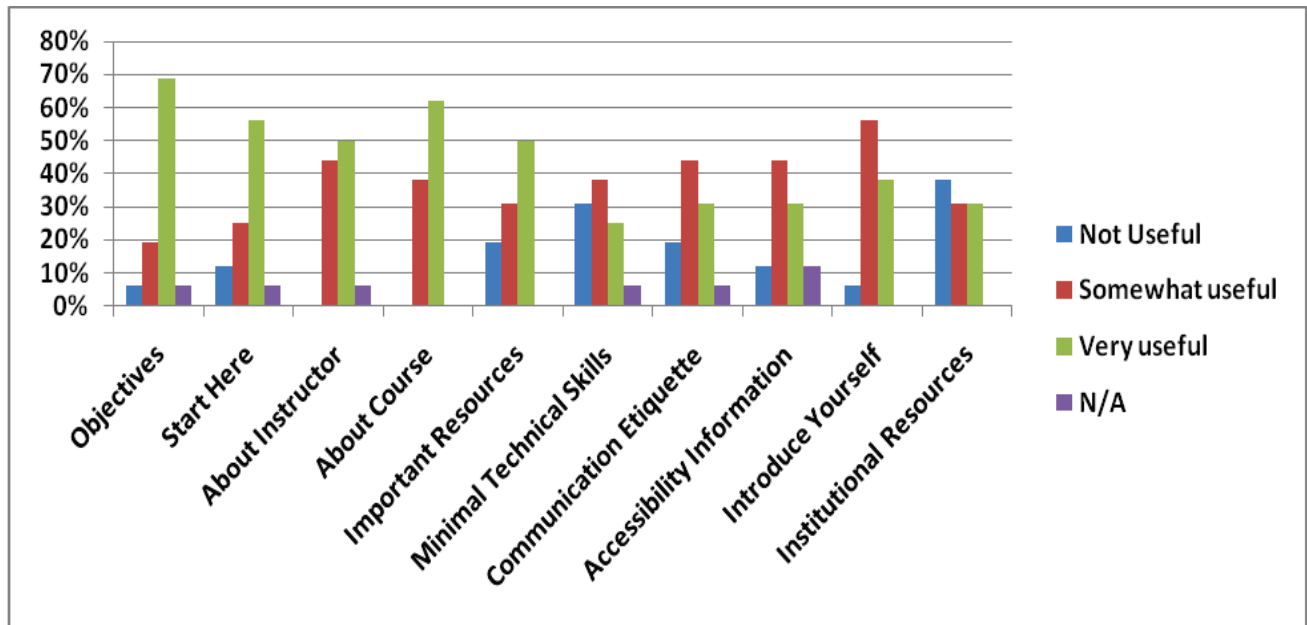
Since the author was interested in student feedback regarding the design and delivery of the course, a student survey was conducted at the end of the course on www.zoomerang.com regarding student views of the effectiveness of the QM format in their learning. Students were given a week to respond. This was a separate survey from the standard course evaluation given at course end. In particular, the question of interest was how the format of this course compared to other online courses the students have taken that were designed in a format that was not QM enhanced. The survey also asked students to rate the features they found most and least helpful in the QM format. The actual QM review process took place with external reviewers at the end of the semester.

Results of the Survey

The survey questioned the usefulness of specific components that appeared on the Course Home Page, Content Section, and Resources pages. Since the student sample used in the study was small, which causes a significant lack of power with respect to any statistical tests (i.e., only large differences on the various percentage differences in the responses could be found to be statistically significant), the researcher did not conduct statistical tests. Thus, only the *differences* in the various percentage differences in the responses will be reported.

The results of the survey are as follows:

Figure 1: Rate your usefulness of each of the QM components on the website.

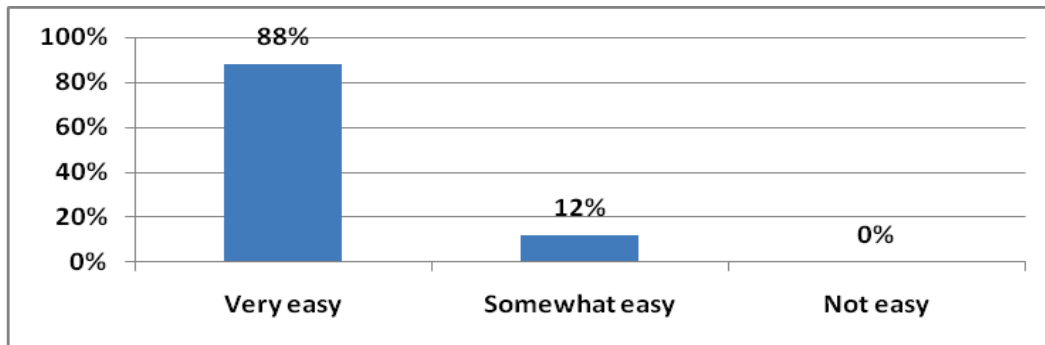


In Figure 1, the author notes that the *Objectives* section was seen as the most useful of all of the components on the website. These objectives were placed in each chapter folder along with chapter assignments. The second most useful component was the *About the Course* section, which appeared on the Home Page. Since this was a full-online course, this section provided an introduction to the scope of the course and how it would evolve. The *Start Here* component was rated third in usefulness. This section gave students the opportunity to view a video on the use of ANGEL in addition to links to vital resources for novices to online learning. In fourth place, the *About the Instructor* section and *Important Resources* sections appeared to also be of use to students.

Rated as somewhat useful were sections on *Introduce Yourself*, *Minimal Technical Skills Assistance*, *Communication Etiquette*, and *Accessibility Information*.

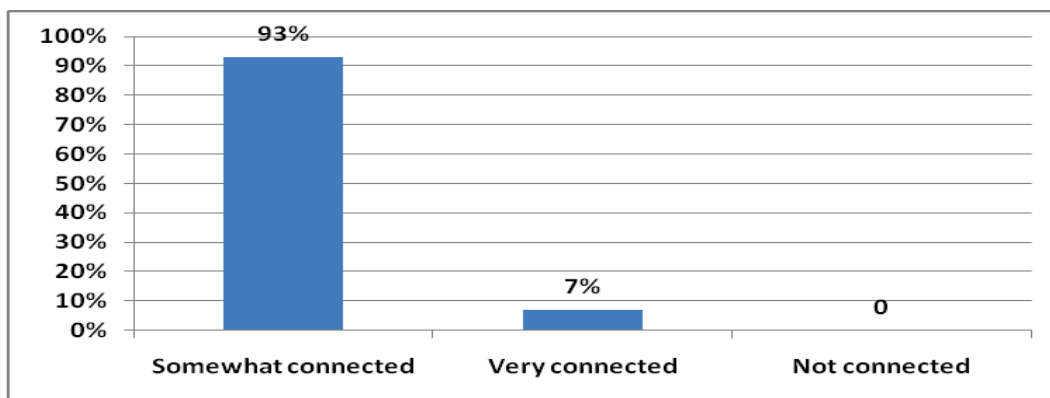
The students seemed to find the *Institutional Resources* section to be the least useful of all components.

Figure 2: Rate your ease in locating assignments in this course.



In Figure 2, one can see that the majority of students (88%) felt it was very easy to locate assignments in the course. Therefore, we can assume the QM design for this particular course was successful in this endeavor.

Figure 3: Rate your connectivity to other students in the class.



The results in Figure 3 were of some concern to the author, since most instructors want to ensure that their students feel a sense of *community* in the online experience. In tailoring the course to meet all of the various QM criteria, it is the author's feeling that perhaps a certain amount of spontaneity and focus on "community" may have been minimized in this course, while focusing on the details of the design, since the course was up for review by an external team at the end of the semester.

When comparing Figure 3 with Figure 1, however, we see a similarity. It is noted that only 58% of the students found the *Introduce Yourself* component "somewhat useful." Therefore, it appears that students were more interested in getting to the assignments than getting to know one another. The author observed that this particular class did not seem as "interested" in connecting with other students as other online courses have been in the past, despite numerous efforts by the instructor.

After viewing these results, this author has added team projects and more *synchronous* discussion to the course for implementation in future classes.

Figure 4: Have you taken other online courses at the same time or previous to taking this online course?

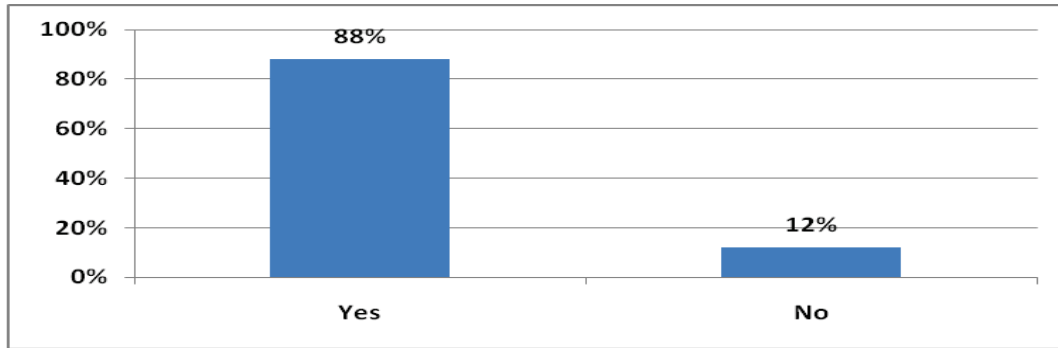
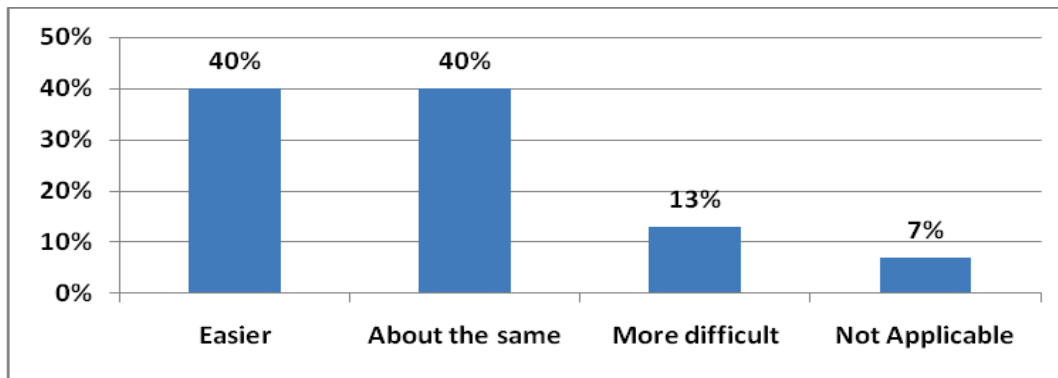


Figure 4 shows that 88% of the students who took this QM course were either taking another online course at the same time or had taken online courses previously, therefore, the majority of students were not novices. Only 12% indicated that they hadn't taken online courses before.

Figure 5: If your answer to the previous question was yes, was this course easier, more difficult, or about the same to navigate through?



In Figure 5, one can see that when comparing the QM designed course to other courses, 40% found the course easier to navigate than other courses, 40% found it about the same, and 13% found it more difficult than other courses. Therefore, the majority of students seemed to be pleased with the design/format of the course in terms of navigation.

CONCLUSIONS

In conclusion, the students in this MBA organizational behavior class rated the following components very useful: *Chapter Objectives, About the Course, Start Here, About the Instructor* and *Important Resources*. Rated as somewhat useful were sections on *Introduce Yourself, Minimal Technical Skills Assistance, Communication Etiquette*, and *Accessibility Information*. Since the majority of students in the class had taken online courses at this university previously, they seemed to be least desirous of viewing the Institutional Resource tab.

Eighty-eight percent of students indicated that it was easy to access the assignments in the QM format, so it appears that the QM design was effective for this course.

Ninety-three percent of students indicated that they felt only "somewhat" connected to other students in the class, while only seven percent felt "very" connected. This was important information for the author in planning future courses.

Of particular interest to the author was that forty percent of the students felt the course design/format was easier to follow than other online courses, and forty percent of the students felt the course was about the same in navigation, while only 13% felt it was more difficult to follow.

This being the first time that this course was offered in the QM format, the survey results proved that this format was successful. At the end of the semester, the Quality Matters external review team met and rated the course with 83 out of 85 points, so the course received the seal of approval from the review team as well as being a student success.

In summary, the author believes that the use of Quality Matters for uniformity purposes is an excellent quality control mechanism. The use of reviewers from other universities critiquing the course is an added bonus.

RECOMMENDATIONS

After viewing the survey results for this course, it is recommended that follow-up studies be done in future classes to obtain longitudinal, reliable data which would lead to continuous improvement of the design/format of this and other courses. It is also recommended that other variables be studied (ie. age and gender) to see which QM components make significant differences in the comprehension of the course (for those specific groups).

Another avenue of interest might be the addition of more synchronous activity and/or audio-video conferencing through Web Ex or similar media to increase student connectivity. The results of that activity would then be measured through student survey and data analysis.

Also, as part of future research, comparison studies between QM and other similar certification providers might be conducted in the area of quality control in online education to determine which design process is most effective.

References

- Arbaugh, J. B. (2000). Virtual classroom characteristics and student satisfaction in Internet-based MBA courses. *Journal of Management Education*, 24, 32-54.
- American Distance Education Consortium (1999). ADEC guiding principles for distance learning. Retrieved from: http://www.adec.edu/admin/papers/distance-learning_principles.html.
- Kassop, M. (2003, May/June). Ten ways online education matches, or surpasses, face-to-face learning. *The Technology Source Archives*.
- Kim, K. & Bonk, C. (2006, November). The future of online teaching and learning in higher education. *Educause Quarterly*, pp. 22-30.
- Lorenzo, G. & Moore, J., (2002, November). The Sloan consortium report to the nation: Five pillars of quality online education, p. 3.
- McGorry, S. Y. (2003, February). Measuring quality in online programs. *The Internet and Higher Education Journal*, Vol. 6, Issue 2, 2nd quarter, pp. 159-177.
- McLoughlin, C. & Luca, J. (2001). Quality in online delivery: What does it mean for assessment in e-learning environments? Meeting at the crossroads. Proceedings of the annual conference of the Australasian society for computers in learning in tertiary education (18th, Melbourne, Australia, December 9-12, 2001), pp. 417-425.
- Norton, P. & Hathaway, D. (2008, June). Exploring two teacher education online learning designs: A classroom of one or many? *Journal of Research on Technology in Education*, Vol. 40, Iss: 4, pp. 475-495.
- Olson-Buchanan, J., Rechner, P., Sanchez, R. (2007). Utilizing virtual teams in a management principles course. *Education and Training*, Vol. 49, Iss: 5, pp. 408-423.
- Phipps, R. & Merisotis, J. (1999). *What's the difference? A review of contemporary research on the effectiveness of distance learning in higher education*. Washington, DC: The Institute for Higher Education Policy.
- Quality Matters Program. (2011). Retrieved from <http://www.qmprogram.org/our-mission>.
- Quality Matters Program. (2011). Retrieved from <http://www.qmprogram.org/reviews/preparing>.
- Shea, P. & Chun, S. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses, *The Internet and Higher Education*, Vol. 9, issue 3, 3rd quarter, pp. 175-190.
- Sims, R., Dobbs, G., & Hand, T. (2002). Enhancing quality in online learning: Scaffolding planning and design through proactive evaluation. *Distance Education*, Vol. 23, Iss: 2, pp. 135-148.
- Suthers, D., Vatrappu, R., Medina, R, Joseph, S. (2008, May). Beyond threaded discussion: Representational Guidance in Asynchronous Collaborative Learning Environments. *Computers and Education*, Vol. 50, Iss: 4, pp. 1103-1127.
- Yang, Yi & Cornelius, L. (2005, January). Preparing Instructors for quality online instruction. *Online Journal of Distance Learning Administration*. pp. 1-16.
- Zemsky, R. & Massey, W. (2004, December). Thwarted innovation –What happened to e-learning and why. *The Learning Alliance for Higher Education at the University of Pennsylvania*. Retrieved from: www.irhe.upenn.edu.
- Zheng, L., & Smaldino, S. (2003). Key instructional design elements for distance education. *The Quarterly Review of Distance Education*, 4(2), 153-166.

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We Have Met the Enemy and He Is Us¹: Relative Potencies of Classroom Distractions

Frederick Tesch, Western Connecticut State University – Danbury, Connecticut USA
Donna Coelho, Western Connecticut State University – Danbury, Connecticut USA
Ronald Drozdenko, Western Connecticut State University – Danbury, Connecticut USA

ABSTRACT

Discussions and research on distractions in college classrooms have typically focused on the effects of laptops and other electronic devices (e.g., cell phones). This study approached the problem from the student's perspective and included non-technological distractions (e.g., whispering) as well. What events of any kind are distracting to students? Do these events differ in their intensities? Does distraction due to external events (those happening to the student) differ from distraction due to self-induced (internal, student's own behavior) events? The results of a pilot and a follow-up study validated the survey instrument used and revealed the relative potencies of 57 distracting events.

Keywords: distractions, classroom behaviors, instructional technology

INTRODUCTION

Teaching in today's college classroom may be more difficult than ever. Professors commiserate about student skill deficits in reading, writing, and cognition. Technology increasingly invades our classrooms. Initial changes, such as PowerPoint, focused on enhancing our teaching techniques. But technology changes shifted from the instructor to the students. Today we attempt to cope with our students' technological toys, that is, their laptops, netbooks, cell phones, and smart phones. Add to these electronic gnats the usual sneezing, whispered conversations, and napping, and the teaching-learning process is likely compromised. Our objective was to determine, from a student's perspective, the relative intensities of distraction due to various external and self-generated situations and behaviors in the classroom. Understanding the relative potency of these distractions may help us ensure classroom environments that optimize the potential for learning.

PREVIOUS RESEARCH

Multitudes of external and internal stimuli bombard us every day: water running, a clock ticking, a conversation, a TV in the background. Hygge (2003) argued that "both acute and chronic noise exposure" affected both long-term recall in children and the central cognitive processes involved in reading and language comprehension skills. Students, particularly college students, are probably exposed to more types of stimuli than any other group, given their penchant for social interchange and group activities. But have they also learned how to filter them effectively?

The literature on college classroom distractions centers mostly on laptops both as instructional tools and as distracters (Murray, in press). Much of the research (Fried, 2008; Lohnes & Kinzer, 2007) examines the misuse of technology (e.g., cell phones, MP3 players) during class time to the detriment of the student and those around him, in effect creating a "digital underlife" (Mueller, 2009). Actual distractions of student-to-student interactions are also a major factor (Young, 2003). Most research reflects the instructor's perspective (Bujega, 2006; Seidman, 2005).

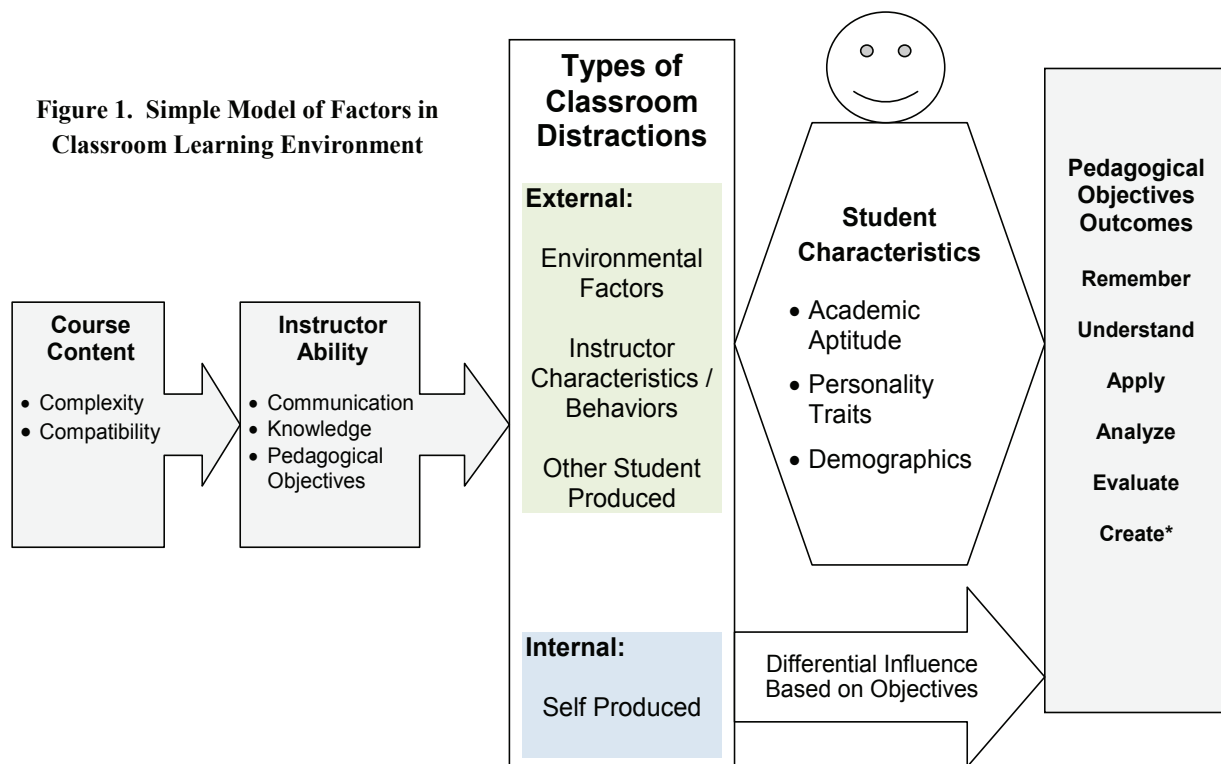
Instructional technology and technological toys in the classroom affect student concentration. Campbell (2006) and Gilroy (2003) revealed the negative impact of mobile phones on both faculty and students. Shelton, Elliott, Eaves, and Exner (2009) conducted four experiments that demonstrated further detrimental effects of a ringing cell phone on cognitive performance. Research in a law school (Yamamoto, 2007) found that improper laptop use interfered with learning and memory. Further evidence that in-class use of laptops involving multitasking was distracting and negatively affected several measures of student learning was obtained by Fried (2008) and Kinzie, Whitaker &

Hofer (2005). In contrast, Kay and Lauricella (2011) found that students spent more time on note taking and academic activities when their use of computers in the classroom was structured by the instructor. Technology and its applications are not the only classroom distracters. Sneezing, talking between students, poor personal hygiene, and the classroom environment, for example, can all be distracters. Seidman (2005) surveyed “disruptive student behavior in college classrooms” and found that these behaviors contributed to unsatisfactory learning environments that could be linked to students leaving a university early. Boice (1996) examined various behaviors, such as being unprepared for class and disruptively arriving late for or leaving early from class.

Our study merged these two lines of research, technology and behaviors. Using our model of factors in classroom environments, we investigated student perceptions of the intensity of the distraction produced by each of thirty-six externally produced and twenty-one self-produced classroom behaviors and situations.

MODEL

The Figure 1 establishes our foundation for the study of classroom learning. We propose that a number of classroom factors in addition to course content, instructor ability and student characteristics affect learning outcomes. For this study, we focus on the center of the figure, the types of classroom distractions and a few student characteristics. Distracters are placed into two categories, those produced by the student and those generated by others.



HYPOTHESES

The literature on classroom distractions provides little guidance for the development of hypotheses on the relative potency of different types of classroom distractions. Therefore, our study is primarily exploratory. However, the literature on the psychology of memory and attention cited above does provide a foundation for the development of the following general hypotheses.

H1: Overall, external distracters will have more potency than distracters that are self-produced by the student.

H2: Internal distracters that are associated with the physiological state of the student (e.g., sleepiness, illness) will be more potent than distracters that are more passive or routine (e.g., clothing, drinking.)

H3: External distracters that disrupt the flow of information from instructor to student (e.g., other students talking in class, other noises) will be more potent than distracters that do not directly disrupt this flow of information (e.g., clothing of other students, silent activities of other students.)

H4: Different groups of students (e.g., gender, academic level, academic performance) are likely to have different patterns of attention and perception in the classroom and thus they are likely to be differentially affected by external and internal distracters.

METHOD

Two anonymous online surveys (pilot survey and primary survey) were used to collect students' ratings regarding the extent to which a set of potential classroom distractions affects them. No revisions to the pilot survey instrument were required. We thus combined the data from the two studies for the analyses presented in the following section. The sample included students from a private and a public university in Connecticut. Students indicated on a seven-point scale (1- not distracting at all; 7-extremely distracting) how distracting each of 36 external and 21 self-produced situations were on their ability to concentrate during a class lecture or discussion. The total sample size for the two studies was 169. The sample size of the pilot study was 72 and the primary study sample size was 97. Demographic and grouping data were collected only in the primary study.

FINDINGS

Test-Retest Reliability

To examine the reliability of the survey instrument, the findings of two studies with different samples were compared. The correlation between the mean distraction scores on the two studies was $r=.96$, ($p<.001$, $N_1=72$, $N_2=97$) indicating a high level of instrument reliability.

Relative item potencies

The findings revealed substantial differences in the perceptions of the distracters in the classroom. Tables 1 and 2 present the sorted means and standard errors of the external and internal (self-produced) distracters. The ANOVA on the external distracters was significant at the $P<.001$ (Pillai's Trace =.87; $F=25.56$, $df=35/134$). The ANOVA on the internal distracters was also significant at the $P<.001$ (Pillai's Trace =.84; $F=39.06$, $df=20/149$). Generally, mean differences of 0.80 or greater in Table 1 and in Table 2 are statistically significant at the 0.05 level using the Bonferroni adjustment for multiple comparisons. Students rated an instructor who is difficult to understand as the most potent external distraction, more so than all the other external and internal distracters. How other students looked or dressed produced the lowest level of distraction.

H1

This hypothesis was partially supported. The top four distracters in the study were external:

- Instructor that is difficult to understand
- Students talking with others in class
- Temperature (too hot/cold)
- Ringing phones & pagers

However, the overall mean of the external distracters (3.75) was not statistically significant from the mean of the internal distracters (3.84).

H2

This hypothesis was supported. Internal distracters that were associated with the physiological state of the student (e.g., sleepiness, illness) were found to be significantly more potent than distracters that were more passive or routine (e.g., clothing, drinking.)

| Table 1. External Distracters | Mean | SEM |
|--|-------------|------------|
| Instructor that is difficult to understand | 5.81 | 0.12 |
| Students talking with others in class | 5.29 | 0.12 |
| Temperature (too hot/cold) | 5.15 | 0.12 |
| Ringling phones & pagers | 5.02 | 0.13 |
| Poor personal hygiene of other students (odors, looking dirty, etc.) | 4.98 | 0.12 |
| Classroom odors | 4.89 | 0.13 |
| Instructor spitting while talking | 4.82 | 0.13 |
| Students asking irrelevant questions or making irrelevant comments | 4.59 | 0.14 |
| Equipment problems (e.g., malfunctioning computers) | 4.58 | 0.14 |
| Students making repetitive movements (tapping fingers, pen clicking, etc.) | 4.49 | 0.13 |
| Student illness symptoms (coughing, sneezing, sniffing, etc.) | 4.33 | 0.14 |
| Instructor making repetitive or unusual speech sounds | 4.28 | 0.13 |
| Students using video games | 4.09 | 0.16 |
| Instructor exhibiting repetitive or unusual movements | 4.04 | 0.13 |
| Students using MP3 players | 3.98 | 0.16 |
| Lighting (glaring, too bright, etc.) | 3.94 | 0.13 |
| Instructor using repetitive words or phrases | 3.86 | 0.13 |
| Ambient noise (e.g., AC noises, road noises, etc.) | 3.81 | 0.14 |
| Furnishings (e.g., chairs, tables that are broken, dirty, etc.) | 3.79 | 0.14 |
| Students arriving late | 3.63 | 0.15 |
| Especially attractive students | 3.47 | 0.15 |
| Students leaving/returning to class | 3.39 | 0.14 |
| Students texting | 3.38 | 0.15 |
| Students leaving early | 3.35 | 0.14 |
| Provocative clothing worn by other students | 3.30 | 0.14 |
| Students using laptops for email, surfing | 3.15 | 0.15 |
| Students using smart phones | 3.15 | 0.15 |
| Students eating in class | 2.98 | 0.13 |
| Student response devices(Clickers) | 2.94 | 0.14 |
| Students playing paper and pencil games, doodling, etc. | 2.76 | 0.14 |
| Students sleeping | 2.62 | 0.14 |
| Students doing work for other courses | 2.52 | 0.13 |
| Clothing worn by other students (words, colors, styles, etc.) | 2.30 | 0.11 |
| Students drinking in class | 2.18 | 0.12 |
| Tattoos, piercings, hair color, bling, etc., of other students | 2.11 | 0.11 |
| Hats, hoods, etc. worn by other students | 1.90 | 0.11 |

| Table 2. Self Produced Distracters | Mean | SEM |
|--|-------------|------------|
| Your illness symptoms (coughing, sneezing, sniffing, etc.) | 4.98 | 0.13 |
| Sleeping | 4.96 | 0.16 |
| Your phone / pager ringing | 4.83 | 0.16 |
| Playing video games | 4.76 | 0.16 |
| Talking with others in class | 4.75 | 0.14 |
| Using your MP3 player | 4.63 | 0.17 |
| Doing work for other courses | 4.57 | 0.15 |
| Using a laptop for checking your email, surfing, etc. | 4.44 | 0.16 |
| Poor personal hygiene (odors, looking dirty, etc.) | 4.39 | 0.14 |
| Texting during class | 4.38 | 0.15 |
| Using your smart phone | 4.20 | 0.17 |
| Arriving late to class | 3.93 | 0.14 |
| Leaving early | 3.91 | 0.15 |
| Playing paper and pencil games, doodling ,etc. | 3.77 | 0.15 |
| Leaving/returning to class | 3.74 | 0.15 |
| Student response devices(Clickers) | 3.09 | 0.16 |
| Eating in class | 2.73 | 0.14 |
| Wearing provocative clothing | 2.52 | 0.13 |
| Wearing clothing with unusual words, colors, styles, etc. | 2.09 | 0.11 |
| Drinking in class | 2.06 | 0.13 |
| Wearing hats, hoods, etc. to class | 1.94 | 0.12 |

H3

This hypothesis was supported. External distracters that disrupt the flow of information from instructor to student (e.g., other students talking in class, other noises) were found to be significantly more potent than distracters that do not directly disrupt this flow of information (e.g., clothing of other students, silent activities of other students.)

H4

Different groups of students (e.g., gender, academic level, academic performance) were differentially affected by external and internal distracters as summarized below.

Gender

Women (N=48) were more likely to report higher levels of distraction overall relative to men (N=33). There was not a significant gender by distracter interaction.

Academic Level

A comparison of graduate (N=22) and undergraduate students (N=59) indicated an interaction on the distracters. The graduate students were significantly less distracted than the undergraduates in the following situations:

- Temperature (too hot/cold)
- Ambient noise (e.g., AC noises, road noises)
- Especially attractive students

The graduate students were significantly more distracted than the undergraduates in the following situations:

- Other student illness symptoms (e.g., coughing, sneezing, sniffing)
- Other students using video games
- Other students sleeping
- Other students doing work for other courses
- Playing video games him/her self
- Doing work for other courses

Academic Performance

A stepwise multiple regression was computed to determine the relationship between GPA and the distracters. The R value was 0.51, N=81, F=12.05; P<.001. Two distracters were included in the final multiple regression model. The higher the student's GPA, the more distracting it was for them to be in a class where other students were sleeping. However, the students with the higher GPAs were less distracted by other students playing paper and pencil games, doodling, etc.

DISCUSSION

This study provides another example of Walt Kelly's quote "We have met the enemy and he is us¹." An instructor who is difficult to understand clearly surpassed all of the other 56 distracters evaluated by students in this study. As educators, we need to be aware of how we present course content and interact with students. Establishing clear learning objectives may help to increase the understandability of our lectures and class discussions. Further, we sometimes can control other distracters such as checking equipment before the start of class and reporting any problems with the room such as heating/air conditioning, lighting, or foul odors.

In contrast, things that many instructors find distracting are not perceived to be distracting to our students. For example, students who wear hats and hoods to class or have tattoos, piercings, hair coloring, and bling (i.e., showy, flamboyant jewelry and accessories), or sleeping during class are minimally distracting to other students. Students have apparently adapted to some behaviors of their fellow students, such as using the internet, texting and drinking in class. However, students can distract fellow classmates by talking during class, not turning off phones, and having poor hygiene. In fact, students talking with others in class was the second most potent distracter.

Students distract themselves the most when they are sick or sleep during class. These impaired physiological states clearly are a detriment to maintaining attention in class. Students are also distracted when their phones ring, when they play video games and when they talk to others. These findings are not surprising. Using other technology and the student's own hygiene were also reported to be top distracters.

The findings on the group differences are less clear. While we found differences between the groups examined in this study, we think the sample may be too small to draw general conclusions.

FUTURE RESEARCH

Our future research will examine the other elements of our model. In particular, we are interested in the possible interaction of student learning styles and other student characteristics (e.g., demographics, personality) with the various distracters examined in our current study. Further, as mentioned above, the sample size limitations for the group analyses in the current study may have been too small to differentiate distracters.

REFERENCES

- Boice, B. (1996). Classroom incivilities. *Research in Higher Education*, V. 37, No. 4, 453-486.
- Bugeja, M. (2006). Facing the Facebook: Unless we reassess our high-tech priorities, issues of student insensitivity, indiscretion, and fabrication will consume us. *Chronicle Careers*, V. 52, No. 21, C1.
- Campbell, S. (2006). Perceptions of mobile phones in college classrooms: Ringing, cheating, and classroom policies. *Communication Education*, V. 55, No. 3, 280-294.
- Fried, C. (2008). In-class laptop use and its effects on student learning. *Computers and Education*, V. 50, 906-914.
- Gilroy, M. (2003). Invasion of the classroom cell phones. *The Hispanic Outlook in Higher Education*, V. 14, 38-39.
- Hygge, S. (2003). Classroom experiments on the effects of different noise sources and sound levels on long-term recall and recognition in children. *Applied Cognitive Psychology*, V. 17, 895-914.
- Kay, R., & Lauricella, S. (2011). Unstructured vs. structured use of laptops in higher education. *Journal of Information Technology Education*, 10, 33-42.
- Kinzie, M. B., Whitaker, S. D., & Hofer, M. J. (2005). Instructional uses of instant messaging (IM) during classroom lectures. *Educational Technology & Society*, V. 8, No. 2, 150-160.
- Lohnes, S. & Kizer, C. (2007). Questioning assumptions about students' expectations for technology in college classrooms. *Innovate*, V. 3, Issue 5, <http://www.innivateonline.info/index.php?view=article&id=431> (accessed November 5, 2010).
- Mueller, D. (2009). Digital underlife in the networked writing classroom. *Computers and Composition*, V. 26, Issue 4, 240-250.
- Murray, K. (in press). Let them use laptops: Debunking the assumptions underlying the debate over laptops in the classroom. Oklahoma City University Law Review.
- Seidman, A. (2005). The learning killer: Disruptive student behavior in the classroom. *Reading Improvement*, V. 42, Issue 1, 40-47.
- Shelton, J., Elliott, E., Eaves, S., & Exner, A. (2009). The distracting effects of a ringing cell phone: An investigation of the laboratory and the classroom setting. *Journal of Environmental Psychology*, V. 29, Issue 4, 513-521.
- Yamamoto, K. (2007). Banning laptops in the classroom: Is it worth the hassles? *Journal of Legal Education*, V. 57, No. 4, 1-46.
- Young, J. (2003). Sssh. We're taking notes here. *The Chronicle of Higher Education*, V. 49, Issue 48, <http://chronicle.com/weekly/v49/i48a02901.htm>

FOOTNOTES

¹A quote from the cartoon *Pogo* by Walt Kelly

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March Madness in the Finance Classroom

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ABSTRACT

The March Madness in the Finance Classroom Simulation uses the NCAA Basketball Tournament to facilitate student engagement in a simulated set of IPO investments and a subsequent secondary stock market. Students benefit from the exercise by learning how to conduct valuation analysis, by examining two different IPO pricing mechanisms, by considering their own tolerance for risk, by determining a diversification strategy, and by understanding the winner's curse in auctions.

Keywords: initial public offering, stock simulation, IPO pricing, finance class exercise, winner's curse

INTRODUCTION

Finance instructors looking for an Initial Public Offering (IPO) and stock market simulation may use the NCAA Basketball Tournament to bring the excitement of March Madness into their classroom. This popular three-week event is a great hook to encourage finance students to learn about IPO pricing mechanisms, auction theory, valuation analysis, portfolio diversification, and stock markets. Because traditional stock simulations use real markets and are typically conducted over a short period of time, they may fail to promote strategies of long term investing. It is also difficult for a real market simulation to facilitate student engagement in an IPO.

The March Madness in the Finance Classroom Simulation uses each of the teams in the NCAA Basketball Tournament (men or women) to represent a company raising capital with an initial public offering of stock. The teams are split into two equal groups, and a different IPO pricing and allocation mechanism is applied to each group. The tournament serves as the market, and each team's average game score becomes the market price of its stock. Stock values in the simulation increase when teams win in the tournament. After a victory, a team's stock splits 3-for-2, and the new share price rises to the value of the team's average game score.

Students participate as individual investors who have been contacted by an investment bank to participate in the IPOs. Students have no mandated spending limit, and they may purchase multiple shares in as many teams as they desire. Each student investor's objective is to maximize capital gains. Once the IPOs are completed students may trade shares in a secondary market throughout the tournament. Students benefit from the exercise by learning how to conduct a valuation analysis, by examining two different IPO pricing mechanisms, by considering their own tolerance for risk, by determining a diversification strategy, and by understanding the winner's curse in auctions.

LITERATURE

There are many simulations and classroom experiments in the finance and economics literature. Becker and Watts (1998) and Bergstrom and Miller (1997) provide a wide range of examples. Einolf (2006) provides the inspiration for this paper by using the NCAA tournament to simulate auctions of commodities with unknown values. Students in Einolf's exercise bid for the rights to sponsor a team in the NCAA tournament, and the value of the sponsorships grow as teams win. The exercise simulates the mechanics of oil lease auctions and the Federal Communication Commission's spectrum auctions. The March Madness in the Finance Classroom Simulation expands on the idea of using the NCAA tournament as a source of uncertainty in a risk management simulation. The simulation provides students with a new opportunity to examine portfolio strategies in an IPO and stock market application.

Almeida and Leal (2010) created an experiment in which bank professionals and business students are subjected to various IPO mechanisms. Almeida and Leal design three different methods to simulate: book building, Dutch auction, and the competitive IPO. They find that book building typically generates the lowest IPO price while Dutch auctions and competitive IPOs typically generate higher IPO prices. The March Madness in the Finance Classroom Simulation uses similar book building and Dutch auction methods for allocating shares among IPO investors and provides a way to apply Almeida and Leal's experiment in a classroom setting.

Since Google conducted its IPO in 2004, there has been much debate regarding the effectiveness of using a Dutch auction to generate an IPO price and to allocate shares. Anand (2006) argues that the book building method of offering securities is better than the Dutch auction. Even though the Dutch auction, in theory, should eliminate the under-pricing effect that occurs in book building, Anand shows that recent evidence indicates that the Dutch auction does not lead to efficient price discovery. In fact, Anand shows that under pricing can occur in the Dutch auction. Pukthuanthong et al. (2007) examine all auction IPOs in the US that occurred from January 1999 to December 2004. The authors find that when compared to similar book-building IPOs, the auction IPOs are less underpriced and leave less money on the table for the stock issuers. Jovanovic and Szentes (2007) compare auctions and book building in a theoretical model. They find that book building discloses more information about a firm, and thus only poor quality companies tend to use auctions for their IPO. This is why, they argue, that auction IPOs are less likely to be used in practice. They also find that under pricing of IPOs occurs with book building but not with auctions. Finally, Jagannathana et al. (2010) show that many countries have abandoned IPO auctions because even sophisticated investors make mistakes while bidding in auctions. They show that IPO auctions often have an unpredictable number of participants, and many investors bid too high to guarantee an allocation of shares. Their analysis suggests that book building is a preferable method to auctions.

LET THE MADNESS BEGIN

The literature suggests that the design of an IPO pricing and allocation mechanism can have a significant effect on the initial price of a stock offering. Students can examine these mechanisms in the March Madness in the Finance Classroom Simulation. Students also have the opportunity to learn about the IPO process, to construct an expected valuation analysis for each IPO, to examine tolerance for risk, to develop a diversification strategy, and to understand the winner's curse associated with auctions.

In the simulation the teams in the NCAA Tournament each represent a company going public with an initial offering of stock. Each team offers new shares in the amount of 10 times its tournament seed, so a #1 seed offers 10 shares of stock, a #2 seed offers 20 shares of stock, and a #16 seed offers 160 shares of stock. This is done to keep the final market capitalizations of the companies in a reasonably close range. It also causes the shares of better teams to be scarcer which tends to increase their pre-IPO hype and entices more students to bid. These effects are discussed later in the classroom discussions section. (Note that the exercise begins after the play-in games are completed when there are sixty-four teams remaining in the tournament.)

The tournament serves as the market price generator. Each team's average game score in the tournament is its market price. Each time a team wins, its stock increases in value. The stock splits 3-for-2: every two shares becomes a total of three shares. Students should understand that the split would normally reduce the price of the stock to two-thirds of its value. However, in this simulation a stock's price immediately rises after a split; the three new shares are priced at the team's average game score. When a team loses, its price is fixed at its average score for the remainder of the exercise. Table 1 provides an example of the market pricing mechanism. Until a team's market price becomes fixed, students may trade shares in a secondary stock market by buying and selling stocks at a negotiated price.

Table 1: NCAA Tournament Stock Price Mechanism Example

| <i>Student purchases 1 share of Duke stock in IPO during the 2010 NCAA Tournament</i> | | | |
|---|----------------|---------------------|-----------------|
| | Current Shares | Current Share Price | IPO Share Value |
| Duke wins first game 87-45 | 1.00 | \$87.00 | \$87.00 |
| Stock splits 3-2 after win | 1.50 | \$58.00 | \$87.00 |
| Stock price rises after win | 1.50 | \$87.00 | \$130.50 |
| Duke wins second game 73-71 | 1.50 | \$80.00 | \$120.00 |
| Stock splits 3-2 after win | 2.25 | \$53.33 | \$120.00 |
| Stock price rises after win | 2.25 | \$80.00 | \$180.00 |
| Duke loses third game 93-77 | 2.25 | \$79.00 | \$177.75 |

Students participate in the exercise as investors who have been contacted by an investment bank with offers to purchase the sixty-four separate IPOs. Students may spend as much money as they desire purchasing stock, and they may purchase as many shares in as many teams as they want. Each student investor's objective is to maximize

capital gains. Instructors may wish to give students a wealth constraint: if students spend above this constraint, the money has to be borrowed at a stated interest rate. This will reduce the incentive for students to simply try to purchase shares in every single stock.

Two different IPO pricing and allocation mechanisms are used to give students the opportunity to compare and contrast different processes. For half of the teams in the tournament, a traditional book-building style is simulated. Students indicate to the investment bank the number of shares they would like to purchase at various prices for each of the thirty-two teams. In each stock offering, the investment bank examines student demands and ranks them from high to low according to willingness to pay. This process is identical to the book building method Almeida and Leal (2010) use in their experiment. The IPO price is the lowest willingness to pay that sells all of the shares of stock in the offering. All of the investors who bid at or above the IPO price receive shares according to the following allocation:

Consider that O is the quantity of shares offered and $\sum d_i$ is the sum of individual demands at or above a given price. The bank will allocate shares to investors at the lowest individual willingness to pay when $\sum d_i$ first becomes greater than or equal to O . Each allocated investor receives $k \times d_i$ shares, where $k=O/\sum d_i$.

While this technique is meant to model the book building process, it is also very similar to the modified Dutch auction process that Google employed in its IPO. Even though Google solicited bids in a public auction, the company selected a clearing price and allocated shares to investors according to the same pro rata system described above. An adventurous instructor may wish to adjust the book-building model to include the preferential network of investors that investment banks sell IPOs to. Some students could be identified as “preferred clients” and receive a guaranteed allocation of their demands before other students.

To give students another IPO mechanism to consider, the second half of the teams in the tournament use a different modified Dutch auction. Students submit bids that indicate a price and a number of shares requested for the companies they would like to invest in. Students are not required to place bids on all thirty-two IPOs. The lowest price that sells all of the offered shares becomes the IPO price. The difference with this method is that bidders who bid above the IPO price receive all shares demanded. The investor(s) who bid at the IPO price receive (or evenly divide) the shares that remain after the higher bidders receive their allocation. Because the higher bidders receive all of their requested shares, investors are more inclined to bid closer to their expected valuation of the IPO. Irrational bidders are even likely to bid too high to guarantee their receipt of shares.

In the classroom the IPOs may be conducted by having students write book building information and Dutch auction bids on ballots. The ballots are then placed into respective envelopes for each of the sixty-four tournament teams. Once students have had an opportunity to enter ballots for all teams they are interested in purchasing, the envelopes are opened and the IPO allocation of shares is determined.

In either IPO method if the number of shares demanded by all investors is less than the number offered, the team lowers its offering to the number of shares demanded. The IPO price in this case will be the lowest bid. If no investors elect to purchase any shares of a team’s stock, then that team is no longer part of the simulation and its shares will not be public.

After the IPOs, a secondary market exists in which student investors may buy and sell each other’s shares of stock until the tournament’s championship game. Prices of these transactions are determined by the trading students.

To illustrate how each IPO method works, suppose a team offers 100 shares in its IPO and the five highest bidders are:

1. 50 shares @ \$75
2. 20 shares @ \$70
3. 20 shares @ \$65
4. 30 shares @ \$60
5. 40 shares @ \$55

Using the book-building model, there are 120 shares demanded at a price of \$60 or above. Thus, $O = 100$, $\Sigma d_i = 120$, and $k = O/\Sigma d_i = 100/120 = 5/6$. So the allocations would be:

1. 5/6 of 50 shares demanded: 41.67 shares @ \$60
2. 5/6 of 20 shares demanded: 16.67 shares @ \$60
3. 5/6 of 20 shares demanded: 16.67 shares @ \$60
4. 5/6 of 30 shares demanded: 25 shares @ \$60
5. 0 of 40 shares demanded: 0 shares @ \$60

Using the modified Dutch auction model, the highest bidders would get the amount they demanded. Bidder #4, who determined the IPO price, would get the remaining 10 shares:

1. 50 shares @ \$60
2. 20 shares @ \$60
3. 20 shares @ \$60
4. 10 shares @ \$60
5. 0 shares @ \$60

VALUATION ANALYSIS

An important component of the simulation is that students conduct a valuation analysis for each of the sixty-four stock offerings. The valuation analysis indicates to the student an expectation of the final per share value of the stock, so they are prepared for the IPO book building and Dutch auction processes.

Students must first determine, for each of the sixty-four teams, their expectation of each team's likelihood to reach each round in the tournament. To be slightly more formal, for each team i and each round r , students must determine expected probability, q_i^r , where q_i^r represents the probability team i wins round r in the tournament. Students must also predict each team's average tournament score, denoted s_i . So, $V_i = e_i^6 s_i$, where V_i is a student's expected valuation for team i , e_i^6 is the number of shares of stock (equities) team i has after round 6 (championship game), and s_i is team i 's average game score.

The final expected shares of stock for each team, e_i^6 , is calculated in the following manner:

e_i^0 \equiv the number of IPO shares before the tournament begins (round 0). #1 seeds will have 10 IPO shares, #2 seeds will have 20 IPO shares, etc.

$$e_i^1 = (1 - q_i^1) e_i^0 + (1.5) q_i^1 e_i^0 \text{ (The number of expected shares for team } i \text{ after round 1.)}$$

$$e_i^2 = (1 - q_i^2) e_i^1 + (1.5^2) q_i^2 e_i^0 \text{ (The number of expected shares for team } i \text{ after round 2.)}$$

$$e_i^3 = (1 - q_i^3) e_i^2 + (1.5^3) q_i^3 e_i^0 \text{ (The number of expected shares for team } i \text{ after Sweet 16 round.)}$$

$$e_i^4 = (1 - q_i^4) e_i^3 + (1.5^4) q_i^4 e_i^0 \text{ (The number of expected shares for team } i \text{ after Elite 8 round.)}$$

$$e_i^5 = (1 - q_i^5) e_i^4 + (1.5^5) q_i^5 e_i^0 \text{ (The number of expected shares for team } i \text{ after Final 4 round.)}$$

$$e_i^6 = (1 - q_i^6) e_i^5 + (1.5^6) q_i^6 e_i^0 \text{ (The number of expected shares for team } i \text{ after championship.)}$$

To calculate the valuations for each team, students could be asked to create an Excel spreadsheet. It may be helpful, depending on the experience of the students, to provide them with a template. Advanced students may be encouraged to calculate q_i^r more rigorously by using the methodology outlined in Einolf (2006).

The valuations, V_i , will guide the student investors in the IPO bidding process. Students should consider how closely they will bid to their valuations and whether they will treat the two IPO processes differently. Students examine their tolerance for risk; they decide how many IPOs to participate in; and they also consider how diversified they would like their portfolio to be.

Students also will need to be aware of the winner's curse. Because the valuation of individual shares is only an a priori estimate, the "winner" of the IPO shares will likely be an investor who overestimated the value of the stock and will thus lose money. A well-known way to introduce students to this concept is to have them bid on a jar containing an unknown number of pennies. It is almost a sure thing that at least one student will overestimate the number of pennies in the jar, overbid, and then overpay for the jar of pennies.

CLASSROOM DISCUSSIONS

There are two phenomena that typically occur when this exercise is conducted, and these issues can lead to interesting classroom discussion.

IPO prices tend to be higher in the Dutch auction IPOs. When students consider their valuations for each of the IPOs, they realize that they must shade their bids (that is, bid lower than their valuation) in order to have a positive expected profit in each IPO. Students tend to bid higher (shade their bids less) in the modified Dutch auction IPOs, because they have an incentive to ensure that their bid is higher than the auction price. Students may discuss the following questions to further investigate this outcome:

- How did the bids you provided in the book-building process and in the Dutch auction compare to your estimated valuations? How much lower than your valuations did you bid? Did you ever bid higher than your valuation for a stock? Why?
- What were your bidding strategies in the IPOs? Did you bid differently under the book-building and Dutch Auction IPOs? How many different IPOs did you bid on?
- Did the class bid differently in the Dutch auction IPOs when compared to the Book-Building IPOs?

Better teams (lower seeds) tend to be overpriced in the IPOs while worse teams (higher seeds) tend to be underpriced. The winner's curse tends to occur with better teams in the tournament, as these are the "hot stocks" in the simulation. There are a lower number of shares of these teams offered, and these teams are more popular with students. Because students tend to underestimate the risk associated the lower seeded teams, they end up bidding too high in both the book building and the Dutch auction processes. Lower seeded teams need to win in the tournament to meet their expected valuations. Upsets happen, and a lower seeded team is often a riskier bet than a higher seeded team. The only risk an investor faces with a higher seeded team (that is expected to lose in the first round) is the estimation of the team's score in the game.

IPO pricing has been studied to a great extent in the literature. In a seminal paper on the subject, Ritter (1991) finds that while IPOs tend to be underpriced initially, they prove to be overpriced in the long run. Ritter found that IPOs underperformed on average relative to market returns during their first three years of trading. Ritter and Welch (2002) provide a solid review of the literature, and it is a nice article for students to review before discussing why some of the IPOs in the exercise were underpriced and why others were overpriced.

Individual risk tolerance and portfolio diversification are also interesting topics to discuss with students. It is helpful for students to discuss the following questions after the simulation:

- How did you diversify your portfolio?
- How many shares of stock did you purchase in the IPO? Why?
- Did you bid on higher seeded (worse) teams? Why or why not?
- Describe your tolerance for risk. How did it compare to your classmates?
- Did you buy and/or sell stock in the secondary market at some point during the tournament?
- What is the winner's curse? Did you and your classmates experience the winner's curse in this exercise? Was the winner's curse more prevalent with lower or higher seeded teams?
- How would you better evaluate the expected valuation of each team now that you have completed this exercise?

The NCAA basketball tournament can be an exciting way to engage students to learn about IPO pricing mechanisms, auction theory, valuation analysis, portfolio diversification, and stock markets. Students will learn and have fun in the March Madness in the Finance Classroom simulation – it should be a slam dunk!

REFERENCES

- Almeida, V. and Leal, R. (2010). A Joint Experimental Analysis of the Dutch Auction, Book Building and Competitive IPO Pricing Methods, *Manuscript under review. Relatório Coppead*.
- Anand, A. (2006). Is the Dutch Auction IPO a Good Idea? *Stanford Journal of Law, Business and Finance*, V. 11, No. 2, pp. 233-260.
- Becker, W. and Watts, M. eds. (1998). *Teaching Economics to Undergraduates: Alternatives to Chalk and Talk*, Northampton, Mass.: Edward Elgar Publishers.
- Bergstrom, T. and Miller, J. (1997). *Experiments with Economic Principles*, New York: McGraw-Hill.
- Einolf, Karl W. (2006). March Madness in the Classroom. *Journal of Industrial Organization Education*, V. 1, No. 1, Article 3.
- Jagannathana, R., Jirnyia, A. and Sherman, A. (2010). Why Don't Issuers Choose IPO Auctions? The Complexity of Indirect Mechanisms. *Working paper*. Available at <http://www.kellogg.northwestern.edu/faculty/jagannathan/htm/WorkingPapersFeb2011/IPOauctions.pdf>
- Jovanovic, B. and Szentes, B. (2007). IPO Underpricing: Auctions vs. Book Building. *Working paper*. Available at <http://www.nyu.edu/econ/user/jovanovi/ipou.pdf>
- Pukthuanthong, K., Varaiya, N., and Walker, T. (2007). Bookbuilding versus Auction Selling Methods: A Study of US IPOs. *Venture Capital*, V. 9, No. 4, pp. 311-345.
- Ritter, J. (1991). The Long-Run Performance of Initial Public Offerings. *Journal of Finance*, V. 46, No. 1, pp. 3-27.
- Ritter, J. and Welch, I. (2002). A Review of IPO Activity, Pricing, and Allocations. *Journal of Finance*, V. 57, No. 4, pp. 1795-1828.

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Improving Pedagogy for Online Discussions

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ABSTRACT

Many pedagogical issues must be addressed in courses with asynchronous online discussions. This article supports business education instructors with pedagogical strategies to improve the design of their online discussions. It clarifies the different hats teachers sport in facilitating computer mediated discourse and offers approaches for consideration. It also suggests ways to design online discussions, use groups to facilitate interaction, delineate discussion boundaries, and launch well-organized discussions through the syllabus.

KEYWORDS: Online pedagogy, online discussions, group discussions, computer mediated discourse, asynchronous distance learning

INTRODUCTION

Many pedagogical issues arise in courses with asynchronous online discussions. These are computer mediated discussions that take place as part of a course management system (e.g., Blackboard and WebCT). In online discussions, the students and the instructor interact, organize, record, and store exchanges for future reference (Clyde & Delohery, 2005). Instructors must determine the strategic purpose for including such discussions and design discourse opportunities that advance learning outcomes. The plan may feature topical conversations, shape the kinds of questions and types of comments most relevant, and calibrate the placement and pacing. To guide online exchanges, instructors need protocols that encourage student cohesion and interdependence. This promotes the value-added benefits of constructing group knowledge and stimulating ongoing engagement. Teachers then must calculate the role the syllabus contributes in acquainting and communicating the structure of discussions to participants.

Instructors sport four different hats in facilitating computer mediated discussions: pedagogical, social, managerial, and technical (Berge, 1995). Pedagogically, they operate as distance learning facilitators. Socially, instructors need to cultivate a discussion venue amenable to constructive dialogue. Managerially, the teacher devises a format, builds an assessment instrument, guides the process, and monitors the exchanges. Technically, the educator introduces the mediating technology and unravels snafus (or makes appropriate referrals). This article addresses common concerns about pedagogical design issues with the goal of improving online discussions. It covers designing online discussions, using groups, delineating discussion boundaries, and the role the syllabus plays for a course with online discussions. The social, managerial, and technical facets fall outside the scope of this analysis.

DESIGNING ONLINE DISCUSSIONS

Instructors need to decide tactically how each discussion forum fits into the course. Each envisioned exchange ought to lead to at least one learning objective. The most common intention involves student-centered engagement of course content. Dialogue about course materials encourages affiliation and interaction among participants. It promotes individual comfort in a virtual class as students relate to each other and the instructor as well. Further, online discourse adds an asynchronous activity where students learn from others while demonstrating their comprehension. The discussions also provide a means of assessing knowledge for instructor feedback.

Organizing instructor-facilitated online discussions is fundamental (Berge, 1995) and demanding. The educational facilitation responsibility in distance learning is multidimensional. Teachers are expected to serve as a planner, role model, coach, facilitator, and communicator (Heuer & King, 2004). As a planner, discussion issues must be anticipated and addressed through the syllabus or in a discussion forum introduction. The instructor needs to model solid organization and exemplary co-learner behavior while assisting students through the course. In the coaching role, participants seek cheerleaders for pushing through challenges and empathetic problem solvers for content hurdles if they are struggling. Teachers, as facilitators, must oversee the process while acting as a catalyst for

sharing and building group knowledge. The communicator responsibility undergirds successful online discussions (Heuer & King, 2004). It can foster connections with students while supporting the overall learning environment.

Instructors must mull over the placement, tempo and intensity of each discussion session. Some employ online discussions gingerly. Others may require discussions routinely but plan periodic breaks. Experience suggests that two to four provocative questions per session usually anchor essential points satisfactorily.

Question design requires reflection once placement and tempo are resolved. Online discussion questions should promote the course purpose while demonstrating achievement of learning objectives (Caulfield, 2011). Questions should concentrate on concepts and principles (Berge, 2008) even as they contribute to skill development. They need to be content based, open ended, and designed to reveal student understanding as they provoke critical analysis. For example, critical analytical skills may be honed through student scrutiny and critique of demonstrations (Lynam, 2009) and posted case studies. Observation reveals that engaging questions permit discussants to weave in their own experiences. This often transitions discussions into “communities of practice” where knowledge among discussants is shared and enlarged (Rau, 2009). This socially stimulates the students.

The convenience of distance learning invites culturally diverse students. This particularly happens in internationally oriented business courses where multicultural classes add value to discussion forums (Caulfield, 2011). Yet, online courses limit discussion cues. Consequently, online discussion pedagogy should be sensitive to cultural awareness. Culture in learning refers to “different expectations, worldviews, assumptions, emotions, and comfort zones” (Hai-Jew, 2008, p. 96). An inclusive orientation to the differing backgrounds of participants is particularly important in virtual discussions.

USING GROUPS

Online discourse may generate problematic navigational issues. The students and the instructor alike may encounter excessive wordiness. The volume of postings may garble the conversational flow (Ross, Kukulka-Hulme, Chappel, & Joyce, 2004). Additionally, instructors may burn valuable time sorting out each individual’s participation for assessment.

Online discussions compel thorough planning and meticulous organization (Al-Shalchi, 2009). Dividing the class into groups facilitates learning. This reduces the acquaintances with which each student must interrelate. Teachers discover with groups it is easier to follow threads, furnish comments, give guidance, and assess performance. The groups may be restructured as needed to accommodate personality difficulties or changing class sizes.

Small groups are logical. Groups of five to seven inject sufficient diversity to keep exchanges interesting and dialogue dynamic. This size also exposes social loafers. “Social loafing” refers to the tendency to minimize one’s group involvement (Williams & Karau, 1991). In small groups everyone is needed. Mandatory discussion standards can punish social loafing while pushing participation.

Small group discussions have advantages and disadvantages. According to Levi (as cited in Caulfield, 2011), small groups introduce multiple perspectives to a subject, contact with varied skill sets, and group construction of knowledge through dialogue. Problems may arise from dysfunctional behavior (Caulfield, 2011). While forming groups for discussions is a pedagogical decision, optimizing discussions and quickly intervening to resolve group difficulties falls to the management role in facilitating mediated discussions. Delineating discussion boundaries, covered in the next section, also averts potential group dysfunction.

DELINEATING DISCUSSION BOUNDARIES

Pedagogically, online discussions require parameters. Anytime, anywhere distance learning enables students to set their own participation pace while accommodating personal time schedules. Nevertheless, discussion parameters move the course forward. For example, a course may be designed where each segment covers a fixed time period with regular start and finish points. Some discussions may have a pattern, with progress milestones for specific aspects. Participants may be required to investigate, consider, and comment upon issues or questions. There is an opportunity to reflect thoughtfully about what to say as well as constructively listen to what others say. Students

learn from the shared knowledge and experiential wisdom of others (Caulfield, 2011). This supports them in fortifying or refining their own thinking.

Defining differing types of comments clarifies expectations for online discussions while creating interdependence among students. These definitions can serve as guideposts for steering discussions. For example, “substantive” and “responsive” comment definitions may supply qualitative and quantitative standards to communicate an assessment rubric upon which discussions will be evaluated. Requiring different types of comments (with clear task expectations identified) motivates student interactions. Individuals tasked with the responsibility for substantive and responsive remarks depend on each other to generate comments. If at least one of students A, B, C, and D, does not post a substantive comment, student E has nothing to reflect upon from the group. Consequently, there is nothing from which to compose a responsive comment. Moreover, if only student A posts a substantive comment, student E loses a significant degree of choice. There is only one substantive comment to consider and to discuss. The lack of options may negatively influence how student E feels about the opportunity to succeed in the discussion portion of the course. The interdependence of group members to reach course discussion requirements motivates each member to engage with others. While such discussion protocols may require repeating during the course, the syllabus should orient students to the overall course plan. The next section elaborates on this point by commenting on the role of the syllabus in detailing discussion activity.

THE ROLE OF THE SYLLABUS IN LAUNCHING ONLINE DISCUSSIONS

The course syllabus supplies the pedagogical path to learning outcomes (Habaneck, 2005). It should convey what students can expect and be expected to do in online discussions (Richlin, 2006). It should introduce how online discussions fit into the course, how groups will function and facilitate online interactions, and describe discussion boundaries. The syllabus should disclose how much weight discussion participation will carry in comparison to other student assessment components. It also should inform students how thoroughly online discussion postings will be assessed, address late postings, and to what extent quality and quantity matters. Teachers must make certain that the syllabus accurately and completely covers what students need to know about the online discussions (Caulfield, 2011).

The syllabus also can provide and emphasize a grading rubric for discussions. This requires special attention because students often are most anxious about how they will be graded. A rubric provides both criteria and standards for online discussions (Richlin, 2006). It can notify students that, depending on the nature of the issues discussed, higher quality comments will be supported by references (e.g., to the text, electronic lectures, and other sources). Students can be advised whether the teacher prefers a formal or informal tone, and values examples, metaphors, and humor in their commentary. Discussants may be required to divulge why they do or do not agree with the perspective of others rather than simply stating their view.

CONCLUSION

Designing well-organized, asynchronous online discussions is no easy task. Strategies are available to improve the pedagogy of such discussions. These include determining the strategic purpose for including discussions and deciding tactically the right fit for each discussion session. Instructors have multidimensional roles to fulfill as they consider the placement, tempo, and intensity of discussions. Forming small groups can facilitate online interaction and contribute to the group construction of knowledge through dialogue about the course subject matter. Delineating discussion boundaries keeps everyone on track and moving forward. The course syllabus serves as the pedagogical path to the planned learning outcomes. Use it to inform students about what they can expect and be expected to do in online discussion. These design suggestions should help instructors to improve the pedagogy for online discussions.

REFERENCES

- Al-Shalchi, O. N. (2009). The Effectiveness and Development of Online Discussion. *MERLOT Journal of Online Learning and Teaching*, V. 5, No. 1, pp 104-108.
- Berge, Z. L. (1995). Facilitating Computer Conferencing: Recommendations from the Field. *Educational Technology*. January-February, pp 22-30.
- Berge, Z. L. (2008). Changing Instructor's Roles in Virtual Worlds. *The Quarterly Review of Distance Education*, V. 9, No. 4, pp 407-414.
- Caulfield, J. (2011). *How to Design and Teach a Hybrid Course*. Sterling, VA: Stylus Publishing, LLC.
- Clyde, W. and Delohery, A. (2005). *Using Technology in Teaching*. New Haven, CT: Yale University Press.
- Habaneck, D. V. (2005). An Examination of the Integrity of the Syllabus. *College Teaching*, V. 53, No. 2, pp 62-64.
- Hai-Jew, S. (2008). Culturally Targeted Online Course Redesigns for English Composition and Research Writing: A Case Study. *MERLOT Journal of Online Learning and Teaching*, V. 4, No. 1, pp 94-108.
- Heuer, B. P. and King, K. P. (2004). Leading the Band: The Role of the Instructor in Online Learning for Educators. *The Journal of Interaction Online Learning*, V. 3, No. 1, pp 1-11.
- Lynam, L. (2009). Course-specific Online Demonstrations Add Layer of Richness to Instruction. *Business Education Innovation Journal*, V. 3, No. 1, pp 16-21.
- Rau, H. E. (2009). Online Discussion and Communities of Practice. *Business Education Innovation Journal*, V. 1, No. 2, pp 92-96.
- Richlin, L. (2006). *Blueprint for Learning: Constructing College Courses to Facilitate, Assess, and Document Learning*. Sterling, VA: Stylus Publishing, LLC.
- Ross, S. M., Kukulsha-Hulme, A., Chappel, H. and Joyce, B. (2004). Taking E-moderating Skills to the Next Level: Reflecting on the Design of Conferencing Environments. *Journal of Asynchronous Learning Networks*, V. 8, No. 2, pp 115-138.
- Williams, K. D. and Karau, S. J. (1991). Social Loafing and Social Compensation: The Effects of Expectations of Co-worker Performance. *Journal of Personality and Social Psychology*, V. 61, No. 4, pp 570-581.

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Action Learning in the College Classroom

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ABSTRACT

The purpose of this paper is to describe a motivational, action-based exercise that can be implemented in numerous university courses whose overall objectives include enhancing students' skills in communication, decision making, teamwork, and problem solving. The exercise consists of teams (1) drawing a design, (2) writing a set of instructions for assembling a collection of odds-and-ends, and, simultaneously, constructing them to look like their sketched design, (3) disassembling the items, and (3) exchanging the instructions and the odds-and-ends with another team who, in turn, assembles the items to construct the object according to a given set of instructions. Teams discuss what they learned and how they may apply action learning to their careers.

Keywords: action learning, classroom exercise, communication, college students

INTRODUCTION

Action learning, pioneered by Reginald Revans more than a half century ago, is a form of management learning and development (Bourner, Cooper, & France, 2000) by which an entity or an organization learns to solve organizational problems. Through the interaction of teamwork, team members identify a problem, discuss their own actions and experiences as it relates to the problem, listen to and question each other's ideas, propose solutions, and implement an insightful solution to which they are held accountable (Marquardt, 1999). In turn, the team provides immediate and short-term benefits (Marquardt, 2004), allowing its organization to survive and improve its overall performance. The competencies acquired by members participating in these various components of action learning can be advantageous in contributing to their personal growth and guiding them in effectively solving problems throughout their working lives (Marquardt & Waddill, 2004).

Action learning can be instrumental in resolving a variety of concerns facing organizations, ranging from changing a business, using technology more efficiently, reducing expenses, removing barriers between a business and its customers, to nurturing global leaders (Noe, 2010).

Some organizations successfully using action learning include TRW, Conoco, Whirlpool, Ameritech, Marriott, Federal Deposit Insurance Corporation (FDIC), Motorola, General Motors, U.S. Army, and AT&T. A management company of transportation services in Illinois known as ATC benefited from action learning when it was able to save approximately \$1.8 million by engaging Action Workout Teams to explore ways to reduce costs ("A Team Effort", 2002). Through the implementation of action learning, General Electric has sped up their decision making and implementation of solutions, increasing trust among themselves, and opening greater dialogue with other team members (Marquardt, 2004; Noe, 2010).

Additional advantages for organizations using action learning are more extensive shared learning between various levels of an organization, greater self-confidence upon receiving feedback from group members, sharper sense of asking more relevant questions, and more effective communication and team interaction (Marquardt, 1999).

As members of organizations gain significant advantages resulting from their engagement in action learning, so can students in a university setting (Heinonen & Poikkijoki, 2006; O'Hara, Webber, & Reeve, 1996). Instructors can motivate students (Benson, 2009) by involving them in creative class exercises that simulate the dynamics often achieved through action learning and, in turn, positively influence them on how they think and behave in real-life situations (Bain, 2004).

The purpose of this paper is to describe a motivational, action-based exercise that can be implemented in numerous university courses whose overall objectives include, in part, enhancing students' skills in communication, decision making, teamwork, and problem solving.

EXERCISE

The exercise, which is summarized in Table 1 at the end of this paper, is designed for students to experience the dynamics associated with the core components of action learning. The procedure consists of individual teams (1) writing a set of instructions and including drawn illustrations for assembling a collection of items, and, simultaneously, constructing the items to look like their sketched design of an object, (2) disassembling the items of the designed object, and (3) exchanging the set of instructions and the collection of items with another team who, in turn, assembles the items to construct the object according to the accompanying set of instructions and illustrations. Once the tasks are complete, teams discuss what they have learned and how the dynamics of teamwork may be applied to their future careers in professional fields of work.

Prior to beginning the exercise, the instructor presents an overview of action learning to students, noting specifically the operations of the six core components they will encounter during five class sessions, namely, (1) identification of a problem, (2) team formation, (3) questioning and reflection, (4) resolution to take action, (5) commitment to learning, and (6) facilitator interaction.

The instructor informs students that during the upcoming exercise he plays several roles as a facilitator, a required component of action learning (Marquardt, 1999). For example, he serves as a “coordinator” and “advisor,” who monitors the actions and dialogues of team members, guides them with their concerns, and assists in keeping them focused on their overall objectives. As a “catalyst,” he energizes team members to continue their progress toward questioning ways to solve problems. He is also a “learning coach,” helping members take ownership of their own learning. Lastly, as a “communication enabler,” and “climate setter,” he strives to set a positive tone, allowing members to “develop confidence in themselves, [and] to reflect and develop new ideas” (Lawlor, 1991, p.256; Marquardt, 1999).

For each class session noted below, students experience and internalize the component of action learning.

Class session day one:

Conceptual understanding of action learning. Students read an article entitled “Harnessing the Power of Action Learning,” (Marquardt, 2004) which addresses the core interactive and interdependent components of action learning. Through an instructor–led discussion, students share their understanding of the problem-solving strategy of action learning and its possible applications in organizations, particularly those in which they may work as future employees (Marquardt, 2004).

Following the discussion, students are assigned the homework tasks of creating and drawing a design of a structural object and collecting an assortment of 25-30 odds-and-ends from which the sketched design can be constructed. These items may include pencils, empty boxes, sponges, paper, screws, and straws, or any other suitable pieces. Students are directed to place the sketched design and the collected items in a paper or plastic bag (no size of bag is stipulated) and bring the bag to the next class session.

Class session day two:

Team formation. Students are divided into teams of four to six students, preferably as culturally diverse as possible. Marquardt (1999) notes that a team having fewer than four members “do not provide enough diversity, creativity, and challenging dynamics” to accomplish a task effectively (p. 27). Once teams are established, each identifies itself as Team One, Team Two, and Team Three, etc., and writes its team name on the bags of all its team members.

Problem identification. The facilitator/instructor explains the next task of the action-based exercise is for each team to identify the problem—each team is to study and evaluate the sketched design and the collection of items found in each of its members’ bags.

The team’s selected sketched design may be an exact copy of one that has already been sketched or a new sketch that the team draws during this class session. Once each team has decided upon a sketch, it then decides upon 25 to 30 items with which team members will assemble the proposed design. The items may be selected from any of the collected ones found in members’ bags, from a combination of their bags, and/or from an assortment found in the front of the classroom that has been provided by the facilitator/instructor. This part of the exercise is complete when each team has decided upon a sketch of an object design and the items to use for its construction.

Resolution to take action. Next, each team begins writing instructions to accompany their assembly of the object design. Members are asked to include illustrated drawings of the object design at different stages of its construction and include them in the set of instructions. The illustrations can serve as visual aids for another team who, at a later class session, will rebuild the object design.

Questioning and reflection. As team members write instructions and construct the structural object, they begin to question and reflect upon their current tasks. Examples of possible questions which they may ask are: “How does this piece look when it is pasted here?” “Can we try putting this piece?” “Are you saying that ...?” “What do you think about our ...?” “Perhaps we should....” “Is it best to sequence Step 6 before Step 3?” “Let’s look at the clearest way of stating this step?” “Do we need to include the phrasing that...?” “Will the other team have a better understanding of assembling the object if we added an illustration here or there?” Many of the questions may be challenging, since all questions do not have precise answers. In Revans’ commonsense approach to the use of questioning in action learning, he emphasizes the value of showing one’s ignorance to others’ questions (Boshyk & Dilworth, 2010). According to Daft’s work on organizational teams, he writes, “Good team leaders aren’t afraid to admit their ignorance and ask for help. This serve to let people know that lack of knowledge, problems, concerns, and mistakes can be discussed openly without fear of appearing incompetent” (p. 507). He states that being open about one’s ignorance most frequently gains respect from others (Daft, 2010). Marquardt (1999) adds that the benefits of questioning and reflection “open doors in the mind and get people to think more deeply....they test assumptions, [and] explore why people act in the way that they do.... Asking questions is not only a quest for solutions but also an opportunity to explore” (pp. 30-31).

Class session day three:

Resolution to take action. Team members complete the assembly of the structural design, along with editing and revising their final copy of instructions and illustrated drawings. The constructed object and copy of instructions and illustrations are submitted to the facilitator/instructor for approval who will either approve or disapprove of the object. If a team receives a disapproval, members must reconstruct the object according to the facilitator/instructor’s advice. Once a team’s designed object has been approved, the team is given permission to disassemble the parts of the object, make multiple copies of its set of instructions, and place them in a team bag. All teams are asked to bring their bags filled with the proper contents to the next class session.

Class session day four:

Resolution to take action. Once the facilitator/instructor collects all bags, he redistributes them. Upon receiving a bag, each team removes its contents and begins reading the instructions and assembling the items. During this process of assembly, members are experiencing a high point of learning, that is, their assessment of how effectively (1) they worked as a team to complete the assembly of a designed object according to their set of self-written instructions, (2) the other team’s response to their instructions on the building of the their object design, and (3) they were able to construct an object design sketched by another team by reading that team’s set of instructions.

Marquardt (1999) writes:

Unless, the organization, the group, or individual puts into effect the action being agreed to, there is no evidence that something different or better has been or can be done. Consequently, there is no indication as to whether any valid learning or worthwhile action has taken place. Only by testing their ideas in practice will group members know whether their ideas are effective and practical, whether any issues have been overlooked, and what problems may occur as a result, what to do differently in the future (p. 34).

If team members are unable to assemble a structural object due to faulty or unclear instructions, they inform the facilitator/instructor who combines the team with the one who wrote the instructions, allowing them to coordinate their efforts to identify the problem, share comments, question the phrasing of instructions, and make the necessary revisions to the instruction set.

Class session day five:

Commitment to learning. In the first half of the session, each team lists personal reactions and learnings based on their participation in the action-based exercise and discusses them within the team. Many of the members’ comments noted that the nature of the exercise sparked their interests and motivated them to learn about action

learning. For example, when members were assigned the homework to design a sketch and collect items to construct it, several indicated they experienced a sudden rush of curiosity and were eager to become involved in the forthcoming task (Locke & Latham, 1990).

Team members recalled being asked to sort through their team's various sketched designs and their accompanying items of odds-and-ends from which they would build a structural object. When they were directed to select only one sketched design, many members indicated they thought it would be a "mindless" and easy task. However, they noted it was not long until they realized trying to determine which design was 'most liked' among team members was not as simple as it first appeared. Being able to identify a problem, or, in this case, to determine which sketched design was 'most liked,' is a major component of action learning. When Revans emphasized in his work on action learning that there is a definite need to clearly identify one's problem at hand, he may have recalled Albert Einstein saying to him, "If you think you understand a problem, make sure you are not deceiving yourself" ("Reginald Revans: Management," 2003).

Several team members also recalled that their questioning and reflection contributed to their self-confidence and ability to ask more challenging questions—many of which had no seemingly quick answers.

As team members recalled finalizing their set of instructions, gaining facilitator/instructor's approval of their assembled structural object, and then disassembling the items, they noted it was reassuring to know that the exercise was not complete, but that another team would be testing their work by assembling the items to construct an object according to the written set of instructions and illustrations. The majority of team members were anxious, but eager to receive feedback. Depending upon how well the other team was able to read the set of instructions and build the object design signaled to the team who had engineered it how well they had analyzed the sequence of steps to assemble the object and how clearly they had written the instructions. Marquardt (1999) notes that a greater depth of learning occurs when one anticipates and receives feedback.

Other insights noted several times by team members include the following:

- "I found that writing instructions in the simplest and most direct terms for the other team to easily understand proved to be a challenge for us."
- "Usually, I'm the introvert in a team exercise, but for this one I opened up and talked a lot because after awhile, everyone in the group wanted to hear as many ideas as possible."
- "I think our team gained more respect for each other as we continued to debate which phrasing of a sentence of writing was best or which way to best assemble our object was best."

During the second half of the session, students disperse from their teams and join an open class forum where they discuss how the principles of action learning may be applied to their future professional careers in training and development and other real-life work situations. For example, in the field of training and development, members noted the importance of being able to identify the precise training needs of an organization before designing a training program. Students in the area of Occupational Safety and Health spoke of the urgency of finding efficient and effective solutions to problems through teamwork. Students in the field of health care emphasized that due to the frequency of unanticipated problems, there is constant need for personnel to be able to sort through much information to quickly find that which is relevant in solving problems (Dixon, 1998).

CONCLUSIONS

The substantive value of what members learn through the team dynamics of action learning is an asset for which employers are searching among prospective employees. Survey results were recently released on items most important to employers when hiring new employees. One of the employers who was surveyed stated, "Be congenial, have a 'get-it-done' attitude and be a team player—anything less than that will draw down the company's productivity and your career growth" (CollegeGrad.com, 2005).

In summary, it is recommended that instructors consider implementing the described exercise or an adaptation of it into one or more of their academic courses for several reasons:

- Sharpens one's awareness that not knowing answers to questions is ok.
- Promotes the use of questioning.
- Improves listening skills.

- Enhances problem solving through teamwork.
- Fosters respect for teammates.
- Enriches one's oral and written communication skills.
- Promotes collaborative interaction among peers.
- Adds variety to the teaching curriculum.

Perhaps one of the most important reasons to implement this exercise is the student's possible creation of a link that bridges his or her academic activity to future employment practices in the real world. Regardless to what extent, the student's life will be impacted by this action-based exercise, the seed of action learning has been planted.

This paper describes an innovative exercise designed to give university students from numerous disciplines the opportunity to experience major components of action learning as outlined by Marquardt (1999; 2004) and to discuss what they learned from their involvement in the exercise, along with how their learning may be applied to real-life situations in their professional careers.

TABLE 1: EXERCISE SUMMARY

Day One:

- Students read "Harnessing the Power of Action Learning" and discuss problem-solving strategies in terms of action learning and its application in organizations.
- For a homework assignment, students collect 25-30 miscellaneous items and sketch a design of an object that can be constructed with the items.

Day Two:

- Teams are formed, and each team participates in the following:
 - Decides upon a sketched or altered design
 - Collects 25-30 items for use in the construction of a design
 - Constructs the design with the items
 - Writes a set of instructions and draws illustrations which direct the assembly of the design
 - Questions, reflects, and revises the set of instructions and illustrations.

Day Three:

- Each team submits the constructed object and its copy of instructions and illustrations to the facilitator/instructor for approval.
- Upon approval, each team disassembles the object, places the 25-30 items and a copy of instructions and illustrations into a bag.

Day Four:

- Each team's bag is redistributed to another team whose assignment is to reconstruct the object according to the copy of instructions and illustrations.
- If a team experiences a problem, the facilitator/instructor combines the team having the concern with the team who wrote the instructions in question. The two teams discuss the problem until a clarification has been reached and the team is able to take the steps to complete the construction of the object.

Day Five:

- Teams discuss their learning and personal reactions to their writing of and sketching of illustrations, as well as their ability to follow a set of composed instructions and sketched illustrations from another team.
- Teams disperse and join an open class forum where they discuss how principles of action learning can be applied to their future careers.

REFERENCES

- A team effort. (2002 September). *Training*. 18.
- Bain, K. (2004). *What the best college teachers do*. (1st ed.). Cambridge, MA: Harvard University Press.
- Benson, S. S. (2009). Going for the intrinsic gold: A collaborative quizbowl quest to motivate students and to showcase business law courses. *Journal of Legal Studies Education*, 26(2), 457-484.
- Boshyk, Y., & Dilworth, R. L. (Eds.). (2010). *Action learning: History and evolution*. New York: Palgrave Macmillan.
- Bourner, T., Cooper, A., & France, L. (2000). Action learning across a university community. *Innovations in Education and Training International*, 37(1), 2-9.
- Collegegrad.Com (May 2, 2005). News survey results detail what top employers want most. Retrieved December 29, 2010, from <http://www.collegegrad.com/press/whatemployerswant2005.shtml>
- Daft, R. L. (2010). *Management* (9th ed.). Mason, OH: South-Western Cengage Learning.
- Dilworth, R. L. (1998). Action learning in a nutshell. *Performance Improvement Quarterly*, 11(1), 28-43.
- Dixon, N. M. (1998). Action learning: More than just a task force. *Performance Improvement Quarterly*, 11(1), 44-58.
- Heinonen, J., & Poikkijoki, S-A. (2006). An entrepreneurial-directed approach to entrepreneurship education: mission impossible? *Journal of Management Development*, 25(1), 80-94.
- Lawlor, A. (1991). "The components of action learning." In M. Pedler (Ed.), *Action learning in practice* (2nd ed.) Aldershot, England: Gower.
- Locke, E. A., & Latham, G. D. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Marquardt, M. J. (1999). *Action learning in action: Transforming problems and people for world-class organizational learning*. Palo Alto, CA: Davies-Black Publishing.
- Marquardt, M. J. (2004 June). Harnessing the power of action learning. *Training & Development (TD)*, 58(6), 26-32.
- Marquardt, M. J., & Waddill, D. (2004). The power of learning in action learning: a conceptual analysis of how the five schools of adult learning theories are incorporated within the practice of action learning. *Action Learning: Research and Practice*, 1(2), 185-202.
- Noe, R. A. (2010). *Employee Training and Development* (5th ed.). New York: McGraw-Hill Irwin.
- O'Hara, S., Webber, T., & Reeve, S. (1996). Action learning in management education. *Education + Training*, 38(8), 16-21.
- Reginald Revans: Management guru who taught executives to value experience over theory and put their people first. (2003, February 21). *The Times*. Retrieved December 14, 2010, from <http://www.timesonline.co.uk/tol/comment/obituaries/article884986.ece>

On The Teaching of Second Order Models in Regression

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ABSTRACT

The objective in teaching second order models is to have students understand how the second order terms capture the curvature in the data. Ideally one wants to use real examples but the appearance of real regression results, which look so complicated, is an obstacle in teaching these models. This paper shows how to construct data sets for teaching second order models that have very nice properties, namely that the data sets are all integers and where both first and second order models simultaneously have regression coefficients that are all integers.

Keywords: Regression, second order models

INTRODUCTION

The goal in any statistics class is that students be able to interpret the results of statistical calculations. This is certainly true in the subject of regression especially when one is discussing the difference between first order models and the somewhat more complicated second order models. To introduce the issues, consider first and second order models with two independent variables. The first order model has the form

$$Y = a + b_1X_1 + b_2X_2 \quad (1)$$

with the second order model having the form

$$Y = a + b_1X_1 + b_2X_2 + b_3X_1^2 + b_4X_1X_2 + b_5X_2^2 \quad (2)$$

(usually $a \neq a$, $b_1 \neq b_1$ and $b_2 \neq b_2$ when fit to the same data). In teaching, the instructor wants to focus on the function of the second order terms meaning the function of the squared terms and the function of the interaction term X_1X_2 . The problem in the teaching of these second order models is the way the regression results look. When using real data the regression results are never clean and the fitted model might look something like:

$$\hat{Y} = 3.98178 + 5.86842X_1 + 1.31073X_2 + 0.07490X_1^2 + 191.73077X_1X_2 - 31.88158X_2^2 \quad (3)$$

whereby the students can barely see the variables and will tend to be drawn to the numbers 3.98178, 5.86842, 1.31073, etc. The students would probably miss the fact that there is a positive interaction term, that the coefficient in front of X_1^2 is so small that this term may not be relevant, and that the coefficient in front of X_2^2 is negative representing a downward curve. An obstacle in students learning is worrying too much about the strange numbers and not worrying enough about interpretations. However instead if one had a data set where the regression equation looked like:

$$\hat{Y} = 4 + 6X_1 + X_2 + 0X_1^2 + 192X_1X_2 - 32X_2^2 \quad (4)$$

students would be able to see the forest from the trees and be able to better concentrate on the more important interpretations of the second order terms. In this second equation it is easy to see that the interaction term has a large coefficient; it is easier to see the negative coefficient in front of X_2^2 and it is clear that X_1^2 is not relevant since the zero coefficient makes this term disappear from the regression equation. One could just introduce Equation (4) as a hypothetical regression equation but obviously it is better if one can actually show a data set that has this equation as its regression equation. One wants to have data sets where the regression coefficients a , b_1 , b_2 , b_3 , b_4 , b_5 are integers. It would be still better for teaching if the same data had first order coefficients a , b_1 , b_2 which are also integers. This paper shows that an infinite number of such data sets exist and details how to produce them. The paper produces a data set that has Equation (4) for its second order model. It will turn out that the same data set has a first order regression equation:

$$\hat{Y} = -148 + 172X_1 + 163X_2 \quad (5)$$

The teaching interpretation of these two equations, once the statistical significance of the variables is considered, will turn out to be that the positive interaction term in the second order model is approximated by the first order model terms $b_1X_1 = 172X_1$ and $b_2X_2 = 163X_2$. The data set that produces Equation (3) is just a modification of the data

that produces Equation (4) obtained by adding 1 to just the first Y value and leaving the rest the same. The first section of the paper details how to create these data sets.

In teaching multiple regression, one will want to discuss the topic of multicollinearity and second order models are an excellent context in which to talk about this idea. The constructed data sets may or may not be chosen to exhibit multicollinearity. If an independent variable has values of only one sign there will be a tendency to have this characteristic in a second order model. Multicollinearity is discussed in the second section of the paper. The third section of the paper gives a real world example that demonstrates the usefulness of second order models. A stock option strategy called a Butterfly Spread provides an excellent teaching example.

CONSTRUCTING THE DATA SETS

In this section we present the method to formulate data sets where each variable, dependent and independent, will have integer values and both the first order model and the second order model simultaneously will have integer regression coefficients. We will use the notation that variables Y and X_i are in *italics* and that data collected from the variables is placed into vectors \mathbf{Y} , \mathbf{X}_i , etc. denoted in **bold**. The vector $\mathbf{X}_i\mathbf{X}_j$ will have the components of the interaction terms X_iX_j and the vectors \mathbf{X}_i^2 will have components that are the values of the squared independent variables X_i^2 . A method for choosing the \mathbf{X} vectors is given at the end of this section.

Assuming that the independent variables vectors have been chosen, the next step is to find and define the regression equations and the dependent variable \mathbf{Y} . In the paper Sutrick (2011), it was shown that either the first order model or the second order model can be chosen to satisfy the integer criterion. It was shown that in general if a regression data set has the form

$$\mathbf{Y} = a + b_1\mathbf{X}_1 + b_2\mathbf{X}_2 + b_3\mathbf{X}_3 + \dots + b_n\mathbf{X}_n + \mathbf{E} \quad (6)$$

the regression equation will be $\hat{Y} = a + b_1X_1 + b_2X_2 + b_3X_3 + \dots + b_nX_n$ as long as the error term \mathbf{E} is uncorrelated with the dependent variable vectors \mathbf{X}_i . The uncorrelated \mathbf{E} is easily computed and will be used later in this paper also. However that method will not produce a data set where both first and second order models simultaneously have integer regression coefficients on the same data. The difficulty in going from a first order model with only the variables X_i to a second order model which adds second order terms is that the variables X_i and X_i^2 , also X_i and X_iX_j are correlated (except in special cases). These correlations affect the estimated regression coefficients in the second order model causing them not to be integers even if the first order model has integer coefficients. By handling the correlations in just the right way we show it is possible to construct an unlimited number of data sets where both first and second order models simultaneously meet the integer value criterion on the same integer data.

The approach to handling the discussed correlations is to use regression. From regression theory the residual from a regression is uncorrelated with the dependent variables. If \mathbf{X}_i^2 is regressed on \mathbf{X}_i then the regression will place the curvature of the squared term into the residual while taking away its correlation with \mathbf{X}_i . The residual vector can then be used to define the \mathbf{Y} and it turns out that the residual vector will not affect the second order coefficients in such a way that they can no longer be chosen to be integers. The approach will be illustrated assuming two (it will be obvious that the same method will apply to more than two) independent variables, in this case three regressions will be needed to remove the correlations and they are: 1) \mathbf{X}_1^2 on $\mathbf{X}_1, \mathbf{X}_2$, 2) $\mathbf{X}_1\mathbf{X}_2$ on $\mathbf{X}_1, \mathbf{X}_2$, and 3) \mathbf{X}_2^2 on $\mathbf{X}_1, \mathbf{X}_2$. We can write these regressions in the form

$$\begin{aligned} \mathbf{X}_1^2 &= c_3 + d_3\mathbf{X}_1 + f_3\mathbf{X}_2 + \mathbf{E}_3 \\ \mathbf{X}_1\mathbf{X}_2 &= c_4 + d_4\mathbf{X}_1 + f_4\mathbf{X}_2 + \mathbf{E}_4 \\ \mathbf{X}_2^2 &= c_5 + d_5\mathbf{X}_1 + f_5\mathbf{X}_2 + \mathbf{E}_5 \end{aligned} \quad (7)$$

where $\mathbf{E}_3, \mathbf{E}_4, \mathbf{E}_5$ are the residual vectors from the three regressions. If \mathbf{X}_1 and \mathbf{X}_2 have integer components then from regression and matrix theory (as discussed below) $c_3, d_3, f_3, c_4, d_4, f_4, c_5, d_5, f_5$ and the components of the residual vectors will all be rational numbers. Therefore the residual vectors can be scaled to have integer values which will later be used to find \mathbf{Y} . Proceeding, we write $\mathbf{E}_3 = (1/g_3)\mathbf{\Gamma}_3, \mathbf{E}_4 = (1/g_4)\mathbf{\Gamma}_4, \mathbf{E}_5 = (1/g_5)\mathbf{\Gamma}_5$ where $\mathbf{\Gamma}_3$ has integer components and g_3 is the least common multiple of all the denominators of the components of \mathbf{E}_3 , with similar definitions for $g_4, \mathbf{\Gamma}_4, g_5$, and $\mathbf{\Gamma}_5$. The integer vectors $\mathbf{\Gamma}_3, \mathbf{\Gamma}_4, \mathbf{\Gamma}_5$ are all uncorrelated with \mathbf{X}_1 and \mathbf{X}_2 . The next to final step for getting \mathbf{Y} is to find an integer component error vector \mathbf{E} which is uncorrelated with $\mathbf{X}_1, \mathbf{X}_2, \mathbf{X}_1^2, \mathbf{X}_1\mathbf{X}_2$, and \mathbf{X}_2^2 . Details on how to compute this vector \mathbf{E} will be given in the example below. The construction of the data set is finished by defining \mathbf{Y} to be

$$Y = w + rX_1 + sX_2 + t\Gamma_3 + u\Gamma_4 + v\Gamma_5 + E \quad (8)$$

for integers $w, r, s, t, u,$ and v which will soon be chosen so that the regression coefficients will be relatively nice such as those in Equations (4) and (5). This is the Y of a second order model since the curvature is contained in $\Gamma_3, \Gamma_4, \Gamma_5$. The data defined in Equation (8) will have the integer coefficient first order regression equation

$$\hat{Y} = w + rX_1 + sX_2 \quad (9)$$

since $\Gamma_3, \Gamma_4, \Gamma_5$ and E are uncorrelated with X_1 and X_2 and serve as the error term for the first order model. Anything uncorrelated with the independent variables will not affect the estimated regression coefficients. Thus Equation (1) will have $a=w, b_1=r,$ and $b_2=s$ all integers.

To see what the second order model will be, we solve for $\Gamma_3, \Gamma_4, \Gamma_5$ in the Equations (7) and plug them into the definition of Y in Equation (8). We can write $\Gamma_3 = g_3[X_1^2 - c_3 - d_3X_1 - f_3X_2],$ etc., so that

$$Y = w + rX_1 + sX_2 + t\Gamma_3 + u\Gamma_4 + v\Gamma_5 + E = w + rX_1 + sX_2 + t^*g_3[X_1^2 - c_3 - d_3X_1 - f_3X_2] + u^*g_4[X_1X_2 - c_4 - d_4X_1 - f_4X_2] + v^*g_5[X_2^2 - c_5 - d_5X_1 - f_5X_2] + E = (w-t^*c_3^*g_3-u^*c_4^*g_4-v^*c_5^*g_5) + (r-t^*d_3^*g_3-u^*d_4^*g_4-v^*d_5^*g_5)X_1 + (s-t^*f_3^*g_3-u^*f_4^*g_4-v^*f_5^*g_5)X_2 + (t^*g_3)X_1^2 + (u^*g_4)X_1X_2 + (v^*g_5)X_2^2 + E.$$

Since E by design is uncorrelated with $X_1, X_2, X_1^2, X_1X_2,$ and $X_2^2,$ the regression of Y on these variables gives the regression equation: $\hat{Y} = a + b_1X_1 + b_2X_2 + b_3X_1^2 + b_4X_1X_2 + b_5X_2^2$ where

$$\begin{aligned} a &= (w-t^*c_3^*g_3-u^*c_4^*g_4-v^*c_5^*g_5) \\ b_1 &= (r-t^*d_3^*g_3-u^*d_4^*g_4-v^*d_5^*g_5) \\ b_2 &= (s-t^*f_3^*g_3-u^*f_4^*g_4-v^*f_5^*g_5) \\ b_3 &= (t^*g_3) \\ b_4 &= (u^*g_4) \\ b_5 &= (v^*g_5). \end{aligned} \quad (10)$$

Since $c_3, d_3, f_3, c_4, d_4, f_4, c_5, d_5, f_5$ are rational numbers and each is multiplied by one of w, r, s, t, u, v the w, r, s, t, u, v can be chosen as integers so that $a, b_1, b_2, b_3, b_4,$ and b_5 in Equation (2) are all integers.

We illustrate this with Data Set #1. Consider the independent variable vectors X_1 and X_2 below with their squares and interactions:

$$X_1 = \begin{bmatrix} 1 \\ 2 \\ 4 \\ 2 \\ 1 \\ 2 \\ 1 \\ 0 \end{bmatrix}, \quad X_2 = \begin{bmatrix} 2 \\ 2 \\ 1 \\ 2 \\ 0 \\ 1 \\ 1 \\ 0 \end{bmatrix}, \quad X_1^2 = \begin{bmatrix} 1 \\ 4 \\ 16 \\ 4 \\ 1 \\ 4 \\ 1 \\ 0 \end{bmatrix}, \quad X_1X_2 = \begin{bmatrix} 2 \\ 4 \\ 4 \\ 2 \\ 2 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \quad X_2^2 = \begin{bmatrix} 2 \\ 4 \\ 1 \\ 4 \\ 0 \\ 1 \\ 1 \\ 0 \end{bmatrix}.$$

The components in X_1 and X_2 were chosen mostly arbitrarily with the last couple of rows chosen to have a property that will be discussed at the end of the section. With the independent variables given and the form of the dependent variable vector Y given, the regression coefficients must be found. The regressions of Equation (7) result (as is easy to check) in the equations:

$$\begin{aligned} X_1^2 &= -(396/192) + (795/192)X_1 - (135/192)X_2 + (1/64)\Gamma_3 \\ X_1X_2 &= -(156/192) + (159/192)X_1 + (229/192)X_2 + (1/192)\Gamma_4 \\ X_2^2 &= -(4/32) - (7/32)X_1 + (67/32)X_2 + (1/32)\Gamma_5, \quad \text{where} \end{aligned}$$

$$\Gamma_3 = \begin{bmatrix} -77 \\ 148 \\ 59 \\ -7 \\ -77 \\ -162 \\ -40 \\ 156 \end{bmatrix}, \quad \Gamma_4 = \begin{bmatrix} 21 \\ -52 \\ 141 \\ -97 \\ 21 \\ -142 \\ -24 \\ 132 \end{bmatrix}, \quad \Gamma_5 = \begin{bmatrix} 5 \\ 12 \\ -3 \\ -17 \\ 5 \\ 18 \\ -24 \\ 4 \end{bmatrix}$$

so that $c_3 = -396/192$, $d_3 = 795/192$, $f_3 = -135/192$ and $g_3 = 64$. Also $c_4 = -156/192$, $d_4 = 159/192$, $f_4 = 229/192$ and $g_4 = 192$. Continuing $c_5 = -4/32$, $d_5 = -7/32$, $f_5 = 67/32$ and $g_5 = 32$.

We start the definition of \mathbf{Y} in Equation (8) by taking $t = 0$, $u = 1$, and $v = -1$. This will keep \mathbf{X}_1^2 out of the model but put a positive interaction $\mathbf{X}_1\mathbf{X}_2$ and a negative (downward curve) \mathbf{X}_2^2 into the model. At this point the current status of the second order coefficients Equation (10) would be:

$$\begin{aligned} a &= (w-(0)*(-396/192)*(192) - (1)*(-156/192)*(192)-(-1)*(-4/32)*(32)) = w + 152 \\ b_1 &= (r-(0)*(795/192)*(192)-(1)*(159/192)*(192)-(-1)*(-7/32)*32) = r - 166 \\ b_2 &= (s - (0)*(-132/192)*(192)-(1)*(229/192)*(192)-(-1)*(67/32)*(32)) = s - 162 \\ b_3 &= (0)*(64) = 0 \\ b_4 &= (1)*(192) = 192 \\ b_5 &= (v*g_5) = (-1)*(32) = -32. \end{aligned} \quad (11)$$

Choosing $w = -148$, $r = 172$, and $s = 163$ gives the first order regression coefficients, Equation (1), as $a = -148$, $b_1 = 172$, $b_2 = 163$ and giving the second order model regression equation, Equation (2), as

$$\hat{Y} = 4 + 6X_1 + X_2 + 0X_1^2 + 192X_1X_2 - 32X_2^2$$

which are Equations (4) and (5) of the Introduction. The final step in the construction of \mathbf{Y} is to find an error term \mathbf{E} . Since $n = 8$ and there are $k = 5$ predictors (\mathbf{X}_1 , \mathbf{X}_2 , \mathbf{X}_1^2 , $\mathbf{X}_1\mathbf{X}_2$, and \mathbf{X}_2^2) the error term will have $n-k-1 = 8-5-1 = 2$ degrees of freedom. Regression theory, see for example Rao (1973), tells us that the error term \mathbf{E} will be a function of two different vectors \mathbf{E}_1 and \mathbf{E}_2 both of which are uncorrelated with the five predictor variables. The two vectors are quite easy to produce using the method in Sutrick (2011). The method is to regress $\mathbf{Y}_1 = [1 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0]^T$ on \mathbf{X}_1 , \mathbf{X}_2 , \mathbf{X}_1^2 , $\mathbf{X}_1\mathbf{X}_2$, and \mathbf{X}_2^2 . It is easy to check that this gives the residual vector $\mathbf{R}_1 = (1/494) [256 \ -18 \ -3 \ 45 \ -238 \ -9 \ -42 \ 9]^T$ uncorrelated with the five predictors. Next regress $\mathbf{Y}_2 = [0 \ 1 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0]^T$ on \mathbf{X}_1 , \mathbf{X}_2 , \mathbf{X}_1^2 , $\mathbf{X}_1\mathbf{X}_2$, and \mathbf{X}_2^2 to get a second error vector $\mathbf{R}_2 = 1/247 [-9 \ 18 \ 3 \ -45 \ -9 \ 9 \ 42 \ 9]^T$. Since combinations of uncorrelated vectors remain uncorrelated, with some trial and error, we can take $\mathbf{E}_1 = (494/247)\mathbf{R}_1 + \mathbf{R}_2 = [1 \ 0 \ 0 \ 0 \ 1 \ 0 \ 0 \ 0]^T$ and take $\mathbf{E}_2 = (1482/247)\mathbf{R}_1 + (256/3)\mathbf{R}_2 = [0 \ 6 \ 1 \ -15 \ -6 \ 3 \ 14 \ -3]^T$. Regression theory and linear algebra state that every error term here can be written in the form $p\mathbf{E}_1 + q\mathbf{E}_2$ for any values of p and q . One can increase or decrease the size of the error term by making p and q bigger or smaller, thereby choosing which terms in the regression equation one wants to be (or not be) significant. We choose $p = 25$ and $q = 3$ giving the error term $\mathbf{E} = [25 \ -18 \ -3 \ 45 \ -7 \ -9 \ -42 \ 9]^T$. This produces a \mathbf{Y} for Data Set #1, through Equation (8), of

$$Y = \begin{bmatrix} 293 \\ 640 \\ 762 \\ 414 \\ 261 \\ 7 \\ 129 \\ 13 \end{bmatrix} = (-148) \begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{bmatrix} + (172) \begin{bmatrix} 1 \\ 2 \\ 4 \\ 2 \\ 1 \\ 2 \\ 1 \\ 0 \end{bmatrix} + (163) \begin{bmatrix} 2 \\ 2 \\ 1 \\ 2 \\ 0 \\ 1 \\ 1 \\ 0 \end{bmatrix} + (0) \begin{bmatrix} 21 \\ -52 \\ 141 \\ -97 \\ 21 \\ -142 \\ -24 \\ 132 \end{bmatrix} + (1) \begin{bmatrix} -77 \\ 148 \\ 59 \\ -7 \\ -77 \\ -162 \\ -40 \\ 156 \end{bmatrix} + (1) \begin{bmatrix} 5 \\ 12 \\ -3 \\ -17 \\ 5 \\ 18 \\ -24 \\ 4 \end{bmatrix} + \begin{bmatrix} 25 \\ -18 \\ -3 \\ 45 \\ -7 \\ -9 \\ -42 \\ 9 \end{bmatrix} .$$

Every data point is an integer as desired. A partial Excel regression printout for the first order model for this data is given in Printout 1 verifying that the criterion that the first order model has integer regression coefficients is met and the coefficients are given by Equation (9). If one were using this data set to teach, one could point out that both regression coefficients, for the X_1 and X_2 , are statistically significant at an $\alpha = .10$ significance level.

Printout 1: Excel Printout First Order Model – Data Set #1

SUMMARY OUTPUT

| <i>Regression Statistics</i> | | | | |
|------------------------------|---------------------|-----------------------|---------------|----------------|
| R Square | 0.79373638 | <i>Significance F</i> | 0.012932 | |
| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> |
| Intercept | -148 | 119.9166377 | -1.23419 | 0.271973 |
| X1 | 172 | 48.33994208 | 3.558134 | 0.016247 |
| X2 | 163 | 68.79983043 | 2.369192 | 0.064017 |

Printout 2 is a partial Excel regression printout for the second order model, verifying that the criterion that both first and second order models simultaneously have integer coefficients is met.

Printout 2: Excel Printout Second Order Model – Data Set #1

SUMMARY OUTPUT

| <i>Regression Statistics</i> | | | | |
|------------------------------|---------------------|-----------------------|---------------|----------------|
| R Square | 0.990807 | <i>Significance F</i> | 0.022825 | |
| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> |
| Intercept | 4 | 49.33392 | 0.08108 | 0.942762 |
| X1 | 6 | 52.34451 | 0.114625 | 0.919213 |
| X2 | 1 | 104.707 | 0.00955 | 0.993247 |
| X1^2 | 0 | 14.16788 | 0 | 1 |
| X1X2 | 192 | 37.81788 | 5.076963 | 0.036675 |
| X2^2 | -32 | 42.54788 | -0.75209 | 0.530459 |

RESIDUAL OUTPUT

| <i>Observation</i> | <i>Predicted Y</i> | <i>Residuals</i> |
|--------------------|--------------------|------------------|
| 1 | 268 | 25 |
| 2 | 658 | -18 |
| 3 | 765 | -3 |
| 4 | 369 | 45 |
| 5 | 268 | -7 |
| 6 | 16 | -9 |
| 7 | 171 | -42 |
| 8 | 4 | 9 |

The residuals by construction consist of the error vector \mathbf{E} as found above. In using this data set to teach one would point out that only the interaction term in the second order model is significant (at $\alpha = .10$) and the significance of X_1 and X_2 in the first order model would be because these variables are proxies for the interaction term X_1X_2 . The significance of any of the variables could be changed by adjusting the size of the parameters w , r , s , t , u , and v in Equation (7) and by adjusting the size of the error (in this example by adjusting the size of p and q). Equation (3) in the Introduction is a regression equation for the same data set with one change--that the first Y value of 293 is changed to 294.

In the remainder of this section, we discuss now how one might go about choosing the independent variable vectors $\mathbf{X}_1, \mathbf{X}_2, \dots, \mathbf{X}_m$ in the first place. In the theory of regression (Rao, 1973) the regression coefficients can be written in the matrix form $\hat{\mathbf{b}} = (\mathbf{X}^T \mathbf{X})^{-1} \mathbf{X}^T \mathbf{Y}$ where \mathbf{X} is a matrix composed of a first column $\mathbf{1}$, which is a vector of 1's, with the rest of the columns consisting of the independent variable vectors $\mathbf{X}_1, \mathbf{X}_2, \dots, \mathbf{X}_m$. From linear algebra the inverse matrix in $\hat{\mathbf{b}}$ will have the form $(1/\Delta)\mathbf{M}$ where Δ is the determinant of the matrix $\mathbf{X}^T \mathbf{X}$. If the independent variable vectors have integer components then both Δ and the components of \mathbf{M} will be integers. Since the regression coefficients are obtained by dividing by Δ it would be useful if the determinant Δ has relatively small prime factors. The values of the independent variables can be chosen by trial and error until Δ has a relatively nice form. In the example above $\mathbf{X} = [\mathbf{1} \ \mathbf{X}_1 \ \mathbf{X}_2]$ has $\det(\mathbf{X}^T \mathbf{X}) = 384 = 2^7 \cdot 3$. Since the prime factors of the Δ are 2 and 3 the numbers work out relatively well as Data Set #1 shows. All of these calculations can be done easily in Excel. The Appendix gives the details.

MULTICOLLINEARITY

In this section we show that in second order models there will always be the tendency to have multicollinearity unless the independent variables have both negative and positive values. Two of the signs of multicollinearity are significant high correlations between pairs of predictor variables and a regression coefficient with a high variance inflation factor (VIF), (see Mendenhall and Sincich (2003)). The fact that Data Set #1 exhibits signs of multicollinearity can be seen from its correlation matrix in Printout 3.

Printout 3: Correlation Matrix – Data Set #1

| Correlation | X1 | X2 | X1^2 | X1X2 | X2^2 |
|-------------|----------|----------|----------|----------|------|
| X1 | 1 | | | | |
| X2 | 0.054047 | 1 | | | |
| X1^2 | 0.945691 | -0.06212 | 1 | | |
| X1X2 | 0.668142 | 0.6753 | 0.621036 | 1 | |
| X2^2 | -0.09149 | 0.958798 | -0.20074 | 0.553512 | 1 |

The correlation between X_1 and X_1^2 is .945691 and the correlation between X_2 and X_2^2 is .958798. The second consequence of multicollinearity is that the estimated standard errors of the regression coefficients will tend to be inflated. This is measured formally with the variance inflation factor defined as $VIF(i) = 1/[1-R^2(i)]$, where $R^2(i)$ is the regression R^2 from predicting independent variable X_i from the rest of the independent variables. For Data Set #1, let $R^2(1)$ be R^2 from the regression of X_1 on $X_2, X_1^2, X_1X_2, X_2^2$, and let $R^2(5)$ is the R^2 from the regression of X_2^2 on X_1, X_2, X_1^2, X_1X_2 , with similar definitions for $R^2(2), R^2(3)$, and $R^2(4)$. A variance inflation factor larger than 10 is evidence of multicollinearity (Mendenhall and Sincich, 2003). Table 1 shows that almost every variable has a large VIF in Data Set #1.

Table 1: Variance Inflation Factor – Data Set #1

| | | | | | |
|---------------------|----------|----------|-----------------|----------|-----------------|
| Predicted Variable: | X1 | X2 | X1 ² | X1X2 | X2 ² |
| VIF= | 10.91447 | 21.56003 | 15.13158 | 9.735577 | 16.70477 |

In a second order model the possibility of multicollinearity will exist if the independent variable has values which are only one sign. For example if X has a uniform distribution between 0 and A it is easy to show that the correlation between X and X^2 is $\text{Corr}(X, X^2) = \sqrt{15}/4 \approx .96825$ independent of the parameter A . To see that something like this happens in general, suppose X has a beta distribution between 0 and A , with a density function:

$$f(x|A, \alpha, \beta) = \frac{1}{AB(\alpha, \beta)} \left(\frac{x}{A}\right)^{\alpha-1} \left(\frac{A-x}{A}\right)^{\beta-1} \quad \text{and moments} \quad E(X^k) = \frac{A^k (\alpha + k - 1)! (\alpha + \beta - 1)!}{(\alpha - 1)! (\alpha + \beta + k - 1)!}$$

for $0 \leq x \leq A$, $\alpha > 0$, $\beta > 0$, and where $B(\alpha, \beta)$ is the beta function. Since $\text{Corr}(X, X^2) = \frac{E(X^3) - E(X)E(X^2)}{\sqrt{\text{Var}(X)}\sqrt{\text{Var}(X^2)}}$ it can be

determined that

$$\text{Corr}(X, X^2) = \sqrt{\frac{4(\alpha + 1)(\alpha + \beta + 3)(\alpha + \beta + 1)\beta / (\alpha + \beta + 2)}{(\alpha + 3)(\alpha + 2)(\alpha + \beta + 1)(\alpha + \beta) - (\alpha + 1)\alpha(\alpha + \beta + 3)(\alpha + \beta + 2)}}$$

(the correlation is independent of the parameter A). By varying the parameters α, β the density function for the beta distribution has a wide variety of shapes. For $\alpha=1, \beta=1$ it is a uniform distribution. For other values of α and β one

can get a probability density function which is a downward parabola symmetric around $A/2$, or an arcsine distribution which has a U-shape, or a density function that is a straight line. By choosing appropriate values of the parameters one can also get shapes that look like an exponential distribution or shapes that are symmetric and bell shaped, or shapes that look like the gamma distribution either skewed to the right or skewed to the left.

There is a lower limit for how small this correlation can be in the beta distribution and this lower limit is above .8. It can be shown that the partial derivative of $\text{Corr}(X, X^2)$ with respect to β is negative for all $\alpha > 0, \beta > 0$, so for a fixed value of α , $\text{Corr}(X, X^2)$ is decreasing when β is increasing. It can also be shown that $\text{Corr}(X, X^2)$ can be written as $\sqrt{[(2\alpha + 2)\beta^3 + \dots]/[(2\alpha + 3)\beta^3 + \dots]}$ where the \dots has smaller powers of β . The limiting value of the correlation as $\beta \rightarrow \infty$ will be dominated by the β^3 term, so that the smallest value for fixed α is $\text{Corr}(X, X^2) = \sqrt{(2\alpha + 2)/(2\alpha + 3)}$. This $\beta = \infty$ formula is always increasing with respect to α . This means that the lowest value of $\text{Corr}(X, X^2)$ for all α, β occurs for the limiting values $\alpha = 0, \beta = \infty$ in which $\text{Corr}(X, X^2) = \sqrt{2/3} \approx .81650$. This also implies that for all $\alpha \geq 0, \beta \geq 1$ $\text{Corr}(X, X^2) > \sqrt{(2 \cdot 1 + 2)/(2 \cdot 1 + 3)} = \sqrt{.8} \approx .89443$ including the uniform distribution where $\text{Corr}(X, X^2) = \sqrt{15}/4 \approx .96825$. However these limiting values do not represent typical data sets. For large β the density function will be L-shaped or U-shaped with a density nearly zero except for x near $x = 0$ or except for x near $x = A$. In conclusion if an independent variable has non-negative values then most likely $\text{Corr}(X, X^2)$ will be high and there will be the likelihood of multicollinearity. If an independent variables has only negative values the previous argument applies but with high negative correlations.

To find a second order model data set without multicollinearity one can use the fact that if the probability density function is symmetric about zero then both $E(X)$ and $E(X^3)$ are zero and then $\text{Corr}(X, X^2) = 0$. For example if $X = [-2 \ -1 \ 0 \ 1 \ 2]^T$ there is no correlation between X and X^2 . As a data set without high correlations among the predictor variables consider Data Set #2 below:

$$Y = \begin{bmatrix} 48 \\ 162 \\ 3 \\ 166 \\ 56 \\ 135 \\ 38 \\ 3 \\ 30 \\ 119 \\ 134 \end{bmatrix}, \quad X_1 = \begin{bmatrix} -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}, \quad X_2 = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ -2 \\ -1 \\ 0 \\ 1 \\ 2 \\ 2 \end{bmatrix}, \quad X_1^2 = \begin{bmatrix} 4 \\ 1 \\ 0 \\ 1 \\ 4 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}, \quad X_1 X_2 = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 2 \end{bmatrix}, \quad X_2^2 = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 4 \\ 1 \\ 0 \\ 1 \\ 4 \\ 4 \end{bmatrix}.$$

Printout 4 has the correlation matrix and among these predictor variables and there are no really high correlations.

Printout 4: Correlation Matrix – Data Set #2

| | $X1$ | $X2$ | $X1X2$ | $X1^2$ | $X2^2$ |
|------|----------|----------|----------|----------|--------|
| X1 | 1 | | | | |
| X2 | 0.149071 | 1 | | | |
| X1X2 | 0.288675 | 0.516398 | 1 | | |
| X1^2 | 2.92E-17 | 0 | 2.97E-17 | 1 | |
| X2^2 | 0.145556 | 0.260378 | 0.504219 | -0.35982 | 1 |

Also the variance inflation factors are given in Table 2.

Table 2: Variance Inflation Factors – Data Set #2

| Predicted Variable: | X1 | X2 | X1 ² | X1X2 | X2 ² |
|---------------------|----------|----------|-----------------|----------|-----------------|
| VIF= | 1.090909 | 1.363636 | 1.867074 | 1.210084 | 1.622613 |

All the VIF are small and far below the value of 10. This data set does not exhibit multicollinearity. This data set was derived using the method of the previous section. The chosen X_1 and X_2 have $\det(\mathbf{X}^T\mathbf{X}) = 1600 = 2^6 5^2$ which again is made up of relatively small prime factors. The regression Equations (7) are $\mathbf{X}_1^2 = 1/8 + 1/8\mathbf{X}_1 + 1/4\mathbf{X}_2 + \mathbf{E}_3$, $\mathbf{X}_1\mathbf{X}_2 = 1 + 0\mathbf{X}_1 + 0\mathbf{X}_2 + \mathbf{E}_4$, $\mathbf{X}_2^2 = 19/16 + 3/16\mathbf{X}_1 + 6/16\mathbf{X}_2 + \mathbf{E}_5$. The first order regression for this data set is $\hat{Y} = 80 + 6X_1 + 4X_2$ and the second order regression equation is $\hat{Y} = 54 + 2X_1 - 4X_2 + X_1^2 + 6X_1X_2 + 16X_2^2$ meeting the all integer criterion.

AN EXAMPLE USING A SECOND ORDER REGRESSION MODEL

In this last section we apply a second order model to a stock option hedging strategy called a Butterfly Spread. To place a value (price) on the Butterfly we use the Black-Scholes option pricing formula for European call options on non-dividend-paying stocks. A European call option is an option to buy stock at a price X , called the strike price, at the expiration of the option. The Black-Scholes option pricing formula is a function of four other variables in addition to the strike price: the current stock price S , the time left to the expiration of the option T , the volatility of the stock price σ , and the interest rate r . A call option is valuable because if $S > X$ there is the potential, using the option, to buy the stock for less than its current price. The Black-Scholes call option pricing formula is:

$$C(S, T, X) = SN(d_1) - Xe^{-rT}N(d_2) \text{ where } d_1 = \left[\ln(S/X) + (r + \sigma^2/2)T \right] / \sigma\sqrt{T} \text{ and } d_2 = d_1 - \sigma\sqrt{T}.$$


The Butterfly Spread uses three different strike prices, suppose $X=45$, $X=50$, and $X=55$. With these strike prices, the Butterfly would be to buy a $X=45$ call, sell two $X=50$ calls, and to buy a $X=55$ call. It has the name Butterfly because at expiration ($T=0$) the shape of its value as a function of stock price looks like . Suppose also that $\sigma = .25$ and $r = .05$, then Table 3 contains the value of the spread as a function of stock price S , and some positive time to expirations T (in fractions of a year).

Table 3: Butterfly Spread Prices

| Butterfly \$ | T=.800 | T=.775 | T=.750 | T=.725 | T=.700 |
|--------------|--------|--------|--------|--------|--------|
| S = 45 | .784 | .794 | .805 | .817 | .828 |
| S = 46 | .810 | .822 | .834 | .847 | .860 |
| S = 47 | .828 | .841 | .855 | .869 | .884 |
| S = 48 | .840 | .854 | .868 | .883 | .899 |
| S = 49 | .844 | .858 | .873 | .889 | .905 |
| S = 50 | .842 | .856 | .871 | .886 | .903 |
| S = 51 | .833 | .847 | .862 | .877 | .893 |
| S = 52 | .819 | .832 | .846 | .860 | .876 |
| S = 53 | .799 | .811 | .824 | .838 | .852 |
| S = 54 | .775 | .786 | .798 | .811 | .824 |
| S = 55 | .747 | .757 | .768 | .779 | .791 |

Figure 1: A Graph of Butterfly Spread Values for various Times to Expiration

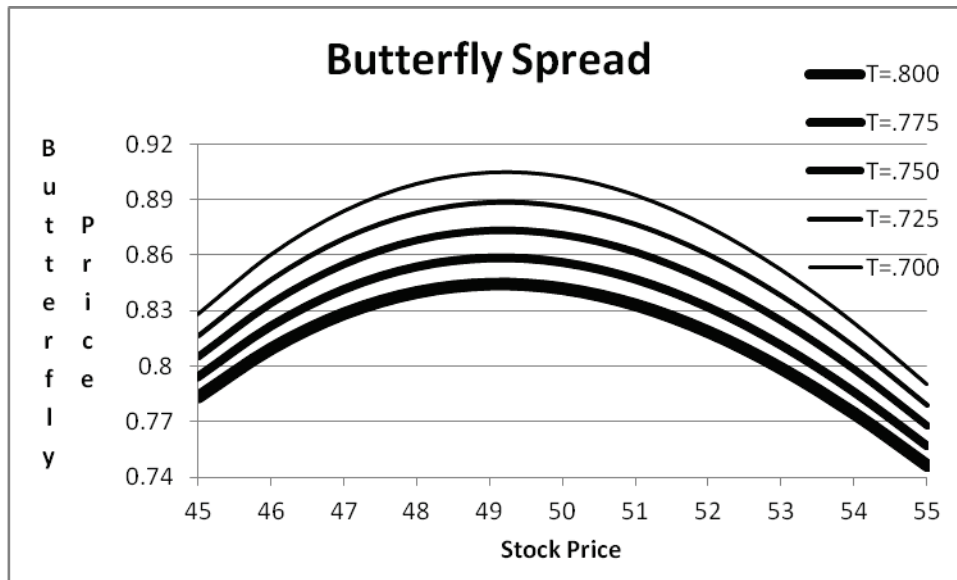


Figure 1 plots the values of Table 3 as a function of stock price for the different times. In the figure the thicker the curved line the longer the time to expiration. A number of things are immediately evident from the graph. The curves are not symmetric around the value $S = 50$ so the variable S may be significant. The downward curves show that the variable S^2 should be statistically significant with a negative regression coefficient. Finally the prices are lower for longer times to expiration so the variable T should also be statistically significant with a negative regression coefficient. Printout 5 is a partial Excel regression printout for a second order model for predicting the value of the Butterfly Spread from predictor variables S , T , S^2 , $S \cdot T$, and T^2 .

Printout 5: Excel Printout – Predicting Butterfly Spread Prices

SUMMARY OUTPUT

| <i>Regression Statistics</i> | | | | |
|------------------------------|---------------------|-----------------------|---------------|----------------|
| R Square | 0.994162 | <i>Significance F</i> | 1.83E-53 | |
| Standard Error | 0.003091 | | | |
| | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> |
| Intercept | -6.64104 | 0.288974 | -22.9814 | 6.78E-28 |
| S | 0.332985 | 0.005487 | 60.68673 | 9.01E-48 |
| T | -1.33768 | 0.6263 | -2.13584 | 0.037715 |
| S^2 | -0.00339 | 4.72E-05 | -71.7885 | 2.62E-51 |
| ST | 0.001944 | 0.003728 | 0.521411 | 0.604429 |
| T^2 | 0.466767 | 0.398535 | 1.171208 | 0.247179 |

The printout shows that the second order model fits the Butterfly data well with an R^2 of .994, a typical prediction error of .3¢, and an essentially zero Pvalue for the F-test of 10^{-53} . The variables S , T and S^2 are statistically significant at $\alpha = .05$ while T^2 and the interaction term ST are not significant.

APPENDIX

This section indicates how to do the Excel matrix calculations required to compute the determinant of $\mathbf{X}^T\mathbf{X}$. In Excel, highlight the cells of the \mathbf{X} matrix, click in the name box, type X, then hit enter to give the matrix the name X. In a similar way place the transpose matrix of \mathbf{X} into the spreadsheet and give \mathbf{X}^T the name XT. By highlighting a square set of cells of size $(m+1)\times(m+1)$, typing `=mmult(XT,X)` and then simultaneously hitting control-shift-enter, the $\mathbf{X}^T\mathbf{X}$ matrix will be computed. Giving this last matrix the name XTX and typing into a cell `=mdeterm(XTX)` and then simultaneously hitting control-shift-enter computes the determinant Δ .

REFERENCES:

- Hull, J. C. (2000). *Options, Futures, & Other Derivatives*. Fourth Edition. Upper Saddle River, NJ: Prentice Hall.
- Johnson, N. and Klotz, S. (1973). *Continuous Univariate Distributions-2*. New York: John Wiley & Sons Inc.
- Mendenhall, W. and Sincich, T. (2003). *A Second Course in Statistics: Regression Analysis*, Sixth Edition. Upper Saddle River, NJ; Pearson Education, Inc-Prentice Hall.
- Rao, C.R. (1973). *Linear Statistical Inference and Its Applications*, Second Edition. New York: John Wiley & Sons, Inc.
- Sutrick, K. (2011). Constructing Data Sets for Teaching Multiple Regression to Non-Statistics Majors. *Business Education Innovation Journal*. V. 3, No. 2, pp 21-26.

Developing Bartering Skills: Real World Exercise for a Negotiation Course

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ABSTRACT

Negotiation skills have been recognized as one of the critical “soft skills” that management and business students should develop in preparation for their careers and personal lives. In fact, a 2009 *Consumer Reports* poll noted that 66% of Americans had tried to negotiate in their personal lives within the past six months (large ticket items such as houses, cars, furniture, etc. as well as cell phone contracts, home repairs, etc.). However, in general negotiating is an under-developed skill. Americans routinely pass up opportunities to negotiate, partly due to their lack of skills, but also due to their discomfort with the process. In this article we describe a classroom tested negotiating exercise that students report increased their negotiation skills and their confidence to practice negotiation in their personal and professional lives. The authors discuss how to utilize a classroom tested bartering exercise which can quickly and easily be utilized in a variety of management courses including principles of management, organizational behavior, labor relations, and negotiations. Instructors in management and OB classes may use the exercise to illustrate key topics including motivation, communication, and decision-making. The Student Instructions form provided students to conduct the exercise is also included so others may use it.

Keywords: Negotiation, bartering, exercise

INTRODUCTION

In society today, almost everyone experiences personal and professional situations that require negotiation. Thus, the negotiation skills necessary to handle these situations successfully are useful to managers, business professionals, engineers, lawyers, teachers, public sector administrators, health care professionals, as well as general members of society such as consumers, parents, neighbors and students. These negotiation situations occur frequently both in a person’s professional life, as well as in his or her personal life. In fact, most people are presented hundreds of opportunities to negotiate issues of importance to them during their lifetime. However, these opportunities often are missed because many people choose not to negotiate the terms of significant issues, but instead simply accept what is offered to them--the job offer, the listed price, the standard rate, the work estimate, etc. Why? Many people lack the confidence, skills, motivation or training to negotiate (Volkema, 2009, p.2). However, research indicates that most individuals can become more effective negotiators with training and practice (Taylor, Mesmer – Magnus, Burns, 2008, pp. 135-140).

Many college programs in business and management, as well as programs in law, communication, psychology, education, and public administration include courses in negotiation and conflict resolution. In the past decade several articles have demonstrated how the classroom use of cases, exercises, and role playing can enhance students’ learning of important negotiation concepts such as interests v. positions and mutual gains (Mallinger, 1999), behavioral norms and values (Antal & Friedman, 2008), ethics (Collins, 1999) as well as other concepts from Fisher, Ury, & Patton’s (1991) classic negotiation book *Getting to Yes*. Instructors in management and OB classes may use the exercise to illustrate key topics including motivation (the need to focus on satisfying the interests of others), communication (the importance of framing and persuasion) and decision-making (the effects of social norms on decisions).

Bartering is generally defined as “the trading of goods or services directly without using money or other similar unit of account” (US Legal, 2010). In a negotiation situation, bartering provides negotiators with an innovative way to avoid getting bogged down in price haggling and enables them to “expand the pie” by adding new goods and services to the process, as discussed in a 2009 article in *Negotiation*, published by the Harvard University Program on Negotiation. Bartering enables the parties to bring more creativity to the deal making process. The 2009 *Negotiation* article also notes that bartering, in comparison to price negotiations, has the advantage of not letting the

parties get bogged down in price haggling. This advantage is particularly useful for the exercise, and is the primary reason students are instructed they may not trade for cash. If they could trade for cash, then they would not be able to practice the negotiation skills they have learned to increase the *perceived* value of the objects involved. In early cases where students were allowed to barter for cash the process was not nearly as successful because...well \$20 is \$20, and the student cannot reframe it to be anymore. Thus in an exercise to develop the students' negotiation skills, bartering has a practical advantage.

We believe these articles illustrate that negotiation naturally lends itself to "hands on" classroom exercises, simulations, and cases. However when confined solely to a classroom all these useful learning tools do not provide students with the fullness of a "real world" negotiating experience that requires them to negotiate not with another student in a hypothetical classroom environment, but with people outside of the classroom – in the real world. Thus we have developed and fine-tuned over several years an exercise that provides students with the opportunity and challenge to apply the negotiation concepts they learn and practice in the classroom to a real-world setting.

THE BARTERING EXERCISE

The bartering exercise was developed over four years in several undergraduate and graduate management junior/senior level classes at a metropolitan university of about 15,000 students. In preparation for the exercise students receive classroom discussion of the basic elements of a negotiation or bartering situation. The exercise is broadly based on a 2006 CBS News report about a 26 year old man who succeeded in bartering a paper clip several times all the way to a house! It took Kyle MacDonald almost a year to complete the trades (CBS News, 2006) and the story received national attention. Today the skill of bartering has gained even greater attention in the business world due to the economy. A November 2009 *Negotiation* article, "When you're short on cash, try bartering," published by the Harvard Law School Program on Negotiation pointed out that during an economic downturn the opportunities to negotiate may diminish due to scarce financial resources, but cash – strapped individuals and businesses recognize they have other assets they can trade for things they need. In addition, the *Negotiation* article reported an explosion of bartering on Craigslist.org as well as in business to business deals. The *Negotiation* article also mentioned bartering can offer a business several potential benefits; 1. Bartering can be a cost-effective method of getting needed assets in exchange for under-utilized assets, without using cash; 2. Other businesses are more willing to barter assets due to the recession; 3. Bartering can create new networks and customers.

The bartering exercise has three basic elements. First, the instructor provides the students with the Student Instructions form included in Table 1. The instructor also provides students an item which they use for their first trade. The item is new, of good quality, but of a minimum value (less than \$2) and one that has broad appeal- thus a first trade is more easily accomplished. Because all students start with the same object, it provides a level playing field for them and avoids any possibility of their choosing an item that would make a first trade too difficult. Also, at the end of the project they can easily compare their relative success. Door stops and hose nozzles have been successfully used for several classes. The items are provided through departmental operating funds and students are not required to reimburse the school for the cost of the initial item. Second, the students are given about four weeks to complete at least eight trades. During this time students keep notes of each trade to include in their presentation. Third the students write a paper that describes each trade, and the norms, frames, etc. they utilized, and what they learned from the exercise. In addition, as an option if time permits, each student is required to give a five to ten minute presentation of what he/she learned from the project. This last element provides students the opportunity to learn from others tactics they may not have utilized in their own bartering, and also reinforces the learning points they experienced when they hear the experiences of classmates. They also realize that all or almost all of their classmates who started with the same \$2 item ended with something of considerably greater value after only eight trades – and without spending any money. Most often the minimum value of students' final item is between \$20 – \$50, or ten – twenty-five times the value of their original item! The most successful students finish with items worth hundreds or even thousands of dollars. For example, students often have ended the negotiation with appliances, new tires, musical instruments, iPods, concert tickets, and in one case a commercial sewing machine valued at \$2,400 which the student and her mother needed for their business!

When the students are first introduced to the bartering exercise and given the instruction sheet in Table 1 it is important for the instructor to emphasize several points. First, the primary purpose of the exercise is to give students actual "real world" experience in which they can practice the negotiation concepts and tactics discussed in the classroom. The bartering exercise requires them to go outside of their comfort zone by only allowing them to barter

four times with family & friends, then four times with strangers, but only in safe settings. Students often report that starting with family & friends definitely help them get their feet wet and build their confidence. Second, students are advised that they get to keep the last item, which provides a great motivation to them during the exercise. Therefore, they should, as early as possible in the exercise, decide what item of value they want to end up with after the last trade. This point significantly helps students focus their efforts and encourages them to make trades that increase in value and therefore they are more likely to negotiate for something they truly value at the end. However, we have not always required students to identify the item they would like to end up with, but instead may allow them to “go with the flow” of the bartering exchanges rather than choose an end goal. The exercise works well in either situation. Third, students need to realize that telling someone that they need to make a trade for a class project is alright – in fact it is an example of framing the trade as something more than just an exchange of items – the other person is also helping them with a school project. Some students report using this frame often, others use it only once or twice as they get started. To make the Bartering Project even more challenging, in one negotiation class the instructor limited the use of the “school project frame” to only two bartering exchanges. As a result of this limitation, students had to devote even more preparation and thinking about how to construct their opening remarks and how to build rapport. Fourth, students should be reminded of a critical point - this is a bartering exercise, and bartering, in comparison to price negotiations, has the advantage of not letting the parties get bogged down in price haggling. Thus the student should utilize frames and norms to increase the perceived value of a potential deal to the other party. Finally, students need to be reminded they should exercise their Best Realistic Alternative To A Negotiated Agreement (BRATNA) if someone offers them an exchange for something that is not of greater value than what they have at the time – they need to walk away and look for another potential trade. Not even lateral trades such as exchanging one DVD movie for another is acceptable and will negatively affect their grade. This last point if not followed by a student will, in our experience, result in their ending up with an item of significantly less value and give the students an excuse not to work as hard as their classmates.

Table 1 Bartering Exercise Student Instructions

| THE NEGOTIATION / BARTERING PROJECT INSTRUCTIONS |
|--|
| <p>This assignment will involve students in the process of bartering, a negotiation technique which requires you to conduct a series of negotiations by exchanging something of value for something else of greater value. This experience replicates the process of exchanging proposals and counterproposals in all forms and types of negotiations. One of the Project’s main goals is make the student ever more comfortable and insightful about the people (you included), the content, and the process of negotiations and bartering.</p> <p>In class you will be given an item which you are to barter at eight times in “real-world” settings. Your objective in each new “real-world” exchange is to attempt to barter for something of greater value to you than the item you are exchanging (eight exchanges resulting in eight ever increasing items/services of value to you). No cash transactions are allowed! The eight exchanges must be with eight different people, four must be with strangers (<u>negotiate only in safe settings as discussed in class</u>), to give you an opportunity to practice bartering/negotiating skills with different personalities and differing approaches to negotiations. You may go to a flea market to conduct two of the four “stranger” exchanges. Space out the bartering exchanges over several weeks and attempt to choose counterparts, friends and strangers, in a way that you will learn something new from each “real-world” transaction.</p> <p>You should before each of the eight bartering exchanges: assess your and your counterpart’s BRATNA; prepare opening remarks designed to set a positive tone; decide how you intend to build rapport with known and “stranger” counterparts; and be equipped with creative interest based proposals and thoughts about how and when you will incorporate persuasive norms and frames to enhance the opportunity for a mutual gain resolution.</p> <p>Paper and Class Presentation:</p> <p>During the sixth week of class, you are to submit a paper, three to five pages in length. The paper should include a complete description of each of the eight exchanges and a self assessment of what the Bartering Project taught you about bartering, negotiations, persuasion, BRATNA, norms, frames, and interest based conflict resolution.</p> <p>During the sixth week of class, you should be prepared to give a five minute presentation about how you could</p> |

use the lessons learned from the Project in your personal and business life.

For each exchange, you should address the following:

1. Each item/service exchanged, the location, and your relationship with your counterpart.
2. How/why you decided to approach each counterpart. Your opening statement to set the tone. How you built rapport? How you assessed your and your counterpart's BRATNA. Questions you asked to determine your counterpart's interests.
3. Specific negotiation techniques you utilized (interest based options, active listening, norms, framing, persuasion, timing, etc.)
4. Techniques used by your counterpart that you found effective and worth emulating.
5. Your comfort or discomfort with each exchange. How you might become more comfortable with future negotiations.
6. Lessons learned from the Bartering Project which you could utilize in your personal and professional life.

Have fun with this Project!

CLASSROOM PREPARATION

Before beginning the exercise students have learned several negotiation skills, concepts, and tactics they can apply during the exercise. They have been assigned relevant reading materials, participated in classroom discussion, and performed role – playing in class to develop the level of proficiency needed to prepare them for the exercise. The five key concepts, found in any negotiation essentials book (explained in Table 2), and many management and organizational behavior books include;

(1) **BRATNA**. Before a negotiation even begins, a successful negotiator decides what is their BRATNA, or Best Realistic Alternative To a Negotiated Agreement. The authors have modified BATNA – the classic term described in *Getting to Yes* (Fisher et. al, 1991) by strategically and purposely adding the word “Realistic” to the concept.

(2) **Norms**. Negotiation researchers have identified four commonly utilized norms which might influence negotiator behavior; (1) *relational norms* (Harvard Business Essentials: Negotiation, 2003, p. 110-114, and Carrell and Heavrin, 2008, p.63) , (2) *fairness norms: equality, equity, need* (Lewicki, 2010, p. 316-318) , (3) *reciprocity norm* - (Lewicki, 2010, p. 240-243 and Allred, 2004), and (4) *good faith bargaining* (Thompson, 1998, p.33-34).

(3) **Framing**. Framing is recognized as one of the primary tactics utilized by experienced negotiators because people often attach significant meaning to words, maybe even more meaning than they attach to numbers and facts (Kheel, 1999). In fact, *Getting to Yes* co-author William Ury strongly suggests that negotiators not reject an offer, but instead *reframe* it so that it provides something of value to both parties (Ury, 1991, p. 59).

4. **Persuasion**. One of the most important roles of a negotiator is that of a persuader (Loughran, 1992, p. 183). Students are encouraged to create opening remarks which set the tone for the bartering; to build rapport, before they attempt a trade; and to use active listening techniques in order to discover the needs and the interests of the other party (Carrell & Heavrin, 2008, p. 90). Persuasion also involves the use of factors that cause a person to say yes to an offer without thinking first (Cialdini, 2006, p. xiv).

5. **Integrative bargaining**. The concepts of distributive and integrative bargaining are central to negotiation. Students, like most adults, approach a negotiation seeking to maximize their portion of the outcome (distributive bargaining) and need to learn through class discussion and exercises the need to integrate interests of the other party in their offers.

Table 2 Key Negotiation Concepts

| Negotiation Concept | Definition for Negotiation / Bartering Application |
|--------------------------------|---|
| BRATNA | Best Realistic <u>A</u> lternative <u>T</u> o <u>A</u> Negotiated <u>A</u> greement - what a <i>person realistically will do if he/she cannot reach a settlement</i> . Absent a clear BRATNA negotiators starts off in a very weak position because they lack a distinct “minimum” reference point (walkway value) and thus may accept a poor offer. BRATNA refers to what <i>action</i> will the party take – seek another buyer, go to court, list an object on eBay, etc. (based on the term BATNA in <i>Getting to Yes</i>) |
| Relational Norm | Desire to maintain a positive long-term relationship which affects the content of the deal. |
| Fairness Norm: Equality | Evenly split the difference between two offers (50/50) or tendency to “meet in the middle” |
| Fairness Norm: Equity | Split the difference between two offers based on proportional inputs of the parties such as time involved, effort, etc. |
| Fairness Norm: Need | Split the difference between two offers based on the individual needs of the parties. |
| Reciprocity Norm | The human tendency to expect someone in a negotiation situation to respond to your concession with an equal or similar action. |
| Good Faith Norm | Expectation that negotiators will openly discuss issues, provide honest information, make sincere proposals, and honor verbal offers if accepted. |
| Framing | Framing in a negotiation refers to the wording and context in which an offer is made. A frame should include <i>how an offer meets the interests of the other party</i> – this focus on meeting the interests of the other party is a key negotiation concept. |
| Persuasion | Convincing the other party by facts, logic, trust or any other ethical, moral and legal means. Robert Cialdini (2006) has identified six factors that can cause a person to immediately agree to an offer without thinking about it first! The factors can be used in bartering and include: reciprocation (already discussed), consistency (desire to be consistent with what one has already done), social proof (tendency to see an action as more appropriate when others are doing it), liking (people prefer to say yes to someone they like), authority (obedience to proper authority), and scarcity (opportunities appear more valuable if limited). |
| Integrative bargaining | The process of discovering the interests of the other party and integrating their interests into an offer, rather than only striving to maximize one party’s outcome (distributive bargaining). |

STUDENT’S REPORTS OF LESSONS LEARNED

Several students gave their consent to reporting their “lessons learned” for this article, each student preferred to remain anonymous. The Bartering Project has been successfully incorporated into several negotiation classes. The student comments are typical of results reported in other classes. Each student in a class started the Bartering Project with a brand new garden hose nozzle or door stop (both have worked very well in several classes). The excerpted verbatim accounts show how the students developed confidence, managed stress, used frames and norms and employed a variety of effective persuasive techniques. The students also reveal their enormous self satisfaction with both their negotiating/bartering skills and their tangible results. The lessons learned from the Bartering Project are revealed when the students realize that they can apply the skills to their real lives, when they develop the willingness to negotiate with strangers, when they know that they can negotiate ethically and when it becomes clear to them that the processes of negotiations and bartering are learning experiences which include: BRATNA, frames, norms, opening remarks, building rapport, interests, active listening, innovative options, timing, power and persuasiveness. Please note that the following “stories” are verbatim accounts excerpted from the papers submitted by the students in accordance with the instructions of Table 1.

1. Student # 1: “To be honest, starting off with a simple garden hose nozzle gave me doubts about what I could actually end up with at the end of this Project, but I ended up coming away with a lot more than just an object of greater value than the garden hose nozzle. During the Project I learned some valuable negotiation techniques that I can use in my personal and professional life. Throughout my bartering transactions I was using a lot of ideas we talked about in class. When first talking with people, I built rapport. This was a really good project, I learned a lot about myself as a negotiator. I realized I am a much better negotiator than I had thought. I hope to use the skills and negotiating techniques I have learned from this class and this Project in both my personal and professional life for years to come.” End product: An air hockey table!

Lesson(s) learned: The student discussed two lessons discussed in class; (1) The importance of first building rapport before starting the negotiation, (2) the need to move beyond one’s “comfort zone” in negotiation

2. Student # 2: “The Bartering Project taught me the value of thinking on my feet and phrasing each encounter in a way that would make the trade seem as though it would benefit the other person. It was important to me that no one felt as though I was ‘fleecing’ him or her or trying to take advantage of him or her. Some of the specific negotiation techniques that I used were: framing, norms, distributive negotiation tactics, and integrative bargaining tactics. I think that the Bartering Project has improved my bartering and negotiation skills. While the exercises and demonstrations that we do in class are helpful and useful, they are contrived situations in a controlled environment. In the ‘real world’ (the Bartering Project), if the people that we were attempting to negotiate with became bored or irritated with me, he or she could simply walk away and leave me where I was standing. It was my job and duty to keep him or her engaged and interested while quickly convincing him or her that this was a good trade to make.” End product: Dane Cook concert tickets

Lesson(s) learned: The importance of framing an offer to meet the interests of the other person (“phrasing each proposal in a context that makes the trade seem as though it would benefit the other person”), and the ability of the other party to use “the walkaway” in a negotiation situation.

3. Student # 3: “There are a few lessons that I learned from the Bartering Project that I will be able to use in my personal and professional life. First, I now see the importance of stepping out of my comfort zone. Second, when “getting to yes”, it really is about the other person. I know my needs, I know what I want. All of those things are important, but realizing only my interests will NEVER help me get what I want out of a negotiating or bartering experience. Building rapport and discovering true interests is a skill I want to keep getting better at.” End product: A dress the student had been wanting for months.

Lesson(s) learned: The student discusses the core concept of integrative bargaining – that both parties must receive something of value in the deal, and since a negotiator knows their own interests, their focus during the negotiation is to determine and then integrate the interests of the other party into an offer which also meets their own interests.

4. Student # 4: In my first exchange I started by saying I needed to make a trade because it was a class project. In one exchange when I was rejected by the other party, I reframed her statement with an option that met the interests of both sides. The sixth exchange attempt resulted in an impasse because I walked away when I realized that we failed to see a mutual gains outcome. Actually walking away to seek another possible trade was much harder to do than I thought it would be. End product: A Yamaha acoustic guitar

Lesson(s) learned: The student started by using the need norm, which many students employ at first to build rapport. The student discusses the very important concept of exercising her BRATNA – by walking away and seeking another potential exchange. She also learned the concept of integrative bargaining – that both sides must meet some interests.

5. Student # 5: “I have undoubtedly left thousands of dollars in “value” on the table in my lifetime simply because it’s an uncomfortable proposition for me to do otherwise. I am trying to change that and hope by the time you reach the end of this paper, you will find I am a changed woman! The enormity of the transactions involved here, and the stress and then the subsequent ease at which many of these occurred is mind-boggling. I definitely feel like I have grown as a student and a business professional and have made habits that I will carry forward with me for years to come.” End product: A washer and dryer scheduled to be offered on Craig’s List for \$500. The best end product in class!

Lesson(s) learned: (1) The need norm – she needed to barter for her class, and (2) persuasion - through first building rapport, and then using facts and logic to convince the other party of the value of the deal.

Application in Other Management Courses

While we developed The Bartering Project for use in a negotiation course, it could easily be incorporated into other management courses including principles of management, organizational behavior, conflict resolution, management communication, etc. Organizational behavior (OB) and principles of management courses often contain topics on persuasion, communication and influence, and of course motivation. The Bartering Project could be assigned to students after a brief introduction by the instructor to the topics in Table 2 and possibly outside reading material. In the introduction the instructor could focus on only some of the topics in Table 2, such as persuasion or social norms, and then have the students apply the specified topic to their exercise. For example, after discussing persuasion in a management course, the instructor could cover Robert Cialdini's six principles of persuasion in class and instruct students to apply one or more persuasion principle in each trade.

Decision – making and group dynamics are topics included in many organizational behavior, communications and principles of management courses that could utilize The Bartering Project. Following a classroom discussion of social norms and their impact on decision – making and group dynamics, The Bartering Project could be utilized to give students direct, “real- world” experiences in applying several of the social norms in Table 2. In our experience with the exercise, students are easily able to apply the fairness norms (equality, equity, need) as well as the relational and reciprocity norms. We developed simple in-class role-playing cases of these norms to help students better understand them and realize how easily and quickly they influence behaviors, and thus give students confidence in applying the norms when bartering.

The Bartering Project's premise is that students will learn “real-world” skills to negotiate, to resolve interpersonal conflict, to understand and manage counterpart interests and positions, and to be prepared to persuade and “think on their feet”. The Bartering Project's premise could become an effective learning exercise/module for incorporation into many other business courses such as: (1) Entrepreneurship: Negotiation, persuasion Skills; (2) Human Resource Management: Interpersonal conflict resolution and salary negotiations; (3) Labor Relations: A prelude to a collective bargaining simulation; (4) Marketing: Persuasion and discovering interests; and (5) Leadership: Skills for both intra and inter organizational conflict resolution.

Teaching Tips

We have included The Bartering Project in about 28 sections of undergraduate and graduate negotiation classes over four years. During this time a few critical teaching tips were learned which we offer to others who might use the exercise;

1. **Getting started.** It works! Students, however, usually start out complaining, and dubious! Almost every class we have heard “who wants a door stop (or hose nozzle)”? To help students get past their doubts we advise them to quickly build a relationship with the other party in their opening remarks, which then enable them to utilize the relational norm – that is if they first find a connection with a person, it helps to ease any tension and anxiety of the process, and often causes the other person to be less concerned about maximizing their outcome in the deal because they want to establish or maintain a positive relationship..

We suggest that instructors allow about four weeks for the project and after the first week ask students in class to share the experiences of their first trades. Other students upon hearing these initial successes feel more confident to try their first exchange.

2. **“The real world”.** Many excellent negotiation exercises have been developed over the years and are available to instructors. By comparison, the value of The Bartering Project is that it enables students to practice the concepts and tactics they have heard about and employed with other students in the real world – outside their comfort zone. We require they make at least four of the eight trades with strangers.

3. **The end item.** Allowing students to keep the item they trade for is a strong motivator and one that causes them to take the exercise seriously, more seriously than other classroom exercises. However, we believe the exercise can also be successful if students turn in their end items – perhaps to be donated to a campus charity or day care.

4. **The paper/ presentation.** The purposes of the required paper & presentation are to (1) require students to practice their communication skills, (2) provide a structure for their experience by requiring them to think deeply about which negotiation concepts and tactics they employ in each trade, and most importantly, in the summary section what they have learned about themselves and the skills they have gained that they can use in their future

personal and professional lives. One advantage of The Bartering Project is that besides the introduction in class to allow for discussion, the project itself takes no additional class time if no presentations are required.

Analysis of Student Feedback

We have received a great deal of feedback on The Bartering Project directly from hundreds of students in their papers and presentation, and from some after they have graduated, as well as indirectly from other faculty who have heard about the exercise. Overall, students consistently report that, sometimes to their surprise, they did learn a great deal about themselves and they learned how to put into practice many of the concepts and tactics learned in class. And they learned the concepts better than from in-class discussion, role-playing and exercises.

In terms of specific concepts and tactics, students most often reported; (1) Utilizing their BRATNA (or BATNA) by “walking away” from a negotiation was harder than they anticipated, especially when friends or family were involved, and the other party may utilize their BRATNA and use the “the walk- away” as well; (2) Framing the exchange to show the other party benefits to them, as one student reported “it really is about the other person” - , and reframing after a negative response was the most often utilized tactic that led to success; (3) Their comfort level when approaching people increased quickly with practice; (4) Including a norm in their frame was often effective – especially the need, equality, equity, and reciprocity norms; (4) Preparation was very helpful – especially they in advance they constructed: an opening statement, ideas to build rapport, and potential questions; (5) Bartering offers the advantage of enabling the negotiator to increase perceived value by framing, timing, etc.; (6) They believe they gained the necessary skills and therefore will use the learned skills, techniques, concepts and tactics of bartering more in their own professional and personal lives after the project.

The Bartering Exercise adds an entire new dimension to a negotiation or management course because it requires students to apply concepts outside of the classroom – where they will need to utilize them after they graduate, then it requires that they think deeply about which concepts they utilized, and write about and present these lessons. Finally it gives opportunity to practice the concepts and tools they can utilize in their personal and professional lives. And, from an instructor’s viewpoint –it is an effective exercise that is easy to learn and use in class.

CONCLUSION

While negotiation skills are useful to almost everyone in their personal and professional lives, many people avoid negotiation or simply accept what is offered to them because they do not believe they have adequate negotiating skills. Thus many management and business courses, as well as courses in other disciplines, have included the study of negotiation and conflict resolution in part to provide students with the necessary skills to negotiate successfully. While many classroom exercises and cases provide useful negotiation concepts and tactics, they do not include a “real world” direct negotiation experience which can provide critical skill development. The Bartering Exercise developed and student - tested over four years provides students with an experience that can help them develop and utilize their personal negotiation skills. Students in numerous classes have provided written and oral reports that testify to their learning of basic negotiation skills through The Bartering Exercise. Faculty at other schools can easily and quickly begin using the exercise by adopting the Student Instructions form provided in this article which has been successfully utilized by the authors. The exercise can be utilized in several management courses including principles, organizational behavior, labor relations, and negotiation, as well as courses in other disciplines.

REFERENCES

- Adams, J.S. (1963). Toward an understanding of inequity. *The Journal of Abnormal Psychology*, Vol. 67, pp.153-157.
- Allred, K. (2004). The high cost of low trust. *Negotiation*, Vol. 7, pp.1-4.
- Antal, A., & Friedman, V. (2008). Learning to negotiate reality: A strategy for teaching intercultural competencies. *Journal of Management Education*, Vol. 32, No.3, pp.363-389.
- Carrell, M.R., & Heavrin, C. (2008). *Negotiating Essentials*. Upper Saddle Creek, NJ: Prentice-Hall Publishing.
- CBS News. (2006). *From paper-clip to house, in 14 trades*. Retrieved 8/27/2008 from <http://www.cbc.ca/canada/story/2006/07/07/paperclip-house.html>.
- Cialdini, Robert. (2006). *Influence: The Psychology of Persuasion*. New York: Harper Collins, and *Influence: Science and Practice*, 5th Ed. Upper Saddle Creek, NJ: Prentice – Hall, Pub. (2008).
- Cohen, H. (1980). *You Can Negotiate Anything: The world's best negotiator tells you how to get what you want*. New York: Bantam Books.
- Collins, D. (1999). The dollar game: Questioning the ethics of capitalism and bargaining. *Journal of Management Education*, Vol. 23, No.3, 302-310.
- Fisher, R., Ury, W., & Patton, B. (1991). *Getting to Yes: The Secret to Successful Negotiation*. New York: Penguin Books.
- From 'no' to 'yes': The constructive route to agreement*. (2006). United Kingdom: Video Arts Limited.
- Harvard Business Review Staff. (2003). *Negotiation: Harvard Business Essentials*. Boston: Harvard Business School Press.
- Harvard Program on Negotiation Staff, (2009) When you're short on cash, try bartering. *Negotiation* Vol. 12, No.11, pp.1-3.
- Kheel, T. (1999). *The Keys to Conflict Resolution: Proven Methods of Resolving Disputes Voluntarily*. New York: Four Walls Eight Windows.
- Lewicki, Roy J., Barry, Bruce, and Saunders, David M. (2010). *Negotiation*. New York, N.Y.: McGraw – Hill Irwin.
- Loughran, C.S. (1992). *Negotiating a Labor Contract: A Management Handbook*. Washington, D.C.: BNA Books.
- Mallinger, M. (1999). The endowment decision: An exercise in negotiation and conflict management. *Journal of Management Education*, Vol. 23, No.5, pp.607-617.
- Shell, G.R. (1999). *Bargaining for Advantage: Negotiation Strategies for Reasonable People*. New York: Penguin Books.
- Silver, W.S., Howard, C.T., & Clouse, M.L. (1999). Distinctive displays: A multidisciplinary caseplay. *Journal of Management Education*, Vol. 23, No.3, pp.263-289.
- Taylor, K.A., Mesmer – Magnus, J. and Burns, T. M. (2008) Teaching the Art of Negotiation: Improving Students' Negotiating Confidence and Perceptions of Effectiveness. *Journal of Education for Business*. Vol. 83, No.3, pp.135-140.
- Thompson, Leigh (1998). *The Mind and Heart of the Negotiator*. Upper Saddle River, N.J.: Prentice- Hall, Inc.
- Ury, W. (1991). *Getting past no: Negotiating With Difficult People*. New York: Bantam Books.
- U.S. Legal Forms, Inc. (www.USLegal.com) accessed November 14, 2010.
- Venter, D. (2004). Framing-an important negotiation tool. *The Negotiator Magazine*.
- Volkema, Roger J. Why Dick and Jane Don't Ask: Getting Past Initiation Barriers in Negotiation. *Business Horizons*. (November 15, 2009)

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The Classroom as a Virtual Community: An Experience with Student Backchannel Discourse

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ABSTRACT

Backchannel discourse is defined as electronic communication between students in an “on-ground” class. Since students in many classes are likely to engage in back-channel discourse anyway, instructors should consider using it for their benefit, and perhaps even proactively encourage it. The author’s experience with the Twitter backchannel is described. It is concluded that the backchannel can provide insights and feedback in upper level and graduate courses that is not otherwise obtainable. Strategies are provided that other instructors interested in using the backchannel in the classroom can use to make the experience fulfilling for both instructor and students.

Keywords: Backchannel discourse, Twitter, virtual communication

INTRODUCTION

This article begins with a presentation of the concept of a backchannel in business, in academia, and in the business classroom, followed by a survey of the literature dealing with the use of the Twitter backchannel in the classroom, and a brief discussion of the advantages of Twitter as a backchannel. The literature is reviewed, and then the remainder of the paper describes a quasi-experiment which this author conducted in three courses simultaneously to explore the idea of encouraging backchannel use. The paper concludes with recommendations, including cautions, for anyone wanting to try using student backchannel discourse.

THE BACKCHANNEL

The backchannel (sometimes ‘back channel’) can be defined for the purposes of this paper as unregulated communication between students in an “on ground” class using electronic media. It is distinguished from the “front channel,” which comprises spoken remarks by the instructor or other speaker and direct discussion between the instructor and the class. The term ‘backchannel’ is attributed to linguist Victor Yngve of the University of Chicago (Wikipedia, 2009).

Backchannel discussions have been going on no doubt since formal human gatherings began, as whispered remarks from one attendee to another. The advent of email, cell phones, PDAs, and Web sites such as Facebook and MySpace greatly expanded the backchannel, since ‘whisperers’ could now communicate beyond voice range. Students began texting or emailing to one another in class and to others outside the class. Twitter (www.twitter.com) is at present the most commonly used technology; it is the backchannel used in the exploratory research reported in this paper.

Readers of this paper may have posted tweets at academic conferences or seen others doing so (Rosa, Terras, Warwick, & Welsh 2011). Today’s business conferences will find many of the attendees looking not at the speaker but at their laptops or PDAs, sending electronic messages as well as taking notes. The practice is so widespread now that many business conferences encourage it by creating a Twitter “hashtag” (a searchable term to group related messages) with which the attendees can send tweets to be viewed by all conference registrants, even those not in the room where the event is occurring.

Academia has been slower than industry to adopt a backchannel. A survey of more than 1900 higher education professionals showed that more than half have not used it, 30% do, while 13% tried it and dropped it (Beja, 2009). Anecdotal evidence encountered by this author is that many instructors discourage or ban any kind of backchannel, though these efforts are seldom 100% successful. Other instructors resign themselves to its inevitability. Few go so far as to encourage it. Yet, as Peltier et al (2003) state about those teaching online courses, “interactive educators will need to find ways to enhance virtual relationships with and between their students” (p. 261). The same can be said for those teaching in the classroom.

There are several advantages to allowing or even fostering a backchannel in the classroom:

- Students can use it to take notes, but these notes, unlike jottings in a notebook, are immediately available to everyone in the class. The backchannel can, in effect, become shared note-taking.
- Students can amplify the lecture or discussion by offering examples, pointing out errors, raising objections, etc.
- Attendees can ask questions they might be too shy to ask out loud, and get answers from other attendees.
- Backchannel comments can be reviewed by instructors after class to glean information to improve their effectiveness in subsequent classes.
- Electronic backchannel communication may reduce whispered private conversations among the students that both the instructor and others in the class may find distracting.

One way to look at the backchannel is that it moves the on-ground classroom along a continuum between totally “on ground” and totally “on-line” to more of a hybrid structure, gaining some benefits from the move.

There are also disadvantages, most of which are obvious to any instructor who has experienced students’ texting in class:

- The instructor may react to students’ obvious preoccupation with the backchannel as rude or inconsiderate, even though the students may actually be discussing the topic.
- Some of what is said in the backchannel may be critical of the instructor or his or her material, and sometimes be said in vulgar or obscene terms.
- Students who are trying to absorb the lecture may miss some of it while simultaneously attending to the backchannel

TWITTER

Twitter is a popular backchannel technology probably best described as a microblogging service. Whereas a blog entry can be of any length, Twitter entries, called ‘tweets,’ are limited to 140 characters in length. It is this limit on message size that is Twitter’s unique strength. Twitter began as a way for individuals to keep their friends and family updated on their activities. Very quickly, though, it has been adopted by businesses and organizations of all kinds for a wide range of communications, such as public relations, customer service, and project management.

Students and event attendees can choose from several technologies for backchannel discourse, but Twitter has become popular due to its simplicity. As of the time of this writing, Twitter is the 14th most popular Web site in the world (Alexa, 2009). “Twitter’s core technology is a device-agnostic message routing system with rudimentary social networking features. By accepting messages from sms, web, mobile web, instant message, or from third party API projects, Twitter makes it easy for folks to stay connected” (Twitter, 2009).

The key advantages and disadvantages of Twitter are much the same as they are for any backchannel, as listed above. But when using Twitter (or another technology) in a classroom setting, there are some points to emphasize:

- Students must be clearly told what they may and may not use it for—tweets should be confined to the course material.
- Instructors may want to make clear to the students that they are not ‘on’ Twitter 24/7, waiting to respond to students’ tweets.
- Instructors need to be prepared to read occasional comments critical of them and the course, and to reply when appropriate in a professional, constructive way.
- Student tweets should be continually monitored to nip any lack of civility in the bud, e.g., coarse language or personal attacks on other students.

It is not the intent of this paper to give a complete description of Twitter. Interested readers are advised to go to www.twitter.com and set up an account, which takes only a minute or two, and then read the help screens.

LITERATURE REVIEW

Businesses are realizing that social networks have partially shifted control of their communications to their audiences, and that they need to respond to this significant change. For example, consumers use Twitter to spread word-of-mouth about brands (Jansen et al., 2009; Penn State, 2009). Qualman (2009) cites Best Buy, Dell, Hardees,

Jet Blue, Kodak, Southwest Air, Starbucks, and Whole Foods as examples of organizations performing well in this new environment. Corporations are finding many other uses for social networks, too. One is to counter rumors and false information quickly, before they spread. Another is to use the networks to respond to whatever crisis might arise (Needleman, 2009). Also, social networks like Twitter enable these firms to communicate directly to groups of concerned stakeholders quickly and at low cost.

In academia, a study of student use of Twitter outside of the classroom concluded that Twitter is an effective peer-support tool, used by study groups for example, and is an efficient way for students to communicate with staff and tutors (University of Leicester, 2009). The Chronicle (2008), reported that some college officials are using Twitter to keep in touch with colleagues at other universities. However, as Peltier et al (2003) report, there has not been research that “explores the types of interactive experiences students are looking for ... research has been particularly lacking in marketing education” (p. 263). Peltier et al were concerned with online courses, whereas the research reported herein explores how “on-ground” students will react to interactive experiences in the classroom.

Twitter was used as a supplement to a classroom management system in a university online course to enhance social interactions among the students outside of class time (Dunlap and Lowenthal, 2009). Those students used Twitter to ask for clarification of reading assignments, for help using software, to disseminate news about educational funding, to post hyperlinks to interesting Web sites and videos, and to request information for a research project. Dunlap and Lowenthal concluded that “we have found Twitter to be a powerful tool for establishing informal, free-flowing, just-in-time communication between and among students and faculty, and with the professional community at large” (p. 72).

Students in a small, on-ground course at the University of Texas at Dallas were encouraged to use Twitter as part of a writing assignment (Academhack, 2009). The instructor, initially skeptical, concluded that he was glad he did it. He found that classroom discussions were more productive as more students were willing to talk, and were more respectful of others.

Twitter was one of several technologies (Moodle, Ning, Twitter) explored at the high school level by List and Bryant (2009). Their objective, to foster social interaction, was achieved, with students being “more than willing” (p. 3) to seek assistance, and they also found that Twitter became a conduit for peer tutoring, as many questions posted by students were answered by other students before the teacher had a chance to do so. There was less success achieving another goal, increasing awareness of assignments and changes thereto, because some students did not read Twitter regularly. It was concluded that students will use these technological tools but require reinforcement to remain engaged.

Grosbeck and Holotescu (2008) compiled an extensive listing of possible uses of Twitter in a course, some of which are:

- Build a community of learning
- Develop collaborative skills, including collaboration with students in other countries
- Develop editing skills
- Obtain response to questions
- Project management
- A platform for metacognition (reflecting on learning occurring)
- A classroom backchannel
- Obtain research information
- A way to have some fun
- Instructor announcements
- Connect with instructors outside of class
- Opinions of quieter students can be heard
- Provide feedback to students
- Make appointments
- Schedule events

Some outcomes of these activities were summarized by Peltier et al (2003): “students may feel freer and more open in online discussions, are more likely to speak out and develop a feeling of trust for other members ... (and) might be motivated to work harder to produce high-quality work” (p. 264).

While research is beginning to emerge on classroom use of Twitter in education, computer science, and other fields (cf Elavsky, Mislán, & Elavsky 2011; Junco, Heiberger, & Loken 2011), there have been only a few published reports of the use of a Twitter backchannel in a business classroom, e.g., Young, E. (2009). Indeed, a search of Ebsco Host's Academic Search Premier database and Infotrac's Expanded Academic ASAP database in October 2011 uncovered no research published in peer-reviewed business journals on the backchannel in the classroom. But hands-on use of Twitter in class would seem to be an effective way to teach business students the use of emerging social networking tools. Young said

There has been a sea change ... whereas broad skills used to be sufficient, now our students must demonstrate a set of concrete skills that not long ago were required only of those in highly technical majors. Nowhere has this change created a greater shift than in fields such as marketing and public relations, which traditionally have been viewed as nontechnical but are now demanding a technological competency that is astounding. A knowledge of how social media including sites such as Facebook, LinkedIn, and Twitter can be used to leverage a marketing message isn't optional—it's a requirement. (p. 5)

The Twitter backchannel was found to work best in two classroom environments, both of which are common in some business programs (Rowell, 2009):

- With relatively small class sizes
- When the topic is wide-ranging rather than intensely focused

Tweets from 300 students in a large lecture hall would likely be overwhelming. But many business classes are much smaller, so business class size would seem to favor Twitter. When students must focus on a particularly challenging concept, multitasking during the lecture by the students using any technology—Twitter, email, or texting—would likely reduce comprehension of the concept. But for case analyses, or discussion of current business developments, synergy in the backchannel might develop even more interesting ideas and questions than the front channel.

One advantage of teaching business students to use Twitter is that it forces them to compose a brief message. Tweets can be no longer than 140 characters, including spaces, symbols, etc. Verbose students must learn to communicate with brevity. Brevity is a virtue in the business environment, and Twitter allows students to practice this useful business skill. Interestingly, it is this forced brevity that is sometimes cited by educators in the liberal arts in opposition to Twitter, and it has also been suggested that Twitter can lead to bad grammar habits (Grosbeck and Hototescu, 2008).

METHODOLOGY

This author had been quite strict about the backchannel until recently, forbidding cell phones, PDAs, and personal laptops in the classroom. When using classrooms equipped with computers, I used software provided by the university to remotely lock them. But after seeing the use of the backchannel at an academic conference, I decided to explore it in three of my courses.

The review of the literature on the use of the backchannel led me to ask these research questions:

- Will students tweet, given the chance? And, if so, will tweeting expand as the weeks go by and students become more familiar with it, or will it fade away? Also, does the propensity to tweet depend on the academic level of the students?
- If the students do tweet, what about? Will the students use the backchannel in a constructive way? I was concerned that their comments would be irrelevant to the class, or at best would mirror the comments one sometimes hears in person: “will this be on the test?” “why do we have to study this stuff?” “can we end class a little early today?” and so on.
- Does Twitter encourage normally silent students to speak up in class? One instructor (Academhack, 2009) found that “people were more willing to talk” but did not distinguish between those who would have spoken without Twitter anyway, and those who would not have spoken.
- Do questions and ideas which appear in the twitter stream get brought up for discussion in the classroom? If a dispute ensues on Twitter about something related to the class, or a question is asked that no tweet responds to, do the students raise their hands and ask the instructor to clarify or resolve it?
- Does the backchannel reduce the instructor's control over the class? Do students pay so much attention to the backchannel that they pay less attention to the instructor? Worse, do students stray from Twitter into reading their email, checking Facebook, or playing solitaire?

These are questions that I simply explored; formal hypothesis testing is left for later efforts when the dimensions of classroom backchannels are better understood. Conducting exploratory trials prior to study of the learning process has been used by other researchers. For example, Cubric (2007) conducted extensive trials with a wiki over two academic years, which “paved the way for a conceptualization of the underlying learning” (p. 16).

The exploration took place simultaneously in three courses over one semester at a state university in the eastern U. S. One course was a principles of marketing section of 25 students, the majority of whom were sophomores. Another was an advertising course of 29 students, all juniors and seniors. The third was a business communication course of 15 students in the MBA program. While using disparate courses meant it was not advisable to combine the data from them, and so reduced the size of samples below that needed for statistical analysis, it provided the opportunity to observe how students of different educational levels respond to the backchannel opportunity. That the same instructor (this author) taught all three courses controlled for instructor influence, a potentially potent variable.

The same classroom was used by all three courses. It was equipped with laptops at every student’s desk. If that had not been the case, I would have requested that students bring their own devices. One of the attractions of Twitter is that it is device-independent, working equally well on a PC or laptop as on a cell phone or Blackberry.

A brief survey of students was conducted the first day of the semester to learn about their backchannel habits and their familiarity or lack thereof with Twitter. Participation in the survey was not a part of the course grade. The class following the survey was used to introduce the students to Twitter. They created their Twitter accounts, were shown how to use Twitter, and instructed in proper Twitter etiquette (“twitiquette”). Starting that day, data on Twitter usage, identified by student, was collected and analyzed by printing out all tweets after every class.

RESULTS

A total of thirty-three usable responses to the survey were obtained from the three courses to the initial survey. The approximately 50% response rate was due to several factors: absences from the class that day, students not handing in the instrument, etc. Ninety percent of the respondents admitted to having sent electronic messages to other students while in class, with texting being their preferred method. Ninety five percent of the respondents had heard of Twitter and a third of them had previously used it, but only one student reported having used Twitter to send electronic messages in class (Table 1).

Table 1: Student Prior Experience with Twitter

| Questionnaire Item | Yes | No |
|--|-----|----|
| 1. Have you ever sent electronic messages to students in the class or outside of it while the instructor was teaching the class? | 30 | 3 |
| 2. What method or methods have you used to do this? (You may select as many items as apply): | | |
| a. texting | 25 | |
| b. Facebook | 10 | |
| c. email | 12 | |
| d. Twitter | 1 | |
| e. other | 6 | |
| 3. Have you heard of Twitter? | 28 | 5 |
| 4. Have you ever used Twitter? | 12 | 21 |
| 5. Have you ever used Twitter in the classroom? | 2 | 31 |

Students did use Twitter. The number of tweets sent in the three courses is shown for the first and fifth weeks of the semester in the total line in Table 2. The average student sent from one to two tweets per week, depending on the course. Course enrollments were too small to test significance, but clearly students in the advertising course used Twitter about twice as much as those in the principles of marketing course or the graduate business communication course. Counts are shown per student per week to control for differing class sizes and for the varying number of

days in which the backchannel was used in each course. Days varied because we did not use the backchannel on days when there were guest speakers, when in-class exercises or student presentations were conducted, and when there were tests. Also, the principles of marketing course lost a class due to a storm closing.

Table 2: Tweets per student per week

| Category | Principles of Marketing | Advertising | Communication (graduate) |
|--------------------------------|-------------------------|-------------|--------------------------|
| 1. About Twitter | 0.14 | 0.18 | 0.04 |
| 2. Motivational | 0.04 | 0.11 | 0.08 |
| 3. Class lectures & activities | 0.05 | 0.65 | 0.57 |
| 4. About homework & projects | 0.07 | 0.53 | 0.17 |
| 5. About quizzes and tests | 0.39 | 0.24 | 0.00 |
| 6. Personal | 0.12 | 0.19 | 0.09 |
| 7. Miscellaneous | 0.12 | 0.32 | 0.13 |
| 8. Garbled, incomplete | 0.04 | 0.10 | 0.01 |
| Total | 0.96 | 2.33 | 1.10 |

I examined what students tweet about, the second research question, using a content analysis. A sample of tweets was analyzed and eight categories were established, shown in tables 2 and 3. Students in the principles of marketing course tweeted more about quizzes and tests than on any other category. In contrast, students in the advertising and graduate communication courses tweeted most about the class lectures and activities and about their homework and projects.

Table 3 shows how the subject matter of the backchannel changed from the first to the fifth week. Tweets about personal status—"I'm playing a baseball game tonight," "I'm hungry," etc.—and about Twitter itself—how to use it, problems encountered, etc.—nearly disappeared, and tweets on miscellaneous topics—"are we having a quiz in the next period," "don't forget the marketing club is meeting at noon," etc.—fell to a low level, resulting in a modest decline in the total volume of tweets. Tweets about class lectures or activities increased substantially. Tweets about quizzes and about upcoming midterm exams also increased as quizzes and exams grew closer or occurred.

Table 3: Change Over Time in Number of Tweets, by Content

| Content Category | | 1st week | 5th week | % change |
|------------------|-----------------------------|----------|----------|----------|
| 1 | About Twitter | 29 | 2 | -93 |
| 2 | Motivational | 6 | 9 | 50 |
| 3 | Class lectures & activities | 10 | 35 | 250 |
| 4 | About homework & projects | 23 | 18 | -22 |
| 5 | About quizzes and tests | 17 | 26 | 53 |
| 6 | Personal | 9 | 0 | -100 |
| 7 | Miscellaneous | 16 | 3 | -81 |
| 8 | Garbled, incomplete | 5 | 5 | 0 |
| | Total | 115 | 98 | -15 |

The remaining questions were not assessed quantitatively; a qualitative analysis appears in the discussion section below.

DISCUSSION

The answer to the first research question is, yes, students will tweet given the opportunity. However, usage varied significantly depending on the educational level of the students. The sophomore Principles of Marketing class found Twitter to be a novelty, a chance to play. Once the novelty wore off, their use of Twitter declined until no tweets were sent for two consecutive class sessions. At that time, I announced the termination of the experiment in that course and locked the laptops, because although the students were not tweeting, they were using the laptops to send IMs, check their mail, or play games.

Students in the advertising course were the most prolific of the three groups. About half the students seemed to “get into” Twitter and used it regularly to discuss homework assignments, their project, upcoming tests, and in-class activities. The graduate communications students did not use it as often, but when they did, it was for useful purposes. I believe the reason the graduate students didn’t use Twitter more is that their course was the smallest of the three, 15 students, and the most informal, so they were more easily able to speak up in class, reducing the need for Twitter.

The evidence from this exploration suggests that the Twitter backchannel requires a certain level of educational maturity and is more appropriate to upper-class and graduate courses. It also seems that the smaller the course, the less need there is for the backchannel. Since this result is contrary to the findings of Rowell (2008); there is a need for further investigation.

Content analysis addressing the question, “what do they tweet about,” produced results that were expected, plus some other interesting results. In the first week, tweets included what the literature survey would lead one to expect: personal status, e.g., “I’m tired,” and miscellaneous chatter, e.g., “look Ma, I’m on Twitter.” There were also many tweets asking for help using Twitter, e.g., “how can I follow someone who’s following me?” I was surprised by the number of tweets expressing resistance to Twitter, e.g., “I’ll stay with Facebook.” But the first tweets relevant to the courses also came on the first day of Twitter use. Here is the first relevant tweet, by ‘Joe,’ and some responses, plus Joe’s caustic reply:

I didn’t do the assignment because I didn’t know it was due today. 1:52 p.m.

Joe should check the schedule. 1:54 p.m.

Check the schedule. Dork. 1:54 p.m.

Thanks for the advice, class. 1:56 p.m.

Many of the tweets were about aspects of the course that concerned some students the most: when homework assignments were due, what would be on the next test, and so on.

By the fifth week, tweets asking for help using Twitter and tweets complaining about Twitter had fallen dramatically, as had tweets on personal status and other miscellaneous topics not related to the course. The novelty of the backchannel was wearing off. Taking their place were many more tweets about the class itself. For example, in a discussion of OTC pharmaceuticals, I mentioned that aspirin has potentially severe effects on children and mistakenly called it Guillain-Barré syndrome. Two students tweeted the correction: Reye’s Syndrome. I think it is significant that neither student volunteered this information orally. Tweets about homework and tests remained relatively constant.

Another unexpected phenomenon emerged early: motivational tweets. In the first week, there were tweets from some students to the effect that other students would “get the hang of” Twitter quickly. Later, when students in the graduate course made brief presentations before the class, nine tweets appeared during this exercise complimenting students on their presentations. None of these compliments were voiced out loud. By the fifth week, there were more tweets about tests since we were drawing closer to the midterm exam. Some of these tweets asked questions the tweeters should have known the answers to, but were nevertheless politely responded to by other students, e.g., “are we going to have a review before the test” with the reply, “it’s scheduled for next Wednesday.” These tweets largely eliminated students raising their hands to ask those questions or coming up to the desk at the end of a class to ask them, saving class time and preserving instructor patience!

Students in the upper-class and graduate courses used the backchannel throughout the semester. The discourse in the advertising course was often in the nature of personal observation, e.g. after a video about Oreo brand cookies: “that’s clever lol I love oreos lol.” Students in the MBA course also used the backchannel throughout the course, but more for learning, e.g., when the instructor couldn’t recall the name, a helpful student immediately tweeted, “Demosthenes was the name of the ancient orator who reportedly practiced speaking with his mouth full of stones.”

In short, the answer to the second research question, what do they tweet about, is that students mostly tweet about what is important to them: tests, homework, and the topic(s) of the class that day. They quickly get over the novelty of tweeting and minimize tweeting personal messages.

The answer to the third question, does Twitter encourage normally silent students to speak up in class, unfortunately seems to be negative. Contrary to one published report, (Academhack, 2009), this instructor saw no evidence to support this idea. Indeed, it may well be that quiet students become even quieter since they now have a new outlet for their comments that does not require speaking out loud in class. This conclusion is based only on this instructor’s subjective assessment, however; no rigorous attempt was made to identify who the quiet students were, measure how much they twittered, or assess how their behavior changed. The complexity of that endeavor could constitute a separate investigation.

The fourth research question, do questions and ideas which appear in the ‘tweetstream’ get brought up for discussion in the classroom, was examined by a careful reading of the tweets that were content-coded as about “class lectures & activities” and relating them to the lesson plan’s topics for the day. No evidence to support this question was found. For example, the MBA students were introduced to the Discussion Tool in Blackboard, the course management system in use at this school. A flurry of tweets ensued, all negative, in response to a tweet from one student: “have you been sold on Blackboard?” Replies included,

“not really it takes forever to do anything on Blackboard,”
“some professors make Bb challenging to navigate,”
“some professors have RUINED Blackboard for me,”
“some just don’t have a clue how to use Bb” (“some” apparently referring to professors)
“so true ...too many folders make it hard to find anything on Blackboard.”

Nevertheless, no students spoke up about their discontent with Blackboard and I would have remained unaware of it had I not read the tweets.

The fifth question was, does the backchannel reduce the instructor’s control over the class. It appears that it depends on the maturity level of the class. As mentioned earlier, I felt it necessary to terminate the experiment early in the sophomore-level course. But the question can’t be evaluated rigorously without first measuring the degree of control one has before introducing Twitter, and that is a challenging task that I did not attempt. There was no issue with control the day I introduced Twitter. The students were learning about Twitter, and of course they would direct their attention to the screens in front of them. But in following classes, it was disconcerting that some of the students spent much of the class looking at their monitors. I wondered: what were they typing? While it is possible to set up a second computer at the instructor’s station to display the tweet stream, I decided it would be impossible for me to watch the flow of tweets and conduct the class activities at the same time. So I simply resigned myself to the fact that it was I, after all, who had created this situation and I who must live with the reduced control. I learned what they had been saying by reading the tweets after each class. We may wish for a classroom of students looking at us, absorbing every word. But realistically we know that even if the face is staring back at us, the mind may be elsewhere. Engaging in the backchannel may be a better occupation for a student than simply daydreaming or, worse, sleeping in the back of the room.

Interestingly, although Twitter is accessible outside the classroom from any device, there was no such use by the students, except for one instance. An MBA student who was ill at home tweeted at the start of class that she would follow the backchannel that night, and asked that her classmates tweet what was happening in class from time to time. But there were no tweets posted that night specifically telling her what we were discussing (although there were other tweets), which disappointed her. Nevertheless, she said she was able to get some sense of what was happening from the tweetstream.

RECOMMENDED STRATEGIES AND RESEARCH

There are several strategies anyone wanting to use the backchannel should use to make it a successful classroom tool. First, devote more class time to making your students comfortable with Twitter than you might think you have to. Make sure the students understand why they will have Twitter access (see the list of five advantages of Twitter in “The Backchannel” section). Giving course credit for Twitter usage is a consideration, although creating a reliable grading rubric might prove difficult.

A good exercise at the start of the course would be to have students set up their Twitter accounts and then monitor Twitter activity, post some tweets, and “follow” friends and classmates for a while. They can indulge their initial tendency for cute, frivolous remarks at this time. Review the posted tweets immediately after each class, and if the results are not what you expected or wanted, take remedial action in class, e.g., remind the class that they should be civil and not tweet anything they wouldn’t say out loud in the classroom. Engage in the backchannel yourself by twittering after class, including replying to specific student tweets when appropriate.

While no attempt was made in the research reported here to analyze the tweetstream to assess the effectiveness of the course, it would seem quite useful for that purpose and could be used as an assessment tool. A limitation of this study is the rather small size of the sample. Also, content coding of the tweets was based on the coder’s judgment when establishing the categories and deciding into which category a tweet fell, introducing the possibility of bias. However, these limitations are acceptable considering the exploratory nature of the study.

CONCLUSION

Backchannel discourse offers learning opportunities for students and professors. Benefits appear to depend on the academic maturity level of the students and the size of the class. Twitter does change the classroom dynamics. As Young, J. R. (2009) says, “opening up a Twitter-powered channel in class ... is not for every professor, or every course. (It) alters classroom power dynamics and signals to students that they’re in control.” Not all instructors are willing to yield some control to students. Those who do, though, will obtain interesting feedback and insights that would otherwise remain hidden from them.

REFERENCES

- Academhack (2009). "Twitter for Academia." <http://academhack.outsidethetext.com/home/2008/twitter-for-academia/>. Accessed 4 Jan 2010.
- Alexa (2009). "Top sites," <http://www.alexa.com/topsites>, accessed 29 November 2009.
- Beja, M. (2009). "Professors Are Not Sold on Twitter's Usefulness." <http://chronicle.com/blogPost/Professors-Are-Not-Sold-on-/7821/>. Accessed 24 Dec 2009.
- Chronicle (2008, Feb.). "Forget E-Mail: New Messaging Service has Students and Professors Atwitter." *Chronicle of Higher Education*, V. 54, No. 25, p. A15.
- Cubic, M. (2007). Wiki-based Process Framework for Blended Learning. In *Proceedings of the 2007 International Symposium on Wikis (WikiSym '07)*, Montreal, Canada, Oct. 21-23, ACM Press, NY, NY, pp. 11-22.
- Dunlap, J. C. and Lowenthal, P. R. (2009). Tweeting the night away: Using Twitter to enhance social presence. *Journal of Information Systems Education*, V. 20, No. 2, pp.11-14.
- Elavsky, C., Mislán, C., and Elavsky, S. (2011). When talking less is more: exploring outcomes of Twitter usage in the large-lecture hall. *Learning, Media, & Technology*, V. 36, No. 3, pp. 215-233.
- Grossecq, G., and Holotescu, C. (2008, April 17). Can we use Twitter for educational activities? Paper presented at the 4th International Scientific Conference, Bucharest, Romania.
- Jansen, B. J., Zhang, M., Sobel, K., and Chowdury, A. (2009). Twitter power: Tweets as electronic word of mouth. *Journal of the American Society for Information Science and Technology*, V. 60, No. 11, pp. 2169-2189.
- Junco, R., Heiberger, G., and Loken, E. (2011). The effects of Twitter on college student engagement and grades. *Journal of Computer Assisted Learning*, V. 27, No. 2, pp. 119-132.
- List, J. S. and Bryant, B. (2009). "Integrating Interactive Online Content at an Early College High School: An Exploration of Moodle, Ning, and Twitter." *Meridian*, V. 12, No. 1. Accessed 8 Jan 2010 at <http://www.ncsu.edu/meridian/winter2009/>.
- Needleman, S. E. (2009). For companies, a tweet in time can avert PR mess. *The Wall Street Journal*, August 3, p. B6. Retrieved 14 August, 2009 from online.wsj.com/article/SB124925830240300343.html.
- Peltier, J. W., Drago, W., and Schibrowsky, J. A. (2003). Virtual Communities and the Assessment of Online Marketing Education. *Journal of Marketing Education*, V. 25, No. 3, pp. 260-276.
- Penn State (2009, September 11). Tweeting: More Than Just Self Expression. *ScienceDaily*. Retrieved December 21, 2009, from <http://www.sciencedaily.com/releases/2009/09/090910184306.htm>
- Qualman, E. (2009). *Socialnomics: how social media transforms the way we live and do business*. John Wiley & Sons, Hoboken, NJ.
- Ross, C., Terras, M. Warwick, C. and Welsh, A. (2011). Enabled backchannel: conference Twitter use by digital humanists. *Journal of Documentation*, V. 67, No. 2, pp. 214-237.
- Rowell, L. (2009, August 6). Capture the Backchannel. *eLearn Magazine*. C:\Course files\Research\using the twitter backchannel in class\eLearn Feature Article - Capture the Backchannel.mht. Accessed 29 December, 2009.
- Twitter (2009). What is Twitter? <http://help.twitter.com/portal>, accessed 29 November 2009.
- University of Leicester (2009, November 16). Twittering the Student Experience. *ScienceDaily*. Retrieved December 21, 2009 from <http://www.sciencedaily.com/releases/2009/11/091116103840.htm>
- Wikipedia (2009). Backchannel, accessed 29 November 2009 at www.wikipedia.com.
- Young, E. (2009). Teaching the Facebook Generation. *Business Week* (Nov. 5). Retrieved February 9, 2010 from www.businessweek.com/print/bschools/content/nov2009/bs2009115_16982.htm.
- Young, J. R. (2009). Teaching With Twitter: Not for the Faint of Heart. *The Chronicle of Higher Education* (Nov. 22), p. 5). Retrieved 24 December 2009 from <http://chronicle.com/article/teaching-with-twitter-not-/49230/>

An Integrated Approach to Teaching the Capstone Strategic Management Course: A Left- and Right-Brained Approach

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ABSTRACT

The objective of the integrated approach to teaching strategic management is to combine the traditional strategic management process with an innovation management process. In doing so, students learn to generate creative ideas to real-world problems while also ensuring they are strategically viable from a competitive strategy perspective. By combining both approaches into one capstone course, students are able to further develop both their analytical and creative capabilities. Most importantly, they are able to enter the working world with a tenacity and passion for generating new ideas to create long-term value for new and existing firms.

Keywords: Innovation, strategic management, experience-based learning

INTRODUCTION

Strategic management is the capstone course for most business students. It is often the last course they will take before earning their business degree, so as business educators, it may be the last opportunity we have to reach our students before they enter the working world. Consequently, the way we design and teach the course will likely have a large impact on how our students perceive their overall educational experience, as recency bias often causes individuals to pay special attention to their most recent experiences. More importantly, as our students enter a most uncertain economic climate and what is now a globally connected world, the capstone strategic management course will likely play an important role in setting the “tone” for what it means to be a business professional in today’s ever-changing world.

Integrated deeply into the DNA of most traditional strategic management courses is the core purpose of trying to understand why some companies succeed while others fail (Hill and Jones, 2011). In doing so, students draw on the many foundational courses they took throughout their program, so business situations can be analyzed through the many lenses required to fully appreciate their complexity. Additionally, students learn and are then asked to apply a series of frameworks to help ascertain why some firms seem to be so successful while others are not. Porter’s five forces, the resourced-based view, and the value chain are all valuable frameworks used to examine firms that already exist and understand the various factors that impact their relative performance. Although the course is useful and important in its customary form, the traditional approach to strategic management may put too much emphasis on analyzing existing companies and industries at the expense of learning to apply formal frameworks to help solidify and sharpen innovative ideas related to designing new businesses that are yet exist. Though, admittedly, it is seemingly subtle, I suggest that such a slight shift could have large impacts collectively if we begin to educate an army of business professionals to begin seeing business as a powerful mechanism for solving many of today’s greatest problems. Thus, if we can adjust the pendulum even slightly to enable our students to see strategic management more as a tool to facilitate innovation rather than as a form of retrospective analysis, we may be able to have a meaningful impact on facilitating economic growth around the world.

The purpose of this article is to describe an alternative approach to teaching strategic management to undergraduate business majors. In doing so, I describe an integrated approach—one that joins the traditional strategic management process with a basic innovation management process. Moreover, by structuring the course around a semester-long innovation project, the students will be able to reinforce key frameworks in active, rather than passive, ways (Fink, 2003).

AN INTEGRATED APPROACH TO STRATEGIC MANAGEMENT

The Traditional Approach

The traditional approach to teaching strategic management is often taught around three core components: strategic analysis, strategic formulation, and strategic implementation (Figure 1). In the strategic analysis component, students are typically given a broad overview of strategic management as a discipline and a pathway for studying the strategic management process is developed. As part of this conversation, the importance of organizational goals and objectives is often given significant attention, as they are the foundation from which to build a well aligned strategy at all levels of the organization. Additionally, during this early phases students also study the meaning and importance of sustainable competitive advantage and are then given a set of tools to assess both the external and internal environments of a firm. By assessing the external environment, students learn the importance of developing goods and services that meet actual consumer demands, as well as the importance of positioning vis-a-vis other competitor firms, suppliers, buyers, etc. While analyzing firms' internal environment, students learn how and why some firms outperform other firms in the same industry by assessing the value-creating activities and unique resources that may combined and coordinated through organizational level capabilities to enable above-average performance. After strategic analysis, students further examine how firms obtain competitive advantage by successfully pursuing one or a combination of several generic strategies (i.e., cost leadership, differentiation, focus, combined). Typically the formulation components are broken down into distinct levels of analysis (e.g., the functional level, the business unit, corporate, international, etc.), all of which have associated frameworks and are, again, meant to help assess relative performance. Finally, the strategic implementation component typically focuses on how core factors (e.g., governance, organizational design, leadership, etc.) enable the execution of the predefined strategy that is developed in the formulation stage.

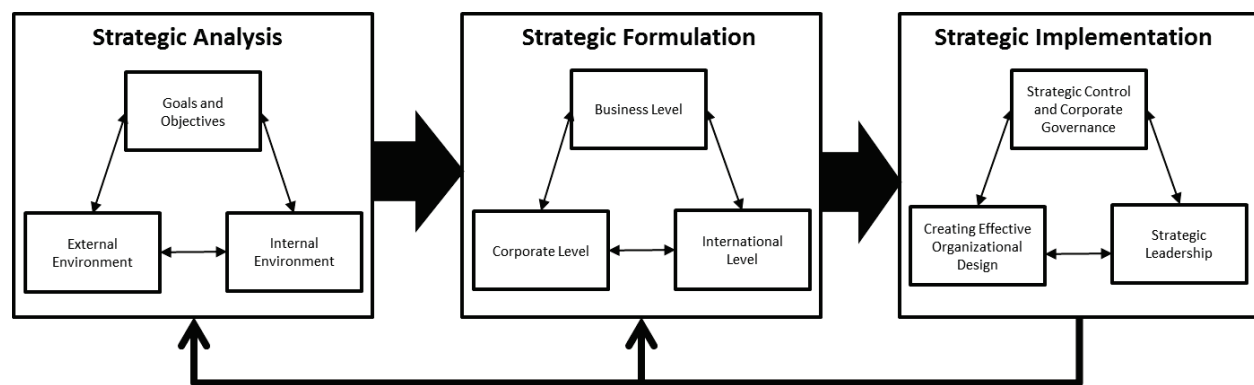


Figure 1: The Strategic Management Process

The traditional approach to teaching strategy provides students with a host of useful frameworks for analyzing existing firms and for determining why some firms are successful while many others are not in a given industry. Despite its usefulness, the traditional approach seems to be too fixated on analyzing existing firms to the detriment of applying such frameworks to developing new and analytically sound ideas. In the remainder of this section, I discuss how I have attempted to address this issue in my strategic management course by integrating a simple innovation management process into the traditional curriculum and adding a semester-long project aimed at applying both frameworks to the creation of a new business venture.

The Integrated Approach

When teaching the integrated approach, I make sure to set the stage for the upcoming semester on the first day of class by first discussing the traditional approach to studying strategic management. I give a brief overview of the three components previously mentioned and reinforce the notion that these are indeed extremely important aspects of the strategic management process. I then introduce the notion between left-brain analytical skills and right-brain creative skills. Without turning the conversation into one focused specifically on human cognition, I point to a large body of research that focuses on the distinct way that each hemisphere processes information. To get this point across, I draw from a classic book in this area titled, "Drawing on the Right Side of the Brain" by Betty Edwards (1999). Dr. Edwards describes the distinction between both sides of the brain in the following way:

The right hemisphere is not good at sequencing—doing the first thing first, taking the next step, then the next. It may start anywhere, or take everything at once. Furthermore, the right hemisphere hasn't a good sense of time and doesn't seem to comprehend what is meant by the term "wasting time," as does the good, sensible left hemisphere. The right brain is not good at categorizing and naming. It seems to regard the thing as-it-is, at the present moment of the present; seeing things for what they simply are, in all of their awesome, fascinating complexity. It is not good at analyzing and abstracting salient characteristics. – p. 41.

I make the point that where analytical skills are undoubtedly important and must continuously be sharpened, perhaps even more important in today's economic climate are creative capabilities, or the ability to come up with something new that creates value. I stress that too often, analytic and creative capabilities are seen as characteristics that label people or departments within organizations, making us think that they are indeed mutually exclusive. To counteract this notion, I suggest that even the most analytical people likely entered the world incredibly curious and creative, as most children do. Likewise, creative types could likely learn to use their unique way of looking at the world to analyze and divide complex concepts into divisions or principles, the core purpose of analytical work. My point is to emphasize that although we are all likely to lean in one direction or the other, as future business leaders we need to commit to further developing both sides of our brains. We can indeed develop more than one capability! As the picture below shows, the traditional strategic management process is well suited for developing our left-brain capabilities, but what about our right brain?

After posing this question to my students, I contend that there are two core distinctions (one structural and one cultural) between the traditional and integrated approach. First, in addition to the traditional strategic management process, we also study a simple four-step innovation management process (Figure 2).

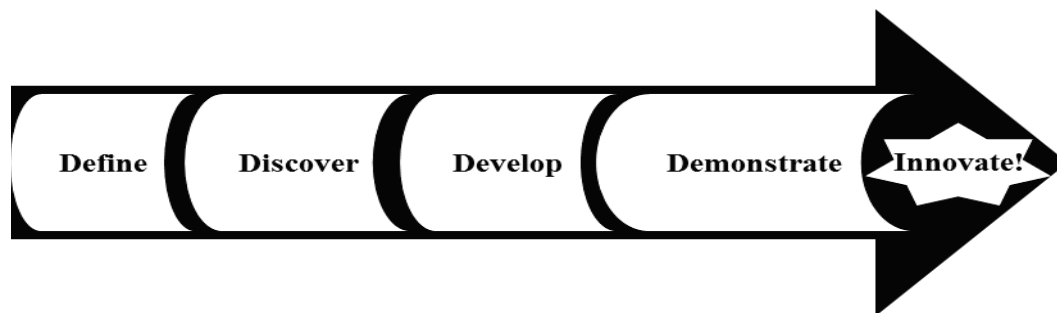


Figure 2: The Innovation Management Process by Silverstein, Samuel, and DeCarlo (2009)

There are a host of different innovation management processes; however, I have found that most are rather similar. Some are four steps; others are five or more, and all seem to label each step something a little different. Therefore, if one wants to pursue this integrated approach, he/she could choose from an innovation management process that best fits his/her own thinking. I draw largely from "The Innovators Toolkit" by Silverstein, Samuel, and DeCarlo (2009). They divide the innovation management process into four distinct phases (define, discover, develop, and demonstrate—see Appendix III) and then offer many activities within each phase.

Define—The define phase is really about uncovering opportunities by identifying needs or "pains" in the world. In this phase, students are encouraged to reflect on experiences in their own lives to uncover opportunities for innovation. Silverstein et al. (2009) offer many exercises to assist in defining viable innovation opportunities. One such activity is the "Jobs to Be Done" (JBTD) exercise, which is simple but effective. According to Silverstein et al. (2009) the JBTD is "not a product, service, or a specific solution; it's the higher purpose for which customers buy products, services, and solutions" (p. 3). For instance, according to the authors, homeowners who are purchasing a lawn mower are not really after the latest and greatest lawn mower. Instead, they are after a solution that will help keep their lawn well maintained. Thus,

innovative companies in this space might decide to focus on developing maintenance-free grass as an alternative to a traditional lawn mower.

Discover—The second phase is intended to generate a variety of ideas that may provide a solution for the JTBD identified during phase one. According to the authors, one of the key tasks in this phase is to search outside oneself for the solution, seeking input/advice from all possible sources. Techniques like “resource optimization” can be useful during this phase, as they help generate a lengthy list of resources that already exist and that might be combined in new ways to create a needed innovation. Furthermore, the random stimulus technique—when students leverage an arbitrary word (generated by a computer program, picked blindly from a dictionary, etc.) that is unrelated to the current solution space—can be useful for altering entrenched thinking patterns that might stifle innovation.

Develop—In the develop phase, students work to transition the best ideas generated in phase two into a working model or prototype. More than one model or design are likely to come from this step, so performance criteria need to be put in place to help assess which solution option is most feasible. Silverstein, Samuel, and DeCarlo (2009) recommend a simple technique, such as “performance and perception expectations,” to help identify exactly what customers might want out of a potential solution. By getting this down in writing, students are better able to assess alternative solution models.

Demonstrate—The final phase is about executing the business model. In this phase, students consider how products and services will actually be manufactured. Thus, issues like raw materials sourcing, operational and plant design, and organizational design are all important focus areas. It is during this phase that students begin to realize the full complexity of developing a solution to a JTBD. This phase is not just about the idea or the product; it is about all of the secondary activities that must be orchestrated to create a successful business.

The innovation management process is complex in its own right and surely could be a course by itself. The purpose is not to do a “deep dive” into the innovation management process (that can occur in another course dedicated to the process and approach). Instead, it is meant to provide a simple framework to help students think about developing novel solutions to real-world problems. It simply gets students thinking more about developing new products and services rather than continuously analyzing firms that already exist. In doing, this framework provides a new context for studying and applying the strategic management process, which is certainly the core focus of this class. Therefore, I use the innovation management process to help students generate sound ideas to business opportunities that they uncover on their own. The traditional strategic management process is then used to help sharpen the ideas that are generated through the innovation management process to ensure that the ideas are analytically sound and viable from the perspective of creating a sustainable competitive advantage. I make the point that we could consider the traditional strategic management process as being a left brain activity and the innovation management process as nourishing the right brain. However, I emphasize that either one of them by themselves are only going to be somewhat useful, but that the power comes from combining both approaches into one integrated framework.

For instance, when designing a new product, students will be forced to think about how components used in the design will eventually be sourced, thus impacting supplier power. They will ponder whether they wish to design a product with commodity components that limit supplier power or if they want to leverage a unique relationship with a given supplier to source components that will lead to product differentiation and lower buyer power. Of course, this is not a linear process, so students will be forced to move back and forth between the innovation management process and the traditional strategic management process.

Second, though it is admittedly subtle, the students and I work to shape the culture of the course by focusing more of our attention on applying the many frameworks discussed to help generate new viable business ideas. Though we surely use case studies and recent press related to existing firms as a means for discussion, they do not take all of our attention. We purposefully use the lessons learned from past experiences of existing companies to sharpen our thinking of what might be possible in today’s marketplace. This is an important cognitive shift that further reinforces the integrated approach.

To further strengthen the integration of these two core frameworks (innovation management and traditional strategic management), I structure the entire course around a semester-long team project (Figure 3). The purpose of this project is for each team to develop a new business idea based on what they determine to be a real need in the world and then to continuously apply the strategic management process to develop a strategic plan that could move the idea into the marketplace in a compelling way (see Appendix I for an overview of the project). Having taught the traditional strategic management process to nearly 350 students over a four year period, I grew increasingly convinced that a new approach was needed. My intent was to develop a new way of teaching strategic management that not only worked to develop both left and right brain capabilities in my students, but to also tap into their human desire to create something new.

Having now taught the new, integrated approach that is described in this paper to over 70 students, I am more certain than ever that students appreciate and see value in the opportunity to build something that has never before existed. Furthermore, they are energized by the opportunity to see business, and in particular strategic management, as a tool for solving real problems in the world. By leveraging both of these innately human interests (building things that are new and that are meaningful), my students (who practiced the integrated approach) seemed more energized and committed than those before them. They echoed this sentiment often in their feedback to me. Many commented that the project was not only “fun and creative”, but that it really helped to reinforce the concepts we studied in class. As one student explained, “At the beginning of the project I was worried that it was going to be a lot more difficult than just doing a strategic analysis as other classes do, but now I see the point. I get the big picture now and see how so many moving pieces need to be brought into alignment.” This sentiment was echoed by many of my students, and reinforced the notion that creativity and analytical skills can be developed and harnessed together.

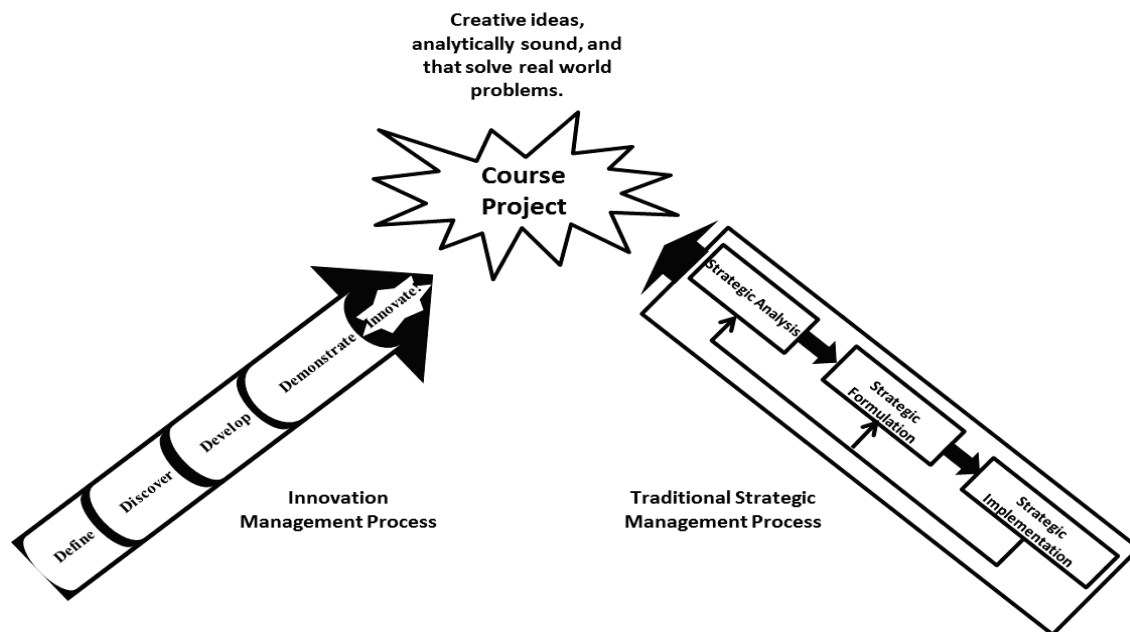


Figure 3: The Integrated and Applied Approach

CONCLUSION

In the *New York Times* article “Jobless and Staying that Way,” author Nelson Schwartz describes how today’s high unemployment rates deviate from the past: “The ‘new normal,’ as it has come to be called on Wall Street, academia and CNBC, envisions an economy in which growth is too slow to bring down the unemployment rate, while the government is forced to intervene ever more forcefully in a struggling private sector. Stocks and bonds yield paltry returns, with better opportunities available for investors overseas.” According to author Don Peck, “The economy now sits in a hole more than 10 million jobs deep—that’s the number required to get back to 5 percent

unemployment, the rate we had before the recession started, and one that's been more or less typical for a generation. And because the population is growing and new people are continually coming onto the job market, we need to produce roughly 1.5 million new jobs a year—about 125,000 a month—just to keep from sinking deeper.”

As business educators, we can't take sole responsibility for the state of the economy, nor can we expect to collectively pull this country out of such a deep hole. However, we can recognize our role in preparing the next generation of business leaders who will be either completely affected by the current economy or play a role in turning it around. With hyper-competitive markets pushing companies to continuously do more with less and with technology advancements that continue to improve operating efficiency, job growth will likely continue to be slow unless firms, both old and new, rededicate themselves to developing a continuous stream of product and service innovations that solve real problems and make life better for consumers (Brown, 2009). The traditional approach to strategic management is undoubtedly useful, but we need to begin training business leaders who are steeped in a culture of ideation and innovation (Martin, 2009). Furthermore, we need to leverage the many great frameworks from the traditional strategic management process so that future business leaders can not only come up with great innovations but, in doing so, can generate ideas that are strategically viable in a competitive global marketplace.

So, let us not think that simply altering the capstone strategic management course will lift the U.S. economy out of great despair. Instead, as author Anne Lamott remembers her father saying to her younger brother as he struggled to finish a lengthy report on birds, “we need to approach this situation ‘Bird by Bird...Just take it bird by bird.’” As business educators, we just need to heed this advice and participate in the solution for fixing the broken economy—one course at a time. We need a new generation of business leaders who are adept at designing new products and services so markets begin to grow and prosperity returns around the globe.

REFERENCES

- Brown, T. (2009). *Change: How Design Thinking Transforms Organizations and Inspires Innovations*. New York: Harper Collins.
- Dess, G., Lumpkin, G., and Eisner, A. (2008). *Strategic Management: Creating Competitive Advantages*. New York: McGraw Hill.
- Edwards, B. (1999). *The New Drawing on the Right Side of the Brain*. New York: Penguin Putnam Inc..
- Fink, D. L. (2003). *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*. San Francisco: Wiley.
- Hill, C. and Jones, G. (2009). *Strategic Management: An Integrated Approach*. Ohio: Cengage Learning.
- Martin, R. (2009). *The Design of Business: Why Design Thinking is the Next Competitive Advantage*. Boston: Harvard Business Press.
- Peck, D. (2010). “How a New Jobless Era Will Transform America.” *The Atlantic*, March.
- Silverstein, D., Philip S., and DeCarlo, D. (2009). *The Innovators Toolkit: Techniques for Sustainable Organic Growth*. New Jersey: Wiley, 2009.
- Schwartz, N.D. (2010). “Jobless and Staying That Way.” *New York Times*, 7 August.

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APPENDIX

Semester Project—Strategic Management

Creating Sustainable Competitive Advantage—Paper and Presentation

Overview

Your group project this semester is to develop a strategic plan for an entrepreneurial company that your team would like to start upon graduating. The purpose of this strategic plan is to support your effort in obtaining some source of funding (i.e. venture capital, private equity, etc.), so you can begin your entrepreneurial quest. A strategic plan is a formal way of outlining an organization's future course. Therefore, all strategic plans, at the very least, address the following three questions:

1. What do we do?
2. Who do we do it for and what value do we create?
3. How can we beat or avoid the competition?

At first glance, these questions might seem easy to answer. However, most companies fail, or at least they don't last very long, so good answers to these questions are likely not as easy as they seem. In the next sixteen weeks, we are going to study the strategic management process, numerous frameworks, and many techniques that can help us work through these three questions, so we can generate creative ideas that are analytically sound. The project will unfold throughout the semester, as each component will align to the concepts we discuss in class.

Developing new ideas is messy work. Therefore, I ask each of you to pause for a second before you begin this project and consider something. How are you going to respond to such ambiguity? Are you going to get frustrated because the "right" answers might not be easily accessible, or are you going to relish the opportunity to create something new for which answers need to be discovered because they don't yet exist? Put on your creative hats, and let's have some fun.

Deliverables

There are two deliverables for this assignment.

Written Strategic Plan—For each chapter, there will be a project exercise that will help your team work through the three questions above. These exercises will largely consist of questions that can be answered by applying the frameworks and tools we discuss in class. Therefore, for each exercise, you will need to write up responses to the questions. These write-ups should be written in a professional manner, so they can be compiled at the end of the semester in one document. Therefore, the final document should not look as if it is a compilation of individual exercises; rather, the each assignment should fit together as a seamless whole. Please keep up with these assignments throughout the semester, as I might on very short notice ask you to submit what you have so far to assess your progress.

In-Class Presentation—At the end of the semester, each team will present their plans to the rest of the class. You will have great autonomy in coming up with your own unique style of presenting your ideas, but they must present a compelling argument for why your ideas are sound and why a group of potential investors should invest in you and your ideas.

Effect of Global Business Curriculum on Student Attitudes

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ABSTRACT

Business schools have internationalized their curriculum to prepare students for work in the global economy. This internationalization rests on the assumption that exposure to international business content will lead students to be more open to doing international business. Traditionally, schools infused core courses with international business content, however while we find that international knowledge is gained, there is little effect on student attitudes. Rather, we find evidence that more experiential approaches such as exchange and study abroad programs may enhance a global curriculum through encouraging desired attitudinal changes regarding doing business with other cultures and nations. While additional research is needed to make firm conclusions, international content with experiential, international learning activities may increase the global knowledgebase and skills of students as well as increase the likelihood that they actually make use of these skills.

Keywords: International curriculum, AACSB, global issues

INTRODUCTION

According to “The Global Survey of International Business Education in the 1990s,” by the Academy for International Business, 465 business schools responded to a survey assessing their internationalization efforts (370 of them were U.S. business schools offering baccalaureate degrees at a minimum). As of 1992, seventy-four percent of respondent institutions infused core courses with international business content. The goal of most schools at this point was “the internationalization objective of developing student awareness of the international dimension of business rather than more advanced understanding or expertise” (Kwok and Arpan, 1992, p. 607). In the same survey eight years later, eighty-seven percent of respondent institutions used the infusion approach and ninety-one percent of respondent institutions sought to provide an awareness of the international dimension of business. As expected, internationalization of business curriculum had increased (Kwok and Arpan, 2000).

Currently, AACSB International (the Association to Advance Collegiate Schools of Business) expects business schools to prepare business students for the challenges that the global economy presents; challenges such as “strong and growing economic forces, differences in organizational and cultural values, and cultural diversity among employees and customers” (AACSB, 2005, p.72). Business school students need “learning experiences in such management-related knowledge and skill areas as: multicultural and diversity understanding; and domestic and global economic environments of organizations” (AACSB, 2005, p.72). These learning experiences should “foster sensitivity and flexibility toward cultural differences” (AACSB, 2005, p.10). Most recently, AACSB International reiterated its commitment to fostering effective international education in business schools by sponsoring a comprehensive study of the globalization of management education, which was conducted by its appointed “Globalization of Management Education Task Force” AACSB 2011). This study reviewed the current status and likely future trends of global management education throughout higher education.

However, numerous important questions remain regarding the effects of globally oriented curriculum. Does exposure to diversity and understanding of global economic environments lead to greater sensitivity and openness to cultural differences? Are students more open to working with people from different backgrounds and more likely to successfully engage in international business after having these learning experiences? Specifically, given that most institutions attempt this by infusing global content into course work, are students’ attitudes toward global issues and business changed by such exposure to international economic and business course content, or are other approaches likely to be more effective? This study addresses two related questions: Does completion of a course in international economics and business change student attitudes toward international economic policy? Does completion of the international economics and business course change student willingness to engage in international

business? This paper is an initial attempt to begin to address some of these questions by providing evidence from one university, which requires a globally oriented economics course of all of its business students.

LITERATURE REVIEW

Most of the previous related research dealing with student attitudes and economics curricula has focused on attitudes toward whether exposure to economic content changed student attitudes regarding political and economic issues. The results of these studies have generally been mixed. For examples see Jackstadt and Brennan (1985), Luker and Proctor (1981), Riddle (1975), Riddle (1978), (Scott and Rothman, 1975), and Whaples (1995). However, very little attention has been paid to student attitudes toward global issues.

In one effort to explore whether college seniors intend to use the skills and knowledge required for work in the global economy, English (1996) interviewed college seniors to determine the factors that predict students' intention to use global competence. She found that students' opportunity, self-efficacy, social influence, and liberal values directly predict whether they intended to use their global competence. Indirect influences on intention are gender, college experience, international travel during college and field of study. Thompson (1978) found that student learning correlates positively with attitude changes toward relevant international economic policy issues. Specifically, increases in student knowledge measured by pre-course and post-course surveys correlated with increases in pro-free trade attitude scores. Hence, coursework with global content may affect attitudes about global issues.

The recent American Council on Education's Report on the Internationalization of U.S. Higher Education finds that "There are limited attitudinal or experiential data on college and university students at the national and institutional levels. There is a need for more data and more analysis of college student attitudes toward global issues" (ACE, 2000, p.3). This project is an attempt to begin to address that need.

Data Description

Consistent with the national trend noted in Kwok and Arpan (2000), one way the business school at Murray State University has internationalized its curriculum was to create an international business course required for all business students. The multiple section course, "Issues in the Global Economy", has common learning objectives (see Appendix I) and a common textbook, *Global Business Today* by Charles W. L. Hill across instructors. The course content for 'Issues in the Global Economy' includes lectures, discussion and textbook chapters on globalization and international institutions, differences in political economy, differences in culture, ethics in international business, international trade theory, the political economy of international trade, foreign direct investment, the foreign exchange market, the international monetary system, the strategy of international business and the complexities of entering foreign markets.

The authors constructed a survey (Appendix II) for the students in the Global Economics course requesting demographic information and responses to twenty-six statements on a five-point scale (strongly disagree, disagree, neutral, agree, strongly agree). The statements were written to determine whether international business course content changed student levels of knowledge and/or student attitudes toward international economic policy and engaging in international business. Some questions reflect knowledge changes, some attitude changes, and some both. This survey was administered to eight sections of the course in the spring, one section in the summer and four sections in the fall of 2006. The one hundred and eight voluntary participants completed the survey at the beginning and again at the end of the semester.

As can be seen in Table 1, the usable sample consisted of one hundred and eight students with an average age of 22 and an average GPA of 3.18 on a four point scale. Sixty-one of the students sampled were women and one hundred and one of them were white. Thirty-six students had traveled abroad including thirteen who had studied abroad. Fifty of the one hundred and eight students surveyed had parents who did not go to college.

Table 1: Demographic Variables

| Variable | Percent | Means | Standard Deviation | Nobs |
|-----------------------|---------|-------|--------------------|------|
| Age | | 22.56 | 3.91 | 108 |
| Current GPA | | 3.19 | 0.49 | 108 |
| Credit Hours | | 93.21 | 24.22 | 107 |
| College Parents | | | | 108 |
| Not first gen | 58.33 | | | 63 |
| First gen | 41.67 | | | 45 |
| Marital Status | | | | 106 |
| Single | 86.80 | | | 92 |
| Married | 13.20 | | | 14 |
| International Student | 4.60 | | | 108 |
| Race | | | | 108 |
| Caucasian | 94.40 | | | 102 |
| Black | 2.78 | | | 3 |
| Asian | 1.85 | | | 2 |
| Hispanic | .93 | | | 1 |
| Sex | | | | 108 |
| Male | 43.50 | | | 47 |
| Female | 56.50 | | | 61 |
| Studied Abroad | 12.04 | | | 108 |
| Traveled Abroad | 34.26 | | | 108 |

Empirical Results

Seven of the survey statements had statistically significant changes between the pre-content and post-content survey responses (statements 4, 8, 9, 13, 22, 23 and 24 in Appendix II). These statements are:

1. Trade between two countries increases the average standard of living in both countries.
2. During my career, I would be willing to take on a business partner from a foreign country.
3. When saving for retirement, I would consider financial investments (stocks and bonds) in other countries.
4. The United States should raise tariffs on imported goods to protect domestic industries.
5. More free market capitalism would benefit the world.
6. Americans would benefit if NAFTA (North American Free Trade Agreement) were expanded to include South American countries.
7. South Americans would benefit if NAFTA (North American Free Trade Agreement) were expanded to include South American countries.

Student responses to the attitudinal statement of whether to take on a foreign business partner (Statement 8) showed greater willingness to do so after completing the course. As shown in Table 2, seventy-two percent were willing at the beginning of the course and eighty-three percent at the end. Student attitudes toward investing in the stocks and bonds of a foreign country also changed positively. While forty-two percent of students were willing to consider making financial investments in other countries (Statement 9) at the beginning of the semester, seventy percent were willing by the end of the semester. While student attitudes did not change regarding their cultural norms concerning their social lives, they did change their attitudes about making investments and doing business with someone from a foreign country.

Table 2: T – Tests: Pre Course Means vs. Post Course

| | | Stmt. 4 | Stmt. 8 | Stmt. 9 | Stmt. 13 | Stmt. 22 | Stmt. 23 | Stmt. 24 |
|-------------|-------------------------|---------|---------|----------|----------|----------|----------|----------|
| Pre course | Mean Response | 3.98 | 3.86 | 3.46 | 2.62 | 3.55 | 3.42 | 3.64 |
| | Std Dev | 0.739 | 0.716 | 0.911 | 0.833 | 0.719 | 0.714 | 0.690 |
| | % Agree | 79.4% | 72.22% | 42.59% | 10.38% | 43.40% | 42.99% | 57.94% |
| | % Disagree ¹ | 3.74% | 2.78% | 11.11% | 41.51 | .943% | 5.61% | 2.80% |
| Post course | Mean Response | 4.26 | 4.064 | 3.92 | 2.361 | 3.888 | 3.769 | 3.99 |
| | Std. Dev | 0.808 | 0.63 | 0.877 | 0.88 | 0.705 | 0.827 | 0.730 |
| | % Agree | 89.62% | 83.33% | 70.37% | 6.481% | 72.90% | 64.82% | 76.85% |
| | % Disagree | 4.72% | 0.00% | 6.48% | 55.56% | 1.87% | 6.48% | 1.85% |
| Change | Diff ⁱⁱ | 0.283 | 0.204 | 0.454 | -.262 | 0.341 | 0.348 | 0.346 |
| | Prob ⁱⁱⁱ | .0083** | 0.028* | .00025** | .0267* | 0.0006** | 0.0011** | .00044** |

Table Notes:

(i) Agree consists of those responding “Agree” (4) or “Strongly Agree” (5), Disagree measures those responding “Disagree”(2) or “Strongly Disagree” (1) to the question. The remaining percentage measures those responding “Neutral” (3) to the question.

(ii) Diff equals Post Course Mean minus Pre Course Mean

(iii) This is the calculated probability of the two samples coming from the same population as determined by a two-tailed, unequal variance, T-test. A ‘*’ represents significance difference between the samples at the 95% level, ‘**’ represents difference at the 99% significance level.

Student responses changed favorably toward free trade in four separate statements and free markets generally in one statement. At the beginning of the semester seventy-nine percent of the students agreed that trade increases average standards of living (Statement 4) and eighty-nine percent agreed by the end of the semester. Expansion of NAFTA (Statement 23) was seen to benefit Americans by forty-two percent of students at the beginning of the semester and sixty-four percent at the end. Initially, fifty-seven percent of students agreed that this expansion of NAFTA would benefit South Americans (Statement 24) and seventy-six percent at the end of the semester. Before exposure to course content, forty-one percent of students did not agree that the U.S. should raise tariffs to protect domestic industry (Statement 13). Over fifty-five percent disagreed with this statement at the end of the semester. Forty-three percent of students agreed that free market capitalism benefits the world (Statement 22) at the beginning of the course and seventy-two percent believed it at the end.

Next, we used ordered probit regression analysis (results shown in Table 3) to examine if particular demographic variables impacted the likelihood of a student moving in the agree (or disagree) direction for each of the seven statements where we found significant differences in the responses (i.e. does being female mean a student is more likely to move in the agree direction on a particular question?). Due to lack of variation in the dependent variable, standard OLS is not appropriate and ordered probit is applied instead. The dependent variable for each question is defined as a change in the pre- and post-course responses. This variable has one of three values: “Disagree” (coded as 0) represents a student’s response changing in the disagree direction (a neutral pre-course response to a statement becoming a disagree or strongly disagree post-course response, for example), “Unchanged” (coded as 1) represents

identical pre-and post-course responses and “Agree” represents a student’s response changing in the agree direction. The dependent variables are labeled ch4, ch8, ch9, ch13, ch22, ch23, and ch24 for change in statement 4, statement 8, etc. As noted earlier, seven ordered probit regression equations are estimated, one for each statement where there was a significant difference between the pre- and post-course means. The magnitudes of the coefficients do not have direct interpretations, but instead could be used with the estimated “Mu” to determine estimated probabilities that a student would fall into one of the three responses defined above. However, a positive coefficient would indicate that the associated variable yields an increased probability of a student falling into the “agree” case (and potentially) smaller probability for the “Disagree” case) after the completion of the course.

Table 3: Ordered Probit Results

| Equation | A | B | C | D | E | F | G |
|----------------|------------------|-------------------|------------------|------------------|------------------|------------------|------------------|
| Dep. Variables | Ch4 | Ch8 | Ch9 | Ch13 | Ch22 | Ch23 | Ch24 |
| Ind. Variables | | | | | | | |
| Constant | 3.061 2.022* | 2.326 1.606 | 1.444 .995 | -.834 -.574 | 3.742 2.539* | .285 .187 | -1.464 -1.013 |
| Age | -.042 -1.127 | -.004 -.126 | -.008 -.255 | .050 1.516 | -.004 -.122 | -.030 -.876 | .021 .627 |
| Male | .215 .908 | .126 .531 | .017 .070 | -.133 -.558 | -.268 -1.100 | .683 2.606** | .443 1.801 |
| Single | -.289 -.774 | .475 1.304 | .179 .490 | .356 .990 | .007 .020 | .283 .737 | .634 1.761 |
| NonWhite | .679 1.081 | .172 .289 | -.401 -.698 | -.507 -.846 | .582 .900 | .158 .255 | .422 .672 |
| FirstGen | -.089 -.357 | -.396 -1.583 | .312 1.262 | .150 .603 | -.451 -1.764 | 1.005 3.582** | .459 1.811 |
| GPA | -.249 -.975 | -.147 -.577 | .031 .121 | -.003 -.010 | -.370 -1.437 | .421 1.560 | .439 1.714 |
| Crhrs | -.001 -.157 | -.007 -1.377 | -.006 -1.236 | -.001 -.110 | -.007 -1.453 | -.002 -.422 | -.0005 -.098 |
| Int | .212 .310 | .204 .297 | -.281 -.434 | .273 .416 | -.881 -1.319 | .491 .703 | -.381 -.574 |
| TrAbroad | -.298 -1.014 | -.901 -3.011** | .203 .698 | -.125 -.428 | -.088 -.297 | .213 .692 | -.059 -.202 |
| StAbroad | .986 2.212* | .397 -.967 | -.077 -.187 | -.414 -.994 | -.419 -1.016 | .583 1.335 | .800 1.825 |
| Mu | 1.402 8.117** | 1.702 8.873** | 1.188 7.461** | 1.582 8.795** | 1.658 8.332** | 2.241 8.187** | 1.613 8.261** |

The top number is the coefficient, with the t-statistic directly below.

Table Notes: * - significant at the 95% level; ** significant at the 99% level.

We find just four situations where a specific demographic group responded differently to the course material, generally, differing only in degree. For equation A (ch4) which deals with whether trade increases the standard of living in both countries, only the variable StAbroad is significant and positive. The responses of students who have studied abroad are more likely to change in the agree direction that trade increases standards of living. Table 4 indicates that, indeed, those who studied abroad, initially on average, agreed slightly more (variable Pre4 – indicating the pre-course response to statement 4, etc.) with the concept, and as a group, after the course, had a larger change in the agree direction. On average, study abroad students started the course more open to international trade content and were more changed by the course content.

Table 4: Beginning Means and Changes by Significantly Different Groupings

| | | Value | Means | Changes |
|--------------|--------------|-------|-------|---------|
| Statement 4 | | | Pre4 | Ch4 |
| | StAbroad | 1 | 4.08 | 1.58 |
| | No StAbroad | 0 | 3.97 | 1.22 |
| | | | | |
| Statement 8 | | | Pre8 | Ch8 |
| | TrAbroad | 1 | 3.95 | .97 |
| | No TrAbroad | 0 | 3.82 | 1.31 |
| | | | | |
| Statement 23 | | | Pre23 | Ch23 |
| | Male | 1 | 3.53 | 1.40 |
| | Female | 0 | 3.33 | 1.25 |
| | | | | |
| | FirstGen | 1 | 3.38 | 1.47 |
| | Not FirstGen | 0 | 3.45 | 1.21 |
| | | | | |

Referring back to equation B in Table 3 (change in statement 8) which deals with whether one is willing to take on a business partner from a foreign country, we find the ‘traveled abroad’ variable (TrAbroad) to be negative and significant. The lower pre-content mean for TrAbroad and higher change for NoTrAbroad in Table 4 indicate that those who have not traveled, while initially less willing to take on a foreign business partner, changed more in the willing direction than those who had traveled. The other coefficient estimates are insignificant. All demographic coefficients were insignificant in Equations C, D, E, and G, indicating that none of the demographic factors particularly influenced how students responded to the course in regards to changing their beliefs regarding these statements. On the other hand, Equation F indicates that gender and whether a student’s parents went to college affected how students responded to the course regarding potential benefits to Americans of expanding NAFTA to include South American countries. Males, were both initially and more likely to change to agree that Americans would benefit if NAFTA were expanded, with first generation college students (although less likely initially) also being more likely to change to the “agree” position.

CONCLUSION

The importance of international issues in business education is evidenced by the large number of schools that have incorporated this material in their programs. That the vast majority have attempted to do so by infusing global content within standard coursework in lieu of other approaches (such as study abroad programs) highlights the importance of understanding the potential end results of this infusion. Are students solely gaining knowledge of international issues or are they also becoming more willing to use this knowledge in international business, travel, etc? Our research indicates that the international business and economics course content did positively affect

student attitudes regarding engaging in business with other cultures. Student attitudes toward their social lives and other cultures did not change.

We find some evidence that more experiential approaches such as exchange and study abroad programs may complement global curriculum in encouraging desired attitudinal changes regarding doing business with other cultures and nations. While additional research is needed to make firm conclusions, international content with experiential international learning activities may increase the global knowledgebase and skills of students, as well as increase the likelihood that they actually make use of these skills.

REFERENCES

- AACSB International – The Association to Advance Collegiate Schools of Business, AACSB International, Eligibility Procedures and Accreditation Standards for Business Accreditation, Revised: January 1, 2005, 777 S. Harbor Island Boulevard, Suite 750, Tampa, FL 33062-5729, USA.
- AACSB International – The Association to Advance Collegiate Schools of Business, AACSB International, Globalization of Management Education: Changing International Structures, Adaptive Strategies, and the Impact on Institutions, 2011, 777 S. Harbor Island Boulevard, Suite 750, Tampa, FL 33062-5729, USA.
- English, S. L. (1996, November). College Influence on Student Intentions Toward International Competence. Paper presented at the ASHE Annual Meeting of the Association for the Study of Higher Education, Memphis, TN.
- Internationalization of U.S. Higher Education: Preliminary Status Report 2000*, American Council on Education Center for International Initiatives, Washington, D.C.
- Jackstadt, S. L., and Brennan, J., with Thompson, S. (1985). The Effect of Introductory Economics Courses on College Students' Conservatism. *Journal of Economic Education*, V. 16, No.1, pp 37-51.
- Kwok, C. Y., Arpan, J. S., and Folks, Jr., William R., (1994). A Global Survey of International Business Education in the 1990's. *Journal of International Business Studies*, V. 25, No. 3, pp 605-623.
- Kwok, C. Y., and Arpan, J. S., (2002). Internationalizing the Business School: A Global Survey in 2000. *Journal of International Business Studies*, V. 33, No. 3, pp 571-581.
- Luker, W., and Proctor, W. (1981). The Effect of an Introductory Course in Microeconomics on the Political Orientation of Students. *Journal of Economic Education*, V. 12, No. 2, pp 54-57.
- Metzner, H. E., and Sims, E. C. (1978). Student Attitudes Toward the Free Enterprise System *Journal of Economic Education*, V. 10, No. 1, pp 46-50.
- Riddle, T. (1978). Student Opinions on Economic Issues: The Effects of an Introductory Economics Course. *Journal of Economic Education*, V. 9, No. 2, pp 111-114.
- Scott, J. H. and Rothman, M. P (1975). The Effect of an Introductory Economics Course on Student Political Attitudes. *Journal of Economic Education*, V. 6, No. 2, pp 107-112.
- Soper, J. C., and Walstad, W. B (1988). What Is High School Economics? Posttest Knowledge, Attitudes, and Course Content. *Journal of Economic Education*, V. 19, No. 1, pp 37-51.
- Whaples, R. (1995). Changes in Attitudes Among College Economics Students About the Fairness of the Market. *Journal of Economic Education*, V. 26, No. 4, pp 308-313.
- Wynd, W. R., and Mager, J. (1989). The Business and Society Course: Does It Change Student Attitudes? *Journal of Business Ethics*, V. 8, pp 487-491.

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APPENDIX 1

COURSE LEARNING GOALS

Upon completion of ECO 310 students will:

1. Understand the recent historical experience of globalization and the role of the United States in the world economy.
2. Be familiar with the various forms of international business and be aware of the strategies to manage related complications.
3. Understand various trade theories and use them to predict the consequences of different international commercial policies.
4. Understand and be able to apply the concepts of balance of payments, foreign exchange and international investment to business decision-making.
5. Apply the theories of international trade, international business, and currency valuation to the diverse cultural, political, and economic environments of developed, developing, and transitional economies.
6. Be able to analyze information in order to reach logical conclusions regarding international economic public policy.
7. Be able to gather, organize, and present information in written form and make recommendation for successful international business decision making.

APPENDIX SURVEY

Survey Instrument

| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|--|-----------------------|--------------|----------------|-----------------|--------------------------|
| 1. International events matter to me. | | | | | |
| 2. When shopping, I look for and buy goods made in America. | | | | | |
| 3. I would welcome an opportunity to live with a classmate from another country. | | | | | |
| 4. Trade between two countries increases the average standard of living in both countries. | | | | | |
| 5. During my career, I would be willing to engage in international business. | | | | | |
| 6. I support the use of taxpayer money for foreign aid. | | | | | |
| 7. During my career, I would be willing to take on a business partner from my home country. | | | | | |
| 8. During my career, I would be willing to take on a business partner from a foreign country. | | | | | |
| 9. When saving for retirement, I would consider financial investments (stocks and bonds) in other countries. | | | | | |
| 10. I would support a law specifying that only U. S. citizens be admitted to Kentucky public universities. | | | | | |
| 11. I would likely come to the defense of another culture if someone spoke about it negatively. | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| 12. If there were no difference in cost between studying abroad and in the U.S., I would like to take classes in another country. | | | | | |
| 13. The United States should raise tariffs on imported goods to protect domestic industries. | | | | | |
| 14. I would support changing Murray State University's International Film Series to show first run Hollywood films instead. | | | | | |
| 15. During my career, I would be willing to accept a position with a firm that requires me to work at least a year in one of their overseas offices. | | | | | |
| 16. If I were/am single, I would consider dating someone from another country. | | | | | |
| 17. If I were/am single, I would consider marrying someone from another country. | | | | | |
| 18. Creating jobs for Americans is more important than creating jobs for residents of less developed countries. | | | | | |
| 19. Adapting to customs of another country would be difficult for me. | | | | | |
| 20. It is our duty to teach American values to people in other countries. | | | | | |
| 21. It is important to protect American culture from foreign cultures. | | | | | |
| 22. More free market capitalism would benefit the world. | | | | | |
| 23. Americans would benefit if NAFTA (North American Free Trade Agreement) was expanded to include South American countries. | | | | | |
| 24. South Americans would benefit if NAFTA (North American Free Trade Agreement) was expanded to include South American countries. | | | | | |
| 25. A strong U.S. dollar is good for Americans. | | | | | |
| 26. English should be the only language of instruction in American public schools. | | | | | |

The Web-enhanced Instruction Mode: Evidence from Undergraduate Finance Graduates with Embedded Online Assessments

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ABSTRACT

This paper examines applications of the web-enhanced instruction mode. Giving online quizzes does appear to be a better use of class seat time. Results of the embedded online assessment given in a undergraduate finance capstone course delivered by this instruction mode are analyzed. Students' learning achievement of this newer pedagogical method is evident. Most students perceive this method as beneficial to their studies in finance. Hence, university administrators should provide encouragements and incentives for finance faculty members to use Internet-based technologies in face-to-face instructions.

Keywords: Web-enhanced instruction mode, course embedded online assessments, learning achievement

INTRODUCTION

The rapid growth of the Internet is creating almost limitless opportunities for improving financial education. Thus, finance faculty members are increasingly encouraged to use Internet-based technologies in teaching. Examples of such research include Daniel (1999), Michelson and Smith (1999, 2004), Hein and Stalcup (2001), Peng (2006, 2007), and Terry (2007). In addition, the process of using online quizzes in a traditional face-to-face (F2F) course has been in effect for several years. The education literature generally supports the premise that using online quizzes in a F2F course contributes positively to students' learning experiences and outcomes. Examples of such research include Norman et al. (2000), Brothen and Wambach (2004, 2007), Daniel and Broida (2004), Dunbar (2004), Bandy (2005), Bol et al. (2005), Marcus (2005), Schnusenberg (2005), Peng (2006, 2007), and Waite (2007).

On a related theme, instruction modes currently used in business schools are classified into three categories by one line of research: (a) the campus mode that no Internet-based instructional technologies are applied; (b) the online mode; (c) the hybrid mode, i.e., by Terry (2007). However, in another line of research, e.g., Peng (2006, 2007) presents an alternative of how a finance course with traditional F2F instructions can be delivered with all course materials online and with multifaceted applications of Internet-based technologies while no seat time is reduced. This instructional mode is called the web-enhanced mode. In a finance class delivered by this method, it is noteworthy that all pedagogical advantages of a F2F course are retained. For example, previous research indicates, "although students do prefer a finance faculty to provide every course material online, the majority of them do not like the idea of taking a finance course delivered solely through distance-learning technologies because they consider finance to be too difficult a subject to comprehend without face-to-face classroom instructions and interactions" (Peng, 2006, Page 9).

Very few research papers in the education literature have included a discussion about how the web-enhanced instruction mode is applied to finance courses, let alone any discussion about administering embedded online assessments in a F2F finance course. Therefore, the aims of this paper are twofold: (a) we present potential benefits of the web-enhanced instruction mode to students; (b) we analyze results of a program assessment for the purpose of an AACSB re-accreditation administered online to a undergraduate finance capstone course delivered by this method. Peng (2006) contains detailed discussions about how to implement the web-enhanced instruction mode in F2F undergraduate finance courses as well as in a F2F MBA finance course.

THE WEB-ENHANCED INSTRUCTION MODE: POTENTIAL BENEFITS TO STUDENTS

Data regarding students' opinions about taking out-of-class online quizzes and in-class online exams were collected by means of an end-of-semester online survey in the spring semester of 2006 and the spring semester of 2007. Participants were students enrolled in *Corporate Finance*, a junior level introductory finance course, and *Investments*, a junior level finance elective class. At the end of each semester, the professor announced in class that there would be an online survey available after the final course grade had been released and encouraged students'

participation. It was posted to the professor's website as a hypertext markup page so that it could be accessed through any of the standard web browsers. A student submitted his or her anonymous response by clicking the "Submit" button at the bottom of the survey page after the questionnaire had been filled out. The survey reveals the following:

1. If a faculty's teaching method is primarily the traditional writing-on-the-board style with a website that contains only static information such as a syllabus or *PowerPoint* lecture notes, it may not meet students' expectations of learning facilitation required of an instructor.
2. Students prefer an finance faculty to provide every course material online. However, the majority of them do not like the idea of taking an finance course delivered solely through distance-learning technologies because finance is considered a subject too difficult to comprehend without face-to-face classroom instructions and interactions.
3. Students comment that they like to take out-of-class online quizzes primarily because there would be more time in class to cover additional materials or have additional classroom interactions.
4. It would be beneficial to students should an instructor regularly update certain information online throughout the semester, e.g., having a grade-book updated continually or integrating interactive components such as forum discussions into the class website.

In a nutshell, it appears that a better method for an finance course delivery is that of in-classroom interactions between an instructor and students while having all pertinent course materials online. In a semester with six out-of-class online quizzes given, it is the author's estimation that the seat time of roughly three class sessions would be "saved" to cover additional materials. For example, in an introductory corporate finance class, because of the "saved" seat time students would be able to have an in-depth exposure of how to utilize *Excel* to construct a complete loan amortization schedule because such a schedule would require using several *Excel* functions that are not seen in simpler time value of money problems. In an investments class, the "saved" seat time was used to discuss how to use *Excel* to construct the Markowitz's efficient frontier, how to utilize the real-time data from *The Wall Street Journal* to compute the bond equivalent yield of an outstanding Treasury bill, and was used to have additional discussions with regard to the class project and the group case that students would need to present in class. Finally yet importantly, it is our belief that the seat time would be better used to go over quiz questions that most students missed in lieu of having them taking the quiz in class.

Students' other comments selected from the survey regarding the web-enhanced instruction mode include:

1. "All his online tests/quizzes are automatically timed; everyone has exactly the same amount of time to complete the test."
2. "Dr. Peng's online testing system also gets students used to working in an online environment to conduct business (in this case taking the quiz)."
3. "Conducting business via the Internet is growing every day and is reality for all business small and large. Professor Peng's online testing environment helps familiarize students with an online "business" type environment which is becoming more prominent every day."
4. "Within the quiz-taking window, I can choose a time slot that best fits my work schedule and my study habits."
5. "I can have a cup of coffee on my desk while taking a quiz in my own bedroom."
6. "I don't have to wait until next class to find out what I made on the quiz because I can know my quiz score hours after I take it, and I can view the whole quiz and the solution at the same time too."

Although these opinions were collected five years ago, the implications remain pertinent today. Internet-based instructional technologies are constantly being updated. For example, an instructor may now choose to have students use an e-textbook through iPad 2s. We have seen attempts to explore classroom applications and to determine the viability of expanding faculty and student access to this new tablet technology, e.g., Weisberg (2011). Another example is that students can now access online course materials through various mobile devices besides using a notebook or desktop computer. Finance professors should be eager to apply available technologies to our classroom teaching, and we may need to spend extra time and make a determined effort to do so. Students would benefit the most from our willingness and ability to adopt pedagogically accepted technologies constantly in our teaching. However, technological advancements do not change the fact that finance remains a relatively difficult subject for most business students. It is our belief that Internet-based technologies may be best thought of as teaching tools.

EMBEDDED ONLINE ASSESSMENTS: EVIDENCE FROM UNDERGRADUATE FINANCE GRADUATES

Since April 2003, the new assurance of learning (AoL) standards have been adopted by the AACSB. The new standards place emphasis on assessing students' learning achievement. That is, "every degree program (must) have a set of defined learning goals and that the school must show progress toward the assurance of learning for each of those learning goals" (Thompson, 2004, Page 429). Furthermore, Smith et al. (2010) contend that it is better to use locally developed exams to meet requirements per AACSB AoL standards in comparison with using standardized content assessments, e.g., ETS' Major Field Tests. Martell (2007) reports that *course embedded assignments* are a major assessment method used among AACSB-accredited schools.

Guided by the AoL 2003 standards, an assessment process regarding the major competency of finance graduates was completed in the fall 2006 semester. Each assessment question is embedded as one quiz or exam question. Very few research papers in the finance education literature have included a discussion about how an embedded online assessment is done in a F2F classroom teaching. The second aim of this paper is to explore this issue.

Data Descriptions

Data were collected in the fall semester of 2006 by means of out-of-class online quizzes and in-class online exams administered to students enrolled in *Applied Finance Management*, a senior level capstone course offered to finance majors. There were a total of six out-of-class multiple-choice quizzes and three in-class multiple-choice exams during the course of the semester. As mentioned previously, each assessment question was embedded in one of these tests. It is understandable that some might think that an online quiz is rather cheating-prone. The finding in Peng (2007) alleviates concerns about students' cheating and hence frees up in-class time for additional materials and interactions. These were graduating undergraduate students majoring in finance at the business school of a regional state university in the northeastern United States. The school's business programs were AACSB-accredited. Exhibit 1 shows a sample of the questions contained in the assessment.

There were 30 students in the class. However, the number of students who had completed all quizzes and exams throughout the semester was 28. Of these 28 students, there were 14 males and 14 females, respectively. The format of a quiz or an exam was multiple-choice, and each quiz or exam question was equally weighted. Each quiz or exam was open-book, open-notes, and timed, and students took it once.

Exhibit 1: A Sample of the Questions Contained in the Assessment

Quiz 1 was taken ONCE between 6:00 p.m. September 14th and 10:00 p.m. September 15th.
Exam 1 was taken on Wednesday, September 20th, 2006 during the class meeting time.
Quiz 2 was taken ONCE between 1:30 p.m. October 10th and 6:00 p.m. October 11th.
Quiz 3 was taken ONCE between 5:00 p.m. October 19th and 11:00 p.m. October 20th.
Exam 2 was taken on Monday, October 23rd, 2006 during the class meeting time.
Quiz 4 was taken ONCE between 5:00 p.m. November 2nd, 2006 and 11:00 p.m. November 3rd, 2006.
Quiz 5 was taken ONCE between 5:00 p.m. November 20th, 2006 and 10:00 p.m. November 21st, 2006.
Exam 3 was taken on Monday, November 27, 2006 during the class meeting time.

In 1958, the average tuition for one year at an Ivy League school was \$1,800. Forty years later, in 1998, the average cost was \$18,900. What was the growth rate in tuition over the 40-year period?

This question is to measure Objective 1, and it appeared in Exam 1.

- a. 12.00%
- b. 9.55%
- c. 6.05%
- d. 7.00%
- e. 8.57%

...

A company has the following income statement. What is its net operating profit after taxes (NOPAT)?

| | |
|------------------|---------------|
| Sales | \$2,000 |
| Costs | 1,200 |
| Depreciation | <u>100</u> |
| EBIT | \$ 700 |
| Interest expense | <u>200</u> |
| EBT | \$ 500 |
| Taxes (40%) | <u>200</u> |
| Net income | <u>\$ 300</u> |

This question is to measure Objective 3, and it appeared in Quiz 2.

- a. \$420
- b. \$120
- c. \$300
- d. \$180
- e. \$280

Descriptive information about the assessment is given in Table 1. Of the four objectives assessed, the first three should have had ample coverage in earlier finance courses. Working capital management, the fourth item, was not likely to be covered in the previous corporate finance course. Although the assessment was conducted in a senior level capstone course offered to finance majors, it was not intended to be a learning outcome assessment of this particular class. Therefore, no pre-test on these four areas at the beginning of the course was given to the students. This was a learning outcome assessment of the finance program for the AACSB re-accreditation purpose.

Table 1: Descriptive Information about the Assessment Data

| Assessment Objectives | Measurement Methods | The Number of Questions Appeared in Quizzes and Exams |
|--|---|---|
| Objective 1: Graduates should be competent in using computer spreadsheet software. | Out-of-class Online Quizzes and In-class Online Exams throughout the Semester | A total of five questions. They appear in Exam 1, Exam 2, Exam 3, and Quiz 3. |
| Objective 2: Graduates should understand the basic relationship between risk and return and its use in financial asset valuation. | | A total of eleven questions. They appear in Quiz 1, Quiz 2, Exam 1, and Exam 3. |
| Objective 3: Graduates should be able to conduct financial statement analysis. | | A total of seven questions. They appear in Exam 2, Exam 3, Quiz 2, and Quiz 5. |
| Objective 4: Graduates should understand the basic elements of working capital management. | | A total of two questions. They appear in Quiz 2. |

*-The assessment contains a total of 25 questions.

Data Analyses

Five-number summaries along with the mean and the standard deviation estimates of the data are given in Table 2. A student's score of an objective is obtained through dividing the number of questions answered correctly by the total number of available questions of that objective. For example, there are five available questions of Objective 1, and let us assume that a student has answered three questions correctly. Thus, the student's score of Objective 1 is equal to $\frac{3}{5} \times 100$, and it is recorded as 60.00. The minimum score of each objective is the one achieved by the lowest scoring student, and the maximum score of each objective is the one achieved by the highest scoring student. One male student answered both questions of Objective 4 inaccurately; hence, his score of Objective 4 is recorded as zero. A student's overall score of the assessment is obtained through dividing the total number of questions answered correctly by 25. For example, should a student answer correctly 18 questions, the student's overall score of the assessment is equal to $\frac{18}{25} \times 100$, and it is recorded as 72.00.

The major properties of the data are contained in Tables 2, 3, and Figure 1. Although it is not shown in the paper, results from univariate analyses of the data indicate that the normality assumption is violated in the sampling distributions of at least two of the four objective scores. For instance, a student's score of Objective 4 can take only three possible values, namely 0, 50, or 100. Thus, the sampling distribution of Objective 4 scores is significantly different from that of the normal distribution. In addition, the sampling distribution of Objective 4 is *bimodal* (having two modes). Thus, this bimodal distribution of the data explains why the median score of 100 for Objective 4 is the same as the maximum score achieved by the highest scoring student. Similarly, it can explain why the third quartile of the data is 100 for Objectives 1, 3, and 4.

All the means and the medians of these scores are greater than 75. As mentioned previously, the assessment is conducted online throughout the semester and embedded in a F2F class delivered by the web-enhanced mode. Besides aforementioned advantages of this pedagogical method, students' learning achievement in the finance program is evident.

Table 2: Frequency Distributions of the Data

| Students' Scores | Number of Students | |
|---------------------|------------------------|-------------|
| | Objective 1 | Objective 2 |
| less than 60 | 11 | 4 |
| 60 but less than 70 | 0 | 4 |
| 70 but less than 80 | 6 | 5 |
| 80 but less than 90 | 0 | 6 |
| between 90 and 100 | 11 | 9 |
| | | |
| | Objective 3 | Objective 4 |
| less than 60 | 5 | 12 |
| 60 but less than 70 | 0 | 0 |
| 70 but less than 80 | 3 | 0 |
| 80 but less than 90 | 10 | 0 |
| between 90 and 100 | 10 | 16 |
| | | |
| | The Overall Assessment | |
| less than 60 | 3 | |
| 60 but less than 70 | 3 | |
| 70 but less than 80 | 7 | |
| 80 but less than 90 | 10 | |
| between 90 and 100 | 5 | |

Table 3: Selected Summary Statistics of the Data

| | Mean | Minimum | First Quartile | Median | Third Quartile | Maximum | Standard Deviation |
|-------------------------------|-------|---------|----------------|--------|----------------|---------|--------------------|
| Objective 1 | 77.86 | 20.00 | 60.00 | 80.00 | 100.00 | 100.00 | 22.00 |
| Objective 2 | 77.92 | 54.55 | 63.64 | 81.82 | 90.91 | 100.00 | 14.93 |
| Objective 3 | 82.14 | 28.57 | 71.43 | 85.71 | 100.00 | 100.00 | 20.06 |
| Objective 4 | 76.79 | 0.00 | 50.00 | 100.00 | 100.00 | 100.00 | 28.81 |
| The Overall Assessment | 79.00 | 48.00 | 72.00 | 84.00 | 88.00 | 100.00 | 12.96 |

The usual parametric method of testing the null hypothesis of no treatment differences among several related samples is the two-way analysis of variance (ANOVA). However, proper inferences of an F test used in a two-way ANOVA rely upon the assumption that the populations follow the normal distribution. As mentioned previously, the normality assumption appears to be violated in the sampling distributions of at least two of the four objective scores. Hence, the two-way ANOVA analysis on ranks is instead performed with the Friedman test, a nonparametric procedure, as presented in Conover (1980). Exhibit 2 contains the test results.

Figure 1: Frequency Histograms of the Data

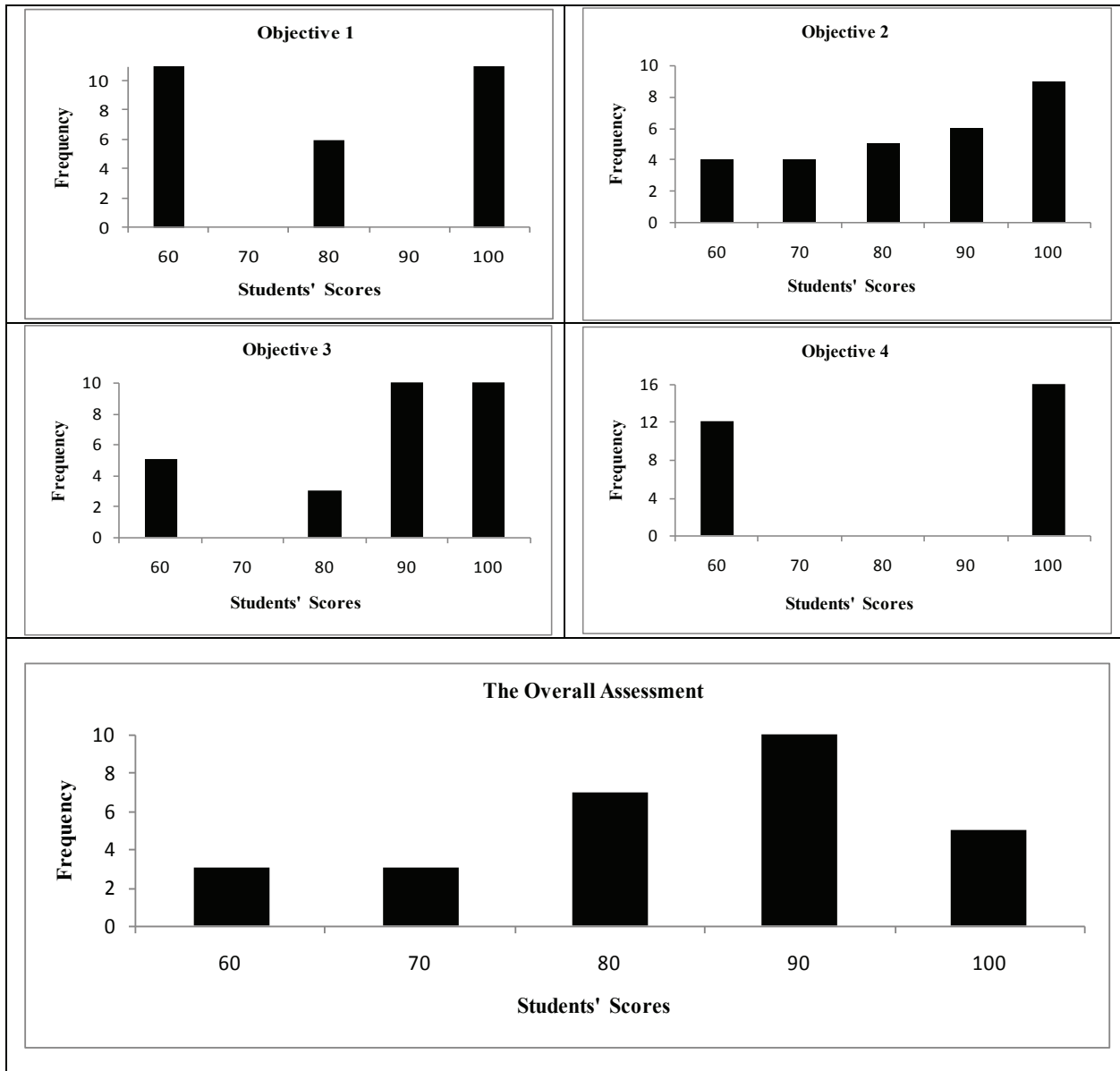


Exhibit 2: Analysis-of-variance on Ranks Using the Friedman Test

The analysis herein follows the procedure in Conover (1980, Page 299 and Page 300).

H_0 : There is no difference in students' scores of these four objectives

H_a : Students score differently in at least one of these four objectives

| Student | Objective 1 Score Rank | Objective 2 Score Rank | Objective 3 Score Rank | Objective 4 Score Rank |
|----------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Student 1 | 2 | 3 | 4 | 1 |
| Student 2 | 4 | 2 | 3 | 1 |
| Student 3 | 3.50 | 2 | 3.50 | 1 |
| ... | ... | ... | ... | ... |
| Student 13 | 2 | 1 | 3.50 | 3.50 |
| Student 14 | 3.50 | 1 | 2 | 3.50 |
| Student 15 | 1 | 3 | 2 | 4 |
| ... | ... | ... | ... | ... |
| Student 27 | 3 | 1 | 3 | 3 |
| Student 28 | 1 | 2 | 3.50 | 3.50 |
| R_j (totals) | 67.50 | 67.50 | 73.50 | 71.50 |

Firstly, calculate the total sum of squares of ranks. It is computed as $A_2 = 823.00$.

The total number of blocks used is denoted by b , and $b > 1$. In this analysis,

$b = 28$ (the number of students)

$k = 4$ (the number of treatments, e.g., the number of objectives)

Secondly, calculate the value of B_2 , and it is computed as $B_2 = 700.96$.

Thirdly, compute the value of T_2 . T_2 is the test statistic.

$T_2 = 0.2133$.

Compare the computed test statistic with the 0.95 quantile of the F distribution with the numerator degrees of freedom of 3 ($k_1 = 3$) and the denominator degrees of freedom of 81 ($k_2 = 81$). The corresponding critical F statistic is estimated to be 2.7173.

Decision Rule: Since the test statistic of 0.2133 is less than the critical F statistic, we fail to reject the null hypothesis.

As indicated in Exhibit 2, we fail to reject the null hypothesis that the score distributions are the same among four objectives. In addition, although it is not shown in the exhibit, we fail to reject the null hypothesis that the score distributions are the same among male and female students. Both tests have the level of significance at 0.05. Therefore, no multiple comparisons are made.

Exhibit 3: The Grading Policy Contained in the Syllabus

...

Grading:
Your final course grade will be determined in the following manner.

| Components of your course grade | Proportion of each component to your final grade |
|--|---|
| Attendance | 6% |
| Quizzes | 10% |
| Team Case Written Report | 15% |
| Case Presentation | 12% |
| Case Participation as Non-presenters | 3% |
| 1 st Exam | 18% |
| 2 nd Exam | 18% |
| 3 rd Exam | 18% |

Exhibit 3 shows the grading policy contained in the syllabus. Per the stipulated policy, the resultant final course average can be a good measure of a student’s performance in the course. The objective of the correlation analysis is to measure the strength of the association between two quantitative variables. The most commonly used measure of correlation is *Pearson product-moment correlation coefficient*, designated by *r*, and it is often referred to as *Pearson’s r*. This measure of correlation may be used between two sets of interval-scaled or ratio-scaled numeric variables without any requirements concerning the type of underlying distribution of the variables. Should there be a positive association between a student’s final course average and the student’s performance on each objective, it would lend credence to the reported results of the assessment. Table 4 contains these estimated correlation coefficients. All the coefficient estimates are positive, and they have the level of significance of at least 0.10. Objective 2 is to assess graduates’ understanding of the basic relationship between risk and return and its use in financial asset valuation. Students’ scores of Objective 2 have the largest correlation with their performance in the course. This finding is expected because the assessed item is one of the most important topics covered in the finance program as well as in the capstone class.

Table 4: Correlation Coefficient Estimates between the Final Course Average and the Four Objective Scores

| | Objective 1 Score | Objective 2 Score | Objective 3 Score | Objective 4 Score |
|---------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| The Final Course Average | 0.4777 (***) | 0.5659 (***) | 0.4429 (**) | 0.3096 (*) |

***-Indicates significance at the 1% level
 **-Indicates significance at the 5% level
 *-Indicates significance at the 10% level

CONCLUSIONS

The web-enhanced instruction mode refers to the course delivery method of having all course materials online and with multifaceted applications of Internet-based technologies while no seat time is reduced. The evidence presented in this paper suggests that this instruction mode certainly possesses potential benefits to students enrolled in finance courses. In the meantime, the evidence implies that applications of Internet-based technologies in teaching should be multifaceted. However, technologies may be best thought of as teaching tools. A better method to deliver a finance course may be that of in-classroom interactions between an instructor and students while having all pertinent course materials online throughout the semester. From the faculty’s perspective, the saved instructional time due to his giving out-of-class online quizzes permits the professor to cover certain topics in depth and additional course materials. For example, additional discussions on how to use *Excel* spreadsheets are done with the saved seat time. Results of the embedded online assessment given in a undergraduate finance capstone course delivered by this mode are analyzed. Students’ learning achievement of this newer pedagogical method is evident. Most students perceive this method as beneficial to their studies in finance. Hence, university administrators should provide

encouragements and incentives for finance faculty members to use Internet-based technologies in face-to-face instructions.

REFERENCES

- Bandy, D. (2005). In-Class Simulation of Pooling Safety Stock. *Decision Sciences Journal of Innovative Education*. V. 3, No. 2, pp 375-380.
- Bol, L., Hacker, D., O'Shea, P., and Allen D. (2005). The Influence of Overt Practice, Achievement Level, and Explanatory Style on Calibration Accuracy and Performance. *Journal of Experimental Education*. V. 73, No. 4, pp 269-290.
- Brothen, T., and Wambach, C. (2004). The Value of Time Limits on Internet Quizzes. *Teaching of Psychology*. V. 31, Issue 1, pp 62-64.
- Brothen, T., and Wambach, C. (2007). Internet vs. Classroom Access in a Hybrid Psychology Course for Developmental Students. *Research & Teaching in Developmental Education*. V 23, No. 2, pp 15-22.
- Conover, W. (1980). *Practical Nonparametric Statistics (second edition)*. New York: John Wiley & Sons.
- Daniel, D., and Broida, J. (2004). Using Web-based Quizzing to Improve Exam Performance: Lessons Learned. *Teaching of Psychology*. V 31, No. 3, pp 207-208.
- Daniel, J. (1999). Computer-aided Instruction on the World Wide Web: The Third Generation. *Journal of Economic Education*. Spring, 163-174.
- Dunbar, A. (2004). Genesis of an Online Course. *Issues in Accounting Education*. V. 19, No. 3, pp 321-343.
- Hein, S., & Stalcup, G. (2001). Using World Wide Web Utilities to Engage Students in Money, Banking, and Credit. *Journal of Education for Business*. V. 76, pp 167-172.
- Marcus, S. (2005). Does Online Participation Matter? A Case Study of a Hybrid Theatre Arts Course. *Campus – Wide Information Systems*. V. 22, Issue 2, pp 77-87.
- Martell, K. (2007). Assessing Student Learning: Are Business Schools Making the Grade? *Journal of Education for Business*. V. 82, Issue 4, pp 189-195.
- Michelson S., & Smith, S. (1999). Applications of WWW Technology in Teaching Finance. *Financial Services Review*. V. 8, pp 319-328.
- Michelson S., & Smith, S. (2004). Web Usage in Financial Education. *Advances in Financial Education*. V. 2, spring, pp 22-33.
- Norman, A., Chitra, G., Chou, J., Chowdhury, M., Dalal, A., and Fortson, K. (2000). Introductory Honors Economics on the Web. *Netnomics*. V. 2, pp 57-73.
- Peng, Z. (2006). Applying Internet-based Technologies to Teaching Corporate Finance and Investments. *Journal of Educators Online*, V. 3, No. 1.
- Peng, Z. (2007). Giving Online Quizzes in Corporate Finance and Investments for a Better Use of Seat Time. *Journal of Educators Online*. V. 4, No. 2.
- Schnusenberg, O. (2005). Time Is Money in Undergraduate Financial Management Courses. *SSRN Working Paper*.
- Smith, L., Clements, C., and Olson J. (2010). Local versus Standardized Content Assessment: Some Management Implications, or Why Bother? *Journal of Education for Business*. V. 85, Issue 5, pp 249-257.
- Terry, N. (2007). Assessing Instruction Modes for Master of Business Administration (MBA) Courses. *Journal of Education for Business*. V. 82, No. 4, pp 220-225.
- Thompson, K. (2004). A Conversation with Milton Blood: The New AACSB Standards. *Academy of Management Learning & Education*. V. 3, pp 429-439.
- Waite, J. (2007). Weekly Quizzing Really Works. *Tech Directions*. V. 66, Issue 7, pp. 16-21.
- Weisberg, M. (2011). Student Attitudes and Behaviors Towards Digital Textbooks. *Publishing Research Quarterly*. V. 27, No. 2, pp. 188-196.

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Managerial Creativity, Critical Thinking, and Emotional Intelligence: Convergence in Course Design

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ABSTRACT

This paper presents the rationale and design for a course in managerial creativity, critical thinking, and emotional intelligence. While these skills are thought to be essential to managers and leaders, many management textbooks limit coverage to a chapter and often a few pages or paragraphs. Time and curriculum constraints pose challenges to offering entire courses in each area, even though books and materials exist to do so. Because some of the principles in these three topic areas converge, they are suitable for both conceptual coverage and skill development within a single course.

Keywords: Course design, pedagogy, creativity, critical thinking, emotional intelligence

ESSENTIAL SKILLS

The rapid pace of change, increasing complexity, and competition in the marketplace call for managers and leaders with creativity skills (Isaksen, Dorval, & Treffinger, 2011). But there is more to it than just creativity for creativity's sake. Creative output must serve a purpose or need (Amabile, 1997; Leavy, 2002). Critical thinking also plays a significant role since this process determines the quality of our thought, which in turn impacts the degree to which products meet needs in cost-effective ways (Paul & Elder, 2008, 2012). The development of critical thinking skills has long been identified as an educational imperative (Hechinger, 1987) and even labeled a national priority (Brookfield, 1987; Newman, 1985).

Effective critical thinking skills are also not without antecedents. Just as critical thinking is important to creativity, emotions are considered central to the critical thinking process (Brookfield, 1987; McKee, 2011). Although the direction of causality might be unclear or even irrelevant to our purposes here, the importance of harmony between emotion and reason is established (Goleman, 1995). In the absence of emotional signals, knowledge and cognition are not enough to ensure effective decision-making (Bechara, H. Damasio, Tranel, & A.R. Damasio, 1997, 2005; Maia & McClelland, 2004). The frontal lobes of the brain are the seat of emotion and interconnect emotion, social conduct, and decision-making (Marzialli, 2006). Although relevant empirical work specific to management and leadership studies remains scant to date (cf. Yukl, 2010), the foregoing evidence suggests that managers and leaders must be able to adequately draw upon their emotions in order to engage in appropriate social conduct and effective decision-making.

LIMITED COVERAGE AND CURRICULUM CONSTRAINTS

Management, leadership, and organizational behavior textbooks do not provide extensive coverage of managerial creativity, critical thinking, and emotional intelligence (c.f. Bell & Smith, 2009; Daft, 2012; Dubrin, 2010; McKee, 2011; Nahavandi, 2012). This is not a critique on the quality of these books, because it is inappropriate to suggest that they should provide additional coverage of these topic areas since that is not their purpose. McKee (2011) provides more extensive conceptual coverage of creativity, critical thinking, and emotional intelligence than many others, but this treatment still does not support the time necessary for skill development.

Further, creativity, critical thinking, and emotional intelligence do not represent typical or functional business courses. Resource constraints at many universities would prevent offering a required course in each of these areas. It is also unlikely that three separate electives could be offered due to the same resource constraints, but since many business curriculums offer room for some electives, it is possible to offer one to address these topics. This is not a capricious proposal, but one based upon the convergence of concepts within managerial creativity, critical thinking, and emotional intelligence.

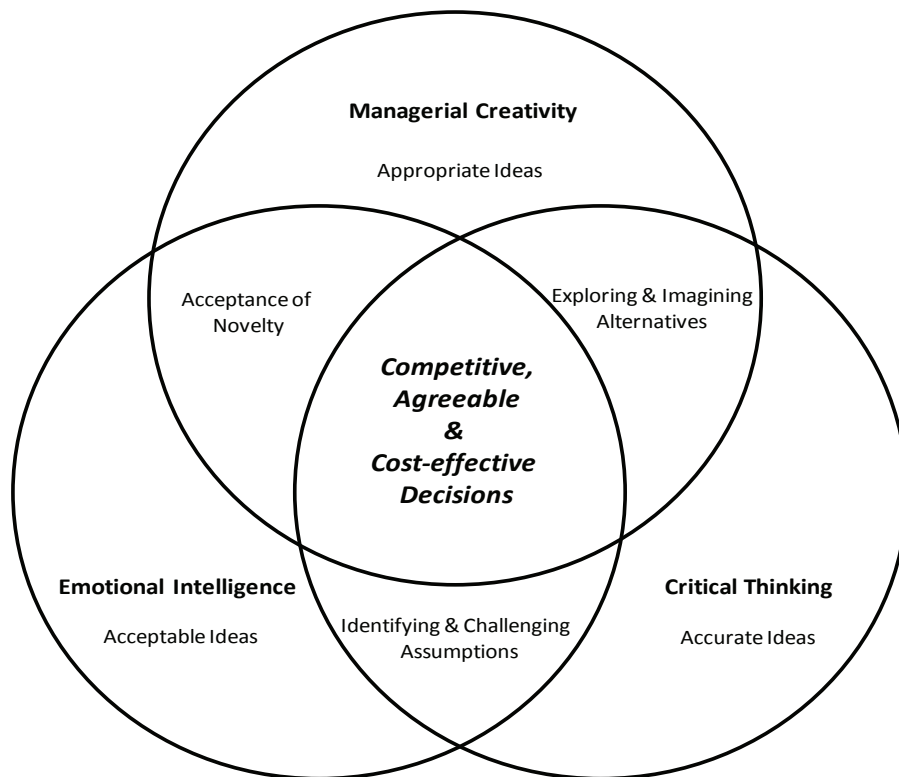
CONVERGENCE

Creativity is about the generation of new ideas that serve a purpose or meet a need (Amabile, 1997; Daft, 2012; Leavy, 2002). Critical thinking is about identifying and challenging assumptions, and exploring and imagining alternatives (Brookfield, 1987). The critical thinking process is further refined to include the analysis and evaluation of our thinking in order to improve that thinking (Paul & Elder, 2008, 2012).

While exploring and imagining alternatives aims to produce creative ideas, the process of identifying and challenging assumptions serves to examine values, thoughts, and behaviors at the emotive level. Creativity and emotional intelligence converge in the critical thinking process. Emotional intelligence guides individual thinking in ways that account for both the individual's and others' feelings and emotions (Salovey & Mayer, 1990) in order to distinguish bias from reason (O'Neill, 1985). Emotional intelligence and purposeful creativity converge at the point where individuals overcome resistance to novelty (Isaksen et al., 2011). Figure 1 presents a descriptive model of these convergences.

An exhaustive defense of this model is under development in another paper, but arguments for the convergence points exist in the literature. For example, Isaksen et al. (2011) argue not only for appropriate ideas, but for new ideas that others will find acceptable. Similarly, both Goleman (1995) and Brookfield (1987) discuss the impact of emotions upon the acceptance of novelty. Thus, the acceptance of novelty converges in the literature describing managerial creativity and emotional intelligence. Next, identifying and challenging assumptions hinges not only upon one's skill to do so (Brookfield, 1987), but also upon one's emotional willingness to do the same (Brookfield, 1987; Goleman, 1995). Finally, the convergence of appropriate ideas and accurate ideas is governed by the process of exploring and imagining alternatives. This is described from the standpoint of creativity in Isaksen et al. (2011) and critical thinking in Brookfield (1987). The center of the model employs ideas from each of these three major works.

Figure 1: Convergence of Concepts in Managerial Creativity, Critical Thinking, and Emotional Intelligence

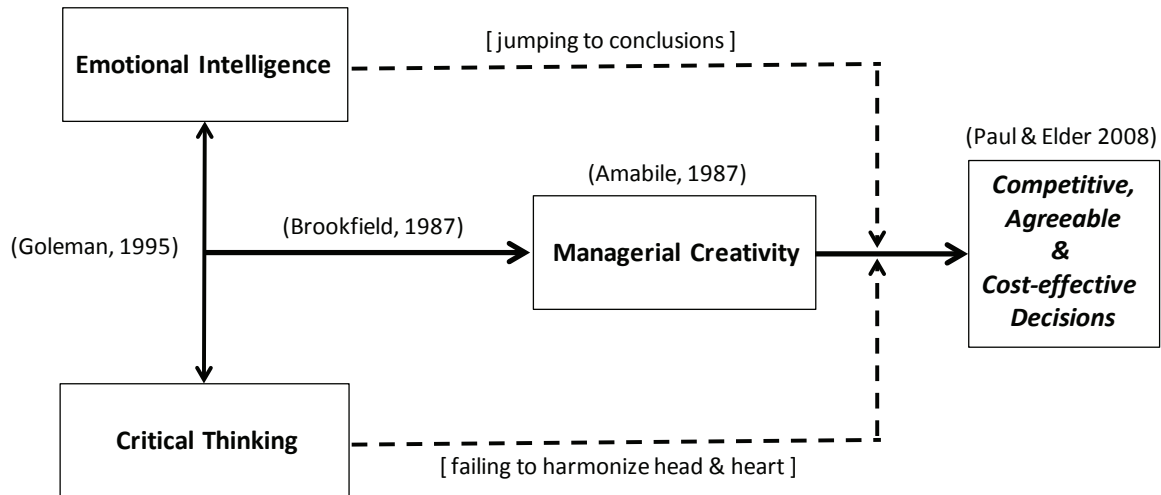


In addition to concept convergence, Figure 1 proposes that each process generates a particular kind of idea. Emotional intelligence qualifies ideas as acceptable, while creativity determines their appropriateness. Critical

thinking captures the extent to which an idea accurately reflects the reality in which it will be executed. Acceptable, appropriate, and accurate ideas converge toward competitive, agreeable, and cost-effective decisions.

Although it is beyond the scope of this paper to fully defend a causal model of these relationships, it is appropriate to posit such a model based upon the foregoing citations. The arguments for the causal model are also being fully developed in another paper, but the existing literature points to causal relationships as described in the next paragraph. Not illustrated in this model are the proactive or intervention strategies that can be employed by organizations to foster both personal and professional creative climates (Mauzy & Harriman, 2003). Thus, the model presumes a catalyst for the process which invokes emotional intelligence and critical thinking followed by a harmony between the two, which leads to managerial creativity.

Figure 2: Causal Model of Relationships between Managerial Creativity, Critical Thinking, and Emotional Intelligence



Goleman (1995) indicates that there must be harmony between emotion and thought or else decision-making is subject to flaws. The extent to which the critical thinker circumvents emotion will moderate the relationship between creativity and effective decisions. Similarly, when critical thinking is bypassed, emotions will cause individuals to jump to conclusions, which again moderate the relationship between creativity and effective decisions. Harmony between emotion and thinking reduces barriers to creativity caused by anxiety or fear (Brookfield, 1987; Isaksen et al., 2011), thus yielding managerial creativity that is both novel and appropriate (Amabile, 1987). In sum, the critical thinking processes accompanied by emotional intelligence generate quality decisions (Paul & Elder, 2008, 2012) through managerial creativity.

COURSE DESIGN

This course is designed to do three fundamental things. First, it exposes students to the concepts relevant to managerial creativity, critical thinking, and emotional intelligence. Second, the course gives students the opportunity to develop skills in these areas through various exercises. Finally, students are expected to apply these processes to generate a positive outcome for a real organization. The essence of the syllabus is presented in the following sections and the course outline appears in Figure 3.

Figure 3: Course Outline/Schedule

| Lesson | Topics | Assignments |
|---------------|---|--|
| #1 | Course Orientation, Personal Introductions, Syllabus, Philosophy of Learning | As assigned in class: What is creativity? What is critical thinking? What is emotional intelligence? |
| #2 | Introduction, Right Answers, Logic & Rules | von Oech: Pages 1-24 & Chapters 1-3 |
| #3 | Practicality, Frivolity, Responsibility, Foolishness, & Ambiguity | von Oech: Chapters 4-8 |
| #4 | Error, <i>Un</i> -creativity & other issues | von Oech: Chapters 9, 10 & pages 171-229 |
| #5 | Introduction & Critical Thinking in Adult Life | Brookfield: Chapters 1-4 |
| #6 | Approaches to Developing Critical Thinking | Brookfield: Chapters 5-7 |
| #7 | The Workplace & Political Issues | Brookfield: Chapters 8-9 |
| #8 | Critical Judgments, Active Learning & Facilitating Critical Thinking | Brookfield: Chapters 9-12 & Epilogue |
| #9 | Aristotle's Challenge, Emotions | Goleman: Pages xi-xiv, Chapters 1 & 2, Review Appendices A-F |
| #10 | The Nature of Emotional Intelligence | Goleman: Chapters 3-8 |
| #11 | Emotional Intelligence Applied | Goleman: Chapters 9-11 |
| #12 | Emotional Application & Literacy | Goleman: Chapters 12-16 |
| #13 | Causal relationships: managerial creativity, critical thinking and emotional intelligence | As assigned in class |
| #14 | Journals & Team Project | Presentation of Personal Journals and Team Project |

Course Description

This course examines managerial thinking processes through the use of existing creativity, critical thinking, and emotional intelligence concepts. The course attempts to develop each student's ability to engage in critical thinking and emotional intelligence for creative and purposeful outcomes. Students will further consider the impact of their emotions upon not only their own managerial thinking, but also the emotions of organization members generated in response to manager actions. Students will apply each of the three processes to propose a positive course of action for a real-world organization.

Course Objectives

The main objective of the course is to initiate the development of managerial creativity capability, critical thinking skills, and emotional intelligence in the student, as well as expose students to the concepts governing those areas. The long term goal is for students to be able to actively continue their development in each of these areas and apply their skills toward the betterment of their organizations and personal life. More specifically, upon completion of this course each student should:

1. Know the working definitions of managerial creativity, critical thinking, and emotional intelligence.
2. Understand the causal relationships between managerial creativity, critical thinking, and emotional intelligence, as well as other factors impacting those relationships and concepts.
3. Be able to assess his or her level of managerial creativity capability, critical thinking skills, and emotional intelligence.
4. Know and understand various strategies, activities, and exercises that contribute to the development of creativity, critical thinking, and emotional intelligence.

5. Have engaged in a variety of activities and exercises that contribute to the development of creativity, critical thinking, and emotional intelligence.
6. Understand the role of managerial creativity, critical thinking, and emotional intelligence in leading organizations and making effective managerial decisions.
7. Examine how leaders promote managerial creativity, critical thinking, and emotional intelligence within organizations.
8. Show evidence of the attempt to personally develop managerial creativity capabilities, critical thinking skills, and emotional intelligence.
9. Learn about managerial creativity, critical thinking, and emotional intelligence from real-life cases.
10. Produce a product or outcome that has a real-life positive impact as the result of personal managerial creativity, critical thinking, and/or emotional intelligence.

Books

In addition to achieving course objectives, some of the relevant considerations in choosing books for this course include cost, the amount of time necessary to make use of the book, depth of topic coverage, and contribution to student skill development. Numerous resources exist in the form of books, articles, and websites. The challenge is to choose from among many to best achieve the course objectives. In the first offering of this course, the professor chose the following three books:

1. *A Whack on the Side of the Head: How You Can Be More Creative, 3rd Edition* by Roger von Oech, Warner Books, 1998.
2. *Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting*, by Stephen D. Brookfield, Jossey-Bass Publishers, 1987.
3. *Emotional Intelligence: Why It Can Matter More Than IQ*, by Daniel Goleman, Bantam Books, 1995.

The rationale for these choices included their status as classic works in the field. While numerous other effective resources exist (see Appendix), some are best suited to the professor's background research and others more appropriate for classroom use by students.

Graded Assignments

The graded assignments in the course are designed to achieve the course objectives. The objective of the contribution category is to ensure participation during class. The reviews of journal articles pose the opportunity to cover topics in greater depth, as well as breadth. The cases, as well as the article reviews also ensure students have the opportunity to participate in class discussions. The learning journal captures an individual's level of development through reflections upon creativity, thinking, and emotional processes not necessarily made evident in the other assignments. The project ensures the application of learned concepts and offers evidence of skill development. The final exam assesses understanding of the course concepts.

Contribution to the Seminar Learning Effort

This category is intended to capture both the quantity and quality of a student's participation and interaction that contributes in a meaningful way to producing a fruitful learning environment for all participants. It also includes completion of in-class and take-home assignments.

Reviews of Journal Articles

Submit a 3-5 page critical review of your assigned reading. These reviews cannot be submitted late since the content is applicable to the assigned lesson. If they are submitted prior to class the reviews can be submitted as MS-Word attachments to the Blackboard system. The review must be discussed by the author during the class for which it was assigned.

Presentation of Creativity Case

Present a detailed description in-class of a real-life case that illustrates a creative and positive outcome. The use of video clips, tangible illustrations, or other documentation, such as a handout for class members is required. There is a 20-minute time limit and a 10% overtime penalty.

Learning Journal

Write 3-5 pages each week capturing your learning and particular personal assessment and development of your

managerial creativity capability, critical thinking skills, and emotional intelligence. The Journal must be submitted periodically during the semester with a final complete copy submitted at the end of the semester. The essence of the Journal must also be presented on the last day of class.

Project

Work in teams to produce a product or outcome that has a real-life positive impact as the result of your personal managerial creativity, critical thinking, and emotional intelligence.

Final Exam

The final exam consists of comprehensive coverage of the course concepts, classroom illustrations and materials in accordance with the course objectives.

THE ACTUAL EXPERIENCE AND STUDENT FEEDBACK

Given that this is a course involving managerial creativity, critical thinking, and emotional intelligence, it may come as no surprise that the professor distributed the syllabus on the first night of class and then promptly had the students follow his example as he held it up and tore it to pieces. This act was symbolic, but also sincere. Although the syllabus remained the guiding structure to provide order throughout the course, students were invited to immediately engage in the creativity process to determine how they would achieve the course objectives in their weekly class activities, as well as assignments.

The activity of creating the course was done within the parameters of the working definitions for each of the three topic areas discussed during the first class. For example, creative ideas had to be both new and appropriate to the course objectives. Critical thinking processes were particularly appropriate for identifying and challenging assumptions about what could and could not be done in the classroom, for example, tearing up the syllabus. After doing that, students were free to explore and imagine alternatives, as befitting Brookfield's (1987) definition of critical thinking.

Emotional intelligence played a significant role in the first night of class because each student responded differently to the syllabus exercise. While some students became excited about the prospect of creating the course, destroying the syllabus produced anxiety in others. One student even dropped the class because he did not want to deal with the ambiguity. When later queried by the professor, the student said he preferred a traditional classroom approach where everything was specified ahead of time so that he could plan his semester. He was also uncomfortable with the idea that the professor was not the sole authority in deciding what would happen in the classroom. Those who were initially apprehensive became more comfortable with the class when they realized that the process was orderly and chaos was not an option.

Class Processes and Activities

The students focused their efforts upon creating the processes or methods by which they would achieve the established course objectives. Initially, many of the students approached this task in a traditional or linear way. For example, they began to divide tasks amongst themselves in a functional manner. Then the professor introduced the notion of lateral thinking. Some creativity exercises were also conducted. These processes were effective in getting the students to think about things in a different way. The professor identified one of the challenges associated with dividing tasks, which is the problem of integrating the outcomes so that everyone in the class achieved the course objectives. At that point students began to discuss how they would communicate and coordinate effectively. Deciding what they would do was only one part of the problem. They also discovered that they needed to record their decisions so that everyone would know what they had decided, what needed to be done, how it was to be done, and when it was to be done.

Among some of the novel activities that the students generated throughout the semester was the idea to employ a cost-free service and create a website for the class. One of the challenges they faced was a lack of expertise; however, they soon realized that with some exploratory effort they would be able to accomplish this task. They used one service for the first two weeks, but then soon found a service that was easier to use. Although the professor thought that the websites were never made very attractive, the students used them to post Learning Journal entries reflecting upon previous classes, assign tasks for the upcoming class, post portraits and professional background information, record updates on their class project as it progressed, and to serve as a repository for important course

documents.

Another novel idea that the class generated was to hold meetings in a different location whenever the class was scheduled to meet. Early readings on critical thinking and creativity suggested that different environments would prompt different modes of thinking, which would lead to more creative and critical thought processes. The class met in various rooms on campus, but also off-site when particular projects were proposed, for example at a local business. The class also adopted the motto “learn to unlearn,” attributed to the famed *Star Wars* character Yoda.

One of the more important tasks in the course was to determine a project that would allow the students to exercise managerial creativity, critical thinking, and emotional intelligence. This was a graduate level elective course with only 12 students, so they decided to form one team to accomplish the project. With 12 people it was a challenge to agree on a project, as well as identify suitable projects. As at other times during the course, the professor intervened with creativity and critical thinking exercises. Particularly useful were the concepts associated with thinking gray and free (Sample, 2002). Students began asking what they might do to improve the educational institution around them, but struggled with generating good ideas. Instead of asking what would be possible, the exercise posed the question, what would be impossible to do at this institution? One of the impossible ideas put forth was to build a casino in the middle of the campus which would generate extra revenue. This and other wild ideas eventually led to the general idea of focusing upon improving revenue-generating operations. Prior to listing impossible ideas, the group had not thought about revenue generation as a goal on a college campus.

The Team Project

Numerous stops and starts occurred over the next four weeks regarding the choice of a project. The students conducted extensive research including financial analysis, bringing potential consumers of their ideas to class, and consulting with the head of campus auxiliary services. A promising idea for a campus revenue-generating service was dismissed after a great deal of progress when some students felt like the campus already had a similar project underway. Unfortunately, it turned out that the campus was not deeply committed to that effort and the students might have missed a good opportunity. However, they soon found a local business in need of creative solutions involving physical space limitations that the store managers could not determine how to resolve in the near term. After the students visited the site they were very excited about producing a tangible and creative outcome, which could be accomplished before the end of the semester.

The students visited the site which was a sporting goods store with limited floor space and excess inventory. Although the store had a warehouse and could receive deliveries quickly, the managers still wanted to ensure that they had all of the various products available for viewing on the store floor. They needed a short-term, low-cost solution to improving the store appearance and customer flow through the product displays.

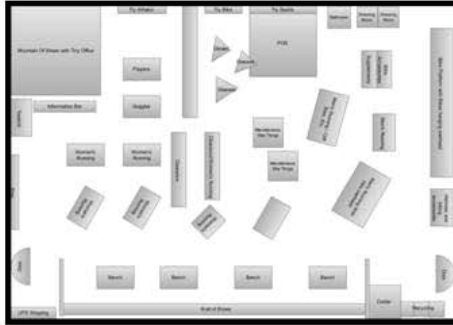
There was a temptation on the part of some students to jump to conclusions about what should be immediately rearranged in the store; however, the professor once again engaged them in critical thinking exercises to ensure that they were identifying and challenging assumptions, and exploring and imagining alternatives. Once they were in the exploration mode they began considering ways to visualize solutions. They had taken pictures at the site and were able to create a relatively accurate graphic representation of the floor space, racks, shelving, storage areas, and existing pathways. They began to realize that they could not accomplish everything they wanted with just a two-dimensional drawing. It was too difficult to change, so they sought to produce an adjustable product. They then created a two-dimensional model which allowed them to move things around and illustrate different options.

Although the two-dimensional model was close to scale, some students expressed concern about the congested appearance of the store regardless of good flow through the product displays. This concern led to a proposal to create a three-dimensional scale model, including an average-sized human figure. They realized that they would need a cost-effective approach to creating this model, as well as determining if people in the group had the talent to produce it. Part of the team worked on the math involved in ensuring the racks, shelving, and other displays were accurate and to scale, while others worked on developing the physical components of the model. The final outcome was not only a set of particular options for various floor plans, but the delivery of a working model to the store managers who could, in turn, make changes to the plans and visualize options based upon their expertise and experience.

Ten weeks after the class ended and the students briefed the store managers, the professor received the following text in an e-mail from one of the students:

I just wanted to touch base with you on our class . . . project last semester. I am not sure if you have been by since we made our presentation, but a great deal has changed there. The majority of our ideas were used in re-designing the store to make better use of the space--and it has really paid off. I was up there this past weekend and was very surprised at how well it turned out. As proof to how well our critical thinking class worked, you should check out the store sometime to see the difference it made. Since I stopped by and was impressed, I figured I would update you on that project. Hope all is well!

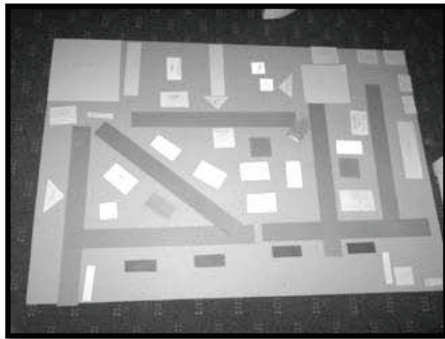
Figure 4: Class Photographs



Graphic created after site visit



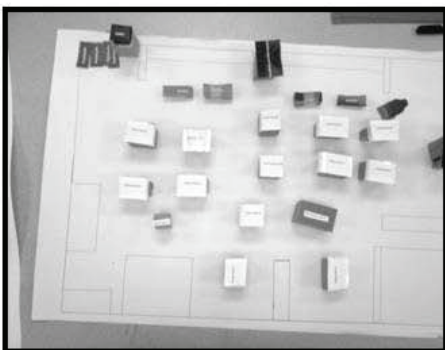
Creating two-dimensional model



Two-dimensional adjustable model



Creating three-dimensional model



Three-dimensional adjustable model to scale



Class briefs store managers

Learning Journal Quotes by Student 1

I was really excited to start this class, and after the first class meeting I am even more excited! I tend to do everything “by the book” with no deviation from a set of rules. In doing this, I tend not to be too creative. I typically look to past precedence to try to figure out what to do when a situation arises that I do not know what to do . . . [The Professor] asked us to rip up our syllabi because the purpose of the course is to “learn to unlearn” and in so doing, exercise our “creative muscles.” I did not want to rip up the syllabus because I am a person that needs structure and organization. But as much as I did not want to rip up the syllabus, I know it is good for me. Having no control over how the class turns out and just letting it progress from each class meeting is very clever. I look forward to seeing where we will end up in the class. I like that there is no direction and it is up to us, the students to take the class where we want. I am a little unsure about a final project idea. Sometimes, I immediately get an idea for my final paper or project. But for this class I have no idea what I will do. I think I will continue to think about it and hope that the rest of the semester will lead me to an appropriate topic . . . After today’s class I feel we gave the class some structure and direction. I feel that it is good to give us some direction with some assignments. This will make sure we clearly understand the terms and purpose of the class. The way each class is planned out will provide us with a forum to discuss our independent research on the given topic. This is then followed by an exercise and discussion regarding the topic. Next we will discuss the real world implications of our newly acquired knowledge. This new knowledge will then translate into our work environment to help improve it in terms of creative management, critical thinking, and emotional intelligence. And finally, we will wrap it up with any closing remarks followed with an introduction to the next topic. This introduction to the new topics will let us discuss any initial thoughts we have about the topic and kind of hash out any preconceived notions we have about the issue . . . Although some classmates still seemed confused about the class and the direction we were taking, I feel I have a good idea of what is going on. Every week we write journal entries discussing our opinions and ideas. Then after each class, one person who was appointed as the class scribe will post on our class blog about our class minutes. This will allow us to recap our class activities in order to track our progression. This is done personally through our journals, and collectively as a class through our blog . . . Today’s class was a lot of fun. First we discussed our articles and then proceeded to take the “Rate your Creativity” questionnaire . . . Another example of this is when we were doing those exercises from the book *Lateral Thinking*. I was very literal in my thinking of how to solve the problems. I need to think more outside the box . . . I find it hard to think “outside the box” and recognize alternative options. That is definitely something I need to continue to work on.

Learning Journal Quotes by Student 2

I am pretty uncomfortable with our first class. When I explained to my wife what we did in class last night she asked me how I felt. When I told her I was a bit worried, she was not surprised. I plan everything I do, at least the things I can control, so the fact that I have no idea what the class will involve, what I am going to be graded on, and how much time and work the class will require makes me very uneasy . . . I am not going to take the easy way out and try and find another more traditionally structured class. What does [another professor I know] say . . . things outside your comfort zone, take risks . . . that is how we grow and learn. Regardless of what I learn about creativity, critical thinking or emotional intelligence, I will hopefully learn to be more flexible and comfortable in a more unstructured learning environment . . . I usually prefer proven methods and solutions to problems . . . not very creative. I hope to overcome my fear of new ideas and solutions . . . I think this is going to be a fun class. Most of the other students in the class seem easy going and interested in a not too serious approach to learning. This should help me overcome some fears about a class on creative management . . . I am starting to feel a little more comfortable with the class now that we have some structure, and I know what to expect. I did my research and found a good article about teaching creativity to adults. Most of the theories on creativity and learning creativity were taken from other books or sources, but the author presented them in a clear and concise way. I am encouraged by the theory that everyone has the capability to be creative . . . The course as a whole had significantly increased my understanding of creativity as a process, not a personality trait. By using a process that promotes creativity, like brainstorming, I believe anyone can be creative, and any group can come up with creative ideas.

Learning Journal Quotes by Student 3

Taking Managerial Creativity was truly a novel experience for me, for I have never been in such an open minded and free spirited class . . . This intellectual liberty allowed us to both distinctively and instinctively think based upon our learned skills and innate talents. We were not just learning about managerial creativity by reading books or listening to lectures, but through actively participating in topics from the grassroots in collectively formulating problems and offering solutions to them. In doing so, this proactive approach allowed the learned processes to be much more effectively and efficiently imprinted upon our minds. We can later utilize these vital tools to explain and

solve actual dilemmas in the real world, whether it is in our personal lives or in the work environment . . . Not only were we able to successfully learn from the many brilliant ideas created from our hands-on approach, but also from the futile ones as well. Without failure, one cannot fully learn and adapt from his mistakes. It is inevitable that we will fail in some fashion, whether it is in the form of a sterile suggestion to a solution or the ineffectiveness of the process in which we implement it. Yet it is how we react and adjust to these failures (hopefully few) that will truly determine our ultimate success . . . Lastly, another uniquely didactic attribute to the class structure (or lack thereof) is our decision to convene at different locations for certain classes based upon the specific theme. Not only did we attempt to expose the principal reasons causing [real-world] problems while offering solutions to them, but we did so in the actual locations themselves. This superbly facilitated our comprehension of the subject matter while literally illustrating [the fundamental areas to address].

DISCUSSION

The course was generally well received by students and some comments suggest that undergoing the experience of creating something in a real-world context was an important part of learning. The professor's deliberate intervention with creativity and critical thinking exercises was an effective means to ensure that students engaged in developmental processes and avoided focusing solely upon outcomes. Emotional intelligence played a significant role in the course. Students had to deal with their feelings about the course, their feelings about negotiating processes and topics with other students, and the impact of their behaviors upon the emotions of other students.

REFERENCES

- Amabile, T.M. (Fall 1997). Motivating creativity in organizations: On doing what you love and loving what you do. *California Management Review* 40(2), 39–58.
- Bechara, A., Damasio, H., Tranel, D., & Damasio, A.R. (1997). Deciding advantageously before knowing the advantageous strategy. *Science*, 275, 1293–1295.
- Bechara, A., Damasio, H., Tranel, D., & Damasio, A.R. (2005). The Iowa gambling task and the somatic marker hypothesis: some questions and answers. *Trends in Cognitive Sciences*, 9(4), 159-162.
- Bell, A.H., & Smith, D.M. (2010). *Developing leadership abilities* (2nd ed.). Boston, MA: Prentice-Hall.
- Brookfield, S.D. (1987). *Developing critical thinkers: Challenging adults to explore alternative ways of thinking and acting*. San Francisco, CA: Jossey-Bass pub.
- Daft, R.L. (2012). *Management* (10th ed.). Mason, Ohio: South-Western, Cengage Learning.
- DuBrin, A.J. (2010). *Leadership: Research, Findings, Practice, and Skills*. Mason, Ohio: South-Western, Cengage Learning.
- Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. New York: Bantam Books.
- Hechinger, F.M. (1987, February 24). Thinking critically. *New York Times*, p. 27.
- Isaksen, S.G., Dorval, K.B., & Treffinger, D.J. (2011). *Creative approaches to problem solving: A framework for innovation and change* (3rd ed.). Los Angeles, CA: Sage pubs.
- Leavy, B. (2002, Autumn). Creativity: The new imperative. *Journal of General Management*, 28(1), 70–85.
- Maia, T.V., & McClelland, J.L. (2004). A reexamination of the evidence for the somatic marker hypothesis: What participants really know in the Iowa gambling task. *Proceedings of the National Academy of Sciences U. S. A.*, 101, 16075–16080.
- Marziali, C. (2006). Emotional rescue. *USC Trojan Family Magazine*, 38(2), 36-43.
- Mauzy, J., & Harriman, R. (2003). *Creativity, Inc.: Building an inventive organization*. Boston, MA: Harvard Business School Press.
- McKee, A. (2011). *Management: A focus on leaders*. Boston, MA: Prentice-Hall.
- Nahavandi, A. (2012). *The art and science of leadership* (6th ed.) Boston, MA: Prentice-Hall.
- Newman, F. (1985). *Higher education and the American resurgence*. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.
- O'Neill, T. (1985). *Censorship—opposing views*. St. Paul, Minnesota: Green Haven Press.
- Paul, R., & Elder, L. (2008). *The miniature guide to critical thinking: Concepts and tools*. Dillon Beach, CA: The Foundation for Critical Thinking.
- Paul, R., & Elder, L. (2012). *Critical thinking: Tools for taking charge of your learning and life*. Boston, MA: Pearson Education.
- Salovey, P., & Mayer, J.D. (1990). Emotional intelligence. *Imagination, Cognition, and Personality*, 9, 185-211.
- Sample, S.B. (2002). *The contrarian's guide to leadership*. San Francisco, CA: Jossey-Bass pub.
- Yukl, G. (2010). *Leadership in organizations* (7th ed.). Upper Saddle River, NJ: Pearson Education, Inc.

APPENDIX

Sample of Resources

| Title | Author(s) | Publisher | Year |
|--|---|--------------------------------------|-------------|
| <i>Critical Thinking: Tools for Taking Charge of Your Learning and Life</i> | Richard Paul & Linda Elder | Pearson Education | 2012 |
| <i>Creative Approaches to Problem Solving: A Framework for Innovation and Change, 3rd Edition</i> | Scott G. Isaksen, K. Bryan Dorval, & Donald J. Treffinger | Sage | 2011 |
| <i>The Miniature Guide to Critical Thinking: Concepts and Tools</i> | Richard Paul & Linda Elder | The Foundation for Critical Thinking | 2008 |
| <i>Creativity in Science: Chance, Logic, Genius, and Zeitgeist</i> | Dean Keith Simonton | Cambridge University Press | 2004 |
| <i>Creativity, Inc.: Building an Inventive Organization</i> | Jeff Mauzy & Richard Harriman | Harvard Business School Press | 2003 |
| <i>The Do-It-Yourself Lobotomy: Open Your Mind to Greater Creative Thinking</i> | Tom Monahan | John Wiley & Sons | 2002 |
| <i>The Contrarian's Guide to Leadership</i> | Steven B. Sample | Jossey-Bass | 2002 |
| <i>Mozart's Brain and the Fighter Pilot: Unleashing the Your Brain's Potential</i> | Richard Restak | Random House | 2001 |
| <i>Getting It Done: How to Lead When You're Not in Charge</i> | Roger Fisher & Alan Sharp | HarperCollins | 1999 |
| <i>Keep Your Brain Alive: 83 and Aerobic Exercises to Help Prevent Memory Loss and Increase Mental Fitness</i> | Lawrence C. Katz & Manning Rubin | Workman | 1999 |
| <i>The Contrarian Manager</i> | Richard H. Jenrette | McGraw-Hill | 1998 |
| <i>Creativity, Innovation, and Quality</i> | Paul E. Plsek | ASQC Quality Press | 1997 |
| <i>Emotional Intelligence: Why It Can Matter More Than IQ</i> | Daniel Goleman, | Bantam Books | 1995 |
| <i>Getting Things Done When You're Not in Charge</i> | Jeffrey M. Bellman | Berrett-Koehler | 1992 |
| <i>Handbook for Creative and Innovative Managers</i> | Robert Lawrence Kuhn | McGraw-Hill | 1988 |
| <i>The Thinking Game: A Guide to Effective Study</i> | Eugene J. Meehan | Chatham House | 1988 |
| <i>Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting.</i> | Stephen D. Brookfield | Jossey-Bass | 1987 |
| <i>Teaching Students to Think Critically</i> | Chet Meyers | Jossey Bass | 1986 |
| <i>The Courage to Create</i> | Rollo May | W. W. Norton & Co | 1975 |
| <i>Lateral Thinking: Creativity Step by Step</i> | Edward DeBono | Harper Row | 1970 |

Profitable Dentistry: A Teaching Case in Entrepreneurship

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ABSTRACT

This teaching case examines a consulting practice that helps dentists achieve profitability. The case provides an interesting contrast between the management advice offered to the clients (dentists) and the management style used for the consulting company itself. Clients are provided with a proven plan that spells out specific actions for success; however, the consulting practice is managed in a more experimental fashion. Since the same individual is responsible for both approaches, this leads to an opportunity for discussion of the relative advantages of each approach. The case culminates with a decision point for the founder where he considers the impact of free internet resources on his business. The case may have applicability in a wide range of settings: 1) It can be used to discuss the difference in plan-based management and experimental management; 2) It can be used to examine the management of practices in the health care industry; 3) It reveals the evolution of an entrepreneur and his business; and 4) It provides an example of an entrepreneur facing transformative forces from the Internet. In this latter example, the case itself does not provide detail on the Internet transformation, rather it provides a setting that might be a starting point for a written analysis by students.

Keywords: Entrepreneurship, Teaching Case Study, Business Planning, Dental Practices, Internet and Commerce, Professional Services

For an electronic copy of this case and a teaching note that can be used for educational purposes, visit <http://cases.8chs.com>

PROFITABLE DENTISTRY

Dr. Woody Oakes reviewed the latest income figures from his newest venture, “*The Profitable Dentist*” magazine. He lost \$100,000 in its first month of production. Did it really make sense to produce a print magazine in the internet age?

Background – Dental Training

The practice of dentistry is far from new. Reports of dentistry date back over 7,500 years with the discovery of molar crowns from bodies found in a graveyard (Coppa, et. al., April, 2006). One of the earliest dentists in America, John Baker, arrived in 1760 from England. Surviving documentation of early dental practices include newspaper advertisements, such as the one by Paul Revere who in 1768 announced his training from ‘Mr. Baker’ (Cahn, 1971).

Throughout history, the standards for formal dentistry training were minimal. Even in the early twentieth century, some who practiced dentistry had no formal schooling. Modern dentistry, however, trained dentists as scientists. Upon completing high school, most aspiring dentists earn a four-year college degree. Seventy-five percent of these students major in science or in pre-med (ADEA Official Guide, 2009). In the summer before their senior year, students will apply to one or more of the 57 American Dental Association (ADA) - certified Dental Colleges. The ADEA reports that only 38% of applicants are accepted. In most cases, this competitive application process requires grade point averages of above 3.0, and relatively high scores on the Dental Admissions Test. The admissions decision may also be influenced by written recommendations and by other factors.

Successful students must master the required science curriculum, and will prove to be accurate diagnosticians. In addition, they must have the hand-eye coordination and motor skills to operate with millimeter precision inside a patient’s mouth. Typically a program includes a clinical internship for hand-on experience at dentistry. Upon successful completion of the program, the student will earn either a Doctorate in Dental Surgery (DDS) or Doctor of Dental Medicine (DDM) degree, depending on the college. Although there are subtle differences in these degrees, they are relatively equivalent. Licensure as a practicing dentist depends on the state regulations, and it may require a state or national board exam.

Around 4,500 dental graduates each year join the existing workforce of over 120,000 dentists (BLS Occupational Outlook Handbook, 2010-2011). Some start out as an associate (employee) in the practice of an existing dentist where they can learn about their profession. However, according to the bureau of labor statistics most choose to eventually become either solo proprietors (75%) or partners in practices (15%).

The Opportunity for the Profitable Dentist

After eight years of post-secondary education, today's dentists are scientists well-grounded in diagnosis and treatment skills. Yet their first task is not dentistry. Opening a new practice involves site selection, interior design, and selection of dental equipment. Other decisions include staffing, billing and scheduling software, and an almost unlimited list of further details. Starting up a dental shop can lead to hundreds of thousands dollars of debt. Furthermore, over 90% of graduates already have outstanding educational loans. The average student will owe over \$160,000 (ADA's Financial Planning Issues, 2010).

Running the business brings new issues. Marketing, customer acquisition, and scheduling are all operational tasks. Finally, as the customers appear, the dentistry begins. Subsequent activities include billing, bill-payment, payroll, and convincing one-time customers to convert to repeat customers. Throughout the many decisions that must be made, there are many opportunities for mistakes. Some potential issues are obvious and typical of any small business. For example, a bad location or bad staffing decisions may lead to disasters.

In addition there are special issues that are unique to dental practices. For example, the highest revenue comes from monetizing the dentist's time in sufficiently high-value procedures. The trick is to offload support activities and low revenue procedures onto lower cost employees. Off-loaded duties include dental activities such as prophylaxis (teeth cleaning), which can be delegated to dental hygienists. But it also includes management and support activities (e.g. scheduling, marketing, billing, and employee recruiting). All of these activities can be shifted to low-priced staff so that the dentist can spend time in high revenue generating activities.

Oftentimes new dentists will find themselves underprepared for these business tasks. Most of their training involves dentistry, not running a business. Many dentists receive minimal training in the art of building and running the business, or as it is known, 'practice management.' In some cases, these trained scientists may be orientated towards decision processes that seem in direct opposition to principles of profitable businesses.

Becoming the Profitable Dentist

Upon graduation from Hanover College in 1969, Woody Oakes was determined to make his career in dentistry. Despite repeated rejections, he continued to apply to dental school until he was accepted by the Indiana University School of Dentistry where the acceptance rate was only 3%. He started his career as a practicing dentist in 1974 as an associate working in an existing practice. Two years later he struck out on his own and began a new practice. In the 1980s, Woody wrote and self-published a book: "The Winning Combination". He describes it as follows:

... a kind of "rags to riches" story to help dentists create large, quality, profitable practices. That book went on to become the most popular practice management book for dentists ever written. This also led to national attention and speaking invitations.

This book sold over 50,000 copies. Dentists across the United States began to write Woody and ask for his advice. In particular, one dentist, Travis, began to consult regularly with Woody. Travis and Woody had weekly calls to discuss issues in Travis' dental practice. Travis began to see progress in his own business and he became more excited by guidance that Woody offered. One day Travis called Woody with a proposal: he suggested that the two work together to publish a newsletter with advice for practicing dentists. Travis explained that he had detailed notes from his weekly calls with Woody, and that those notes could be the basis of the newsletter.

The newsletter debuted and soon reached 600 subscribers. Woody was impressed by the relative ease with which the newsletter spread and wondered what he could do with more aggressive marketing. He proposed a \$100,000 marketing campaign to spur adoption of the newsletter. The offer to new subscribers: \$150 for a one year subscription and a guarantee for a more profitable practice or a refund to the subscriber. Woody's partner and his family questioned the concept, but Woody felt that it was the correct move and he went forward. As a result of the campaign the newsletter subscriptions grew to over 12,500.

One winter day, Woody and his partner began to talk about how much they would enjoy a trip to a sunny climate. They came up with an idea for a teaching seminar in a beach resort. They announced the seminar in their next newsletter and within 30 days had over 700 people signed up – and no seminar to offer. Dr. Oakes began to look for a site. Calls around the country found a cancellation in Destin, FL and the seminar was on. He booked entertainment, including the band “The Kingsmen”, contacted leading educators as speakers and ‘edutainment’ came to dental education. After delivering a well-received seminar, Woody returned home to find a scolding letter awaiting him. Some of the old-guard dentists were uncomfortable with mixing fun and education. Furthermore, they thought that profitability shouldn’t be a significant concern of dentists.

However, Woody was already working on his next venture. A large company had taken a medical camera and adapted it for use in dental treatment. With this \$45,000 device, dentists could take pictures inside a patient’s mouth and show the patient exactly what was going on. However, Dr. Oakes questioned whether \$45,000 was a reasonable price for this device. One weekend he worked in his basement to build a better solution. He built a \$2,000 camera that he could sell for \$5,000.

Now Woody needed a sales outlet for his patented camera. He sent out a mailing to his local area advertising a new seminar. Seminar attendees would pay \$5,000 to understand how the new camera would improve their practice. If they agreed that the camera was valuable Woody would keep their check, and would give them a camera for attending the seminar. If they decided they didn’t want a camera, Woody would tear up the check and keep the camera. His first seminar had 20 attendees and 18 of them took home cameras. Over time, Dr. Oates built a team of dentists who traveled the country giving camera seminars. At one point, he had about a dozen different dentists who were leading seminars and offering the Oral-Vision camera.

In addition his entrepreneurial endeavors, Woody was still a practicing dentist. However in 1996, Dr. Oakes had a life-changing event – a stroke. Although he came back from this event, it had lasting consequences for his career. He no longer had the fine motor skills required of a practicing dentist. Furthermore, he didn’t have the stamina to keep up his portion of the Oral-Vision roadshows.

Dr. Oakes decided to focus on his newsletter and consulting business. He closed his practice and sold the Oral-Vision business. He then made an offer to buy out his newsletter partner. The newsletter became the core of his new focus. Woody constantly surveyed his customers to identify new products. For example, an audio recording of the month club offered a recording that dentists could listen to as they drove around town.

Woody also offered personal consulting for those with troubled practices. Personal consultations cost \$25,000 per year. It could seem like a steep price tag for a struggling business to pay, but he backed up his advice with a money-back guarantee that his clients would see at least a \$100,000 difference in their business. Woody felt comfortable with this guarantee because he felt the formula for success was pretty clear. He had time-tested advice that he could offer his clients.

For example, the basic business model was based upon appropriately monetizing the dentist’s time in high-value procedures. The trick was to offload support activities and low revenue procedures onto lower cost employees. Office staff can be hired to handle management and support activities, such as scheduling, marketing, billing and employee recruiting. Dental hygienists can perform basic dental procedures, such as prophylaxis (teeth cleaning). Shifting these activities to low-priced staff frees the dentist to spend time in high revenue generating activities.

Dr. Oakes advice encompassed the full breadth of the dental business plan. For example, when locating a new practice he recommended sites that provided at least 1,000 clients for each dentist (dental practice) in the area, and he used specific tools to survey potential locations for suitability. As another example, when emailing clients, he not only recommended the most attractive messages, but his experience had pinpointed the best day, and the best time of day to send the emails for the best response rates. All of these pieces of advice added up to a predictable, repeatable formula for business success. Woody offered a clear, detailed plan and backed it up with a money-back guarantee.

Everything seemed to be running fine, but Woody began to notice a drop-off in the newsletter subscriptions that accounted for one-half of his income. It seemed that the problem was competition from the internet. Woody had seen the creation of up to 42 competing newsletters, and with the advent of the internet many of these articles were offered for free to anyone with a web browser. Dropping newsletter subscriptions hit the bottom line twice.

Obviously, the loss in subscription fees was painful, but an additional problem was that fewer subscribers meant a smaller market for other services.

Woody had considered his options. One choice would be to offer a web-only paid newsletter. The cut in production costs might make his newsletter more profitable, but he didn't believe sufficient customers would pay for a web-only newsletter. Another choice would be to fully shift his income stream to alternative products, such as consulting, seminars and recordings. Half of his income already came from these alternative sources, so this wasn't a complete change of strategy. The problem was that the newsletter was necessary to drive business to these alternative businesses.

He decided that the newsletter was necessary for marketing purposes, and he considered publishing a *free* online newsletter. However, this would be simply another free newsletter that might not stand out from the competing products. As he began to think about a newsletter that maximized exposure instead of income, Woody began to consider a free printed product delivered to dentist's mailboxes on a regular basis. The problem with this approach would be generating enough income to cover the production costs.

Woody then considered the option of moving upscale with a glossy magazine delivered each month. With a professional magazine he could offset his production and delivery costs by selling advertising. The professional image would enhance his consulting brand, and he could also use it to advertise his own products. Thus was born The Profitable Dentist magazine, an advertiser supported magazine that was free to subscribers. Although he also planned on making the content available online for free, his feeling was that most of his customers would rely on the print version of his magazine.

In the first month of publication, The Profitable Dentist lost \$100,000, and the second month didn't look like it would be any better. Woody was considering his options. His gut instinct was that this would still work; however, some of his own employees disagreed with him.

Questions:

Should he continue with the path he had chosen, at the risk of additional losses of \$100,000 for each month he continued? Or, was it time to rethink his plan?

REFERENCES

- ADEA Official Guide to Dental Schools. Accessed on August 24, 2010.
http://www.adea.org/dental_education_pathways/aadsas/Documents/OG08_1-77_r4.pdf. American Dental Education Association [Online Brochure].
- ADA Financial Planning Issues for Dental Students. Accessed on August 24, 2010.
http://www.ada.org/sections/educationAndCareers/pdfs/finplan10_final.pdf. American Dental Association [Online Brochure]
- BLS Occupational Outlook Handbook, 2010-11 Edition – Dentists. Accessed on August 24, 2010. <http://www.bls.gov/oco/ocos072.htm>. Bureau of Labor Statistics
- Cahn, Lester; "The British Influence on American Dentistry", Menzies Campbell Lecture; May, 1971;
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2388048/pdf/annrcse00822-0034.pdf>; Accessed on July 2, 2011
- Coppa, A. Bondioli, L. Cucina, A. Frayer, D. W. Jarrige, C. Jarrige, J.-F. Quivron, G. Rossi, M. Vidale, M. Macchiarelli, R.; "Palaeontology: Early Neolithic tradition of dentistry"; Nature, April, 2006; vol 440(7085); pgs 755-756

A Pedagogical Approach to Teaching Senior Business Majors in a Small Liberal Arts University: Creating and Operating a Real Business

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ABSTRACT

The question of how to motivate students in today's college classroom has plagued college faculty members. We ask faculty to be competent in their subject area, yet how much focus is there on the art of motivating students in their classroom? The purpose of this article is to describe one unique pedagogical approach with senior business majors in one small liberal arts university in a senior business class.

Keywords: Motivation, teaching, experiential learning, creative pedagogy.

INTRODUCTION

In the fall of 2004, I was becoming increasingly frustrated with our senior business majors, many of whom had seemingly already checked out of college. Their motivation levels were low. These were not the same junior business majors who regularly came to class with enthusiasm and anticipation. As the primary faculty member for the senior business strategy class, I was ready to try a new approach. Something had to give! I had heard about some colleges requiring business students to start their own businesses. Frankly this held great appeal because I believe one way to effectively teach students is by integrating real life experiences into the classroom. I decided to adopt this idea in our business strategy class. I quickly realized I would need to secure institutional funding. I needed venture capital money. My plan was to launch this new class format in the spring of 2005.

In December of 2004, six weeks before the class was scheduled to start, one of our senior business majors who was enrolled in the spring class and was quite excited about the new format, was tragically killed in a terrible car accident caused by an alcohol impaired driver. At the memorial service held on campus, the student's parents requested donations in lieu of flowers to go to a newly established memorial scholarship fund for use by the undergraduate business department toward the launching of this new idea. The parents were delighted to see the funds used in this manner. In the six years since, the scholarship fund has allowed our department to grant venture capital loans to over fifty new businesses created and operated by our senior business majors.

THE IDEA

The central idea of the class is to simulate owning and operating a business. We ask students to apply what they have learned in their previous management, accounting, marketing, economics, ethics, and finance courses through the formation and operation of an actual business. Each team is given \$750 (which must be paid back) as venture capital money. The fall semester is dedicated to selecting a team leader, establishing the business teams, identifying the actual business idea (this is hard for students), and then developing the different components such as the mission statement and marketing, finance and management plans. This activity takes virtually the entire semester. The actual launching of the business is in December. We do this to allow businesses to capture the Christmas season buyers. The start date is allowed prior to the team's final business plan presentation at the end of the fall semester since the majority of their plans are complete. By the spring semester the businesses are fully operational. The yearlong (two semesters) class potentially inhibits more innovative ideas given the relatively short time frame. This could be a consideration for future changes in the structure.

Rationale

Initially, I had a lot of questions. Would this idea even work? Would students take the class seriously? Was I ready to take the risk? Essentially, I was turning over nearly the entire class into the hands of seemingly unmotivated senior business students. Eble (1979) said that teaching requires a "willingness to take risks," and that "teaching is not a safe occupation, either for teacher or student" (p. 157). I take heart, if not courage, from these words.

Not only was the methodology risky, it also required a mindset that my teaching could improve. Weimer (1990) suggests that faculty “continue to rely on the teaching methods they have always used – despite research documenting the need for students to learn actively” (p. xi). Faculty must be open to taking risks in the classroom, and being willing to move outside their comfortable paradigms and look for creative and innovative ways to truly engage students. Even if it is uncomfortable! The pedagogical change I was about to embark upon required both risk as well as a paradigm shift in my teaching approach.

One of the surprising outcomes of this new approach was the inherent motivation that resulted from students being expected to literally start their own business with the final exam being a successful profit and loss statement. Most of us, let alone college students, are never given the chance to start our own business. This proved to be a powerful motivator. Herzberg (2008) refers to this in the work world as job enrichment and vertical job loading, where employees are motivated by intrinsic rewards such as job responsibility, decision making and authority. Nicholson (2003) said the job of the manager in motivating employees is to “create circumstances in which their inherent motivation – the natural commitment and drive they have - is freed and channeled toward achievement goals” (p. 57-58). Why shouldn't this apply to college students in today's classroom? When our seniors realized the opportunity presented to them, the opportunity to actually start their own business, motivation quickly followed.

Another fascinating result of this class was what I call the accountability factor. There was no hiding in this class. No coasting. Teams simply could not choose to remain unengaged. Too much was at stake. They were required to provide regular progress reports in front of the entire class. The peer accountability and potential for embarrassment was too powerful. Peer pressure proved to be a significant motivator. No longer was I solely responsible for motivating students. This phenomenon is similar to the motivational hurdle in Tipping Point Leadership where the New York City police precinct commanders were put under the spotlight by their peers and supervisors at regular performance accountability meetings. (Kim and Mauborgne, 2003, p. 8). No one wants to look bad in front of their peers, whether it be the classroom or the workplace.

Not only must we seek to motivate students to engage in their learning, we must also create the conditions that maximizes student learning. The idea of requiring students to start their own business provided them with ultimate ownership. The business was not my idea, it was theirs, and they naturally assumed primary ownership. I also discovered students really loved their businesses and thus indirectly the learning that came with it. Eble (1979) said that “learning is essentially pleasurable.” While students regularly commented on the stress of the class, it was evident that the class was also exciting and enjoyable.

Parker Palmer (2007) tells the compelling story of the surgical resident who was left alone for three hours with 34 intensive care patients and failed to respond to one in distress, resulting in that patient's death. Palmer writes, “Her head knew what was happening but her heart refused to recognize it.” He calls into question how we teach students to think and respond to difficult situations. It is not enough to teach the four P's of marketing to business students. Where do ethics or difficult decision making dilemmas enter the picture? One of our senior business teams was selling advertising to a local automobile dealership at a negotiated price, reached an agreement, only to be offered a higher price by another local automobile dealership. The students came to me for help. I refused! I was thrilled! I could have never recreated this real life dilemma in the artificial environment of the classroom. Thankfully the students made the right decision and honored the original agreement with the first dealership. In our business curriculum, we provide the head knowledge, test for it, and send students on their way. Are we producing students who have the ability to truly think critically? Are we graduating students who have the courage to be change agents? Are we teaching students to respond to difficult issues with their heart? Palmer goes on to ask if we are teaching students that “opening one's mouth to challenge what is wrong is a way to stay sane, honor their integrity and live by their deepest calling.” What greater gift can we leave our college students? Hopefully in some small measure this has been achieved in this class.

THE FORMAT

Fall semester: the planning stage

The fall semester requires significant organization in order to launch the program successfully. Typically we have two class sections of about 30 students each. The yearlong class is 4 semester credit hours, 2 per semester.

Team leadership and team membership process

Typically we have teams of 6 students with a team leader. Students make application to be a team leader. This last year we had over 30 seniors out of 74 enrolled apply for one of eleven openings. Each enrolled student must also complete a team member application. After team leaders are selected they review all team member applications and actually interview every student during a very active two hour class interview session. The team leaders then sit down with the instructor, and a draft of team members is conducted. The draft selection process is **confidential!** We don't want word getting out who was drafted first and last.

The business idea

This is a critical step for students. Teams brainstorm and identify a viable business idea. If a team fails to reach consensus and team buy-in, the ultimate success of the business as well as team synergy is in jeopardy. Once teams have agreed on their idea they work on developing a clear sense of the nature and scope of their business. This is followed by the formation of a well written mission statement. Each team is then required to "pitch" their business idea in front of the class and instructor. This works even better when other faculty and off campus business owners are present. At times the pitching activity can be a little brutal. No one likes to hear their idea questioned, or possibly challenged as to its validity. Yet at the same time this can serve to help teams clarify and refine their business idea.

Developing a business plan

The next step is developing the various components of a business plan. This is where other business faculty members are helpful. Teams are required to write marketing, finance, management, and operations plans and present these to the class. We bring in our marketing and finance faculty who help students think through what goes into these plans, and then the students come back and once again "pitch" their plans to the class and faculty. We have found that student and faculty feedback on their business plan is extremely helpful. The value was not only in hearing outside perspectives, but also in learning the value of asking for feedback. This process takes several weeks but is important. Teams are required to turn in their written business plan at the end of the fall semester.

Developing team synergy

Invariably, I have found that team synergy is one of the most challenging aspects of this class. Students seem to come into the class with a high degree of naivety. They quickly learn how difficult it can be to develop a cohesive team. To that end, we require each student to read *The Five Dysfunctions of a Team*, by Patrick Lencioni. This text is assigned in the first week of fall semester with teams required to present a written and oral assessment of their team's progress at the end of week twelve, using the five dysfunctions as a measurement. Teams are strongly encouraged to be very honest with their evaluation. Students have found this activity to be very helpful as they move forward with the operation phase of their business. Invariably, team personnel issues have surfaced by this time. Lencioni's book is really quite useful at this point as students attempt to address team synergy issues.

End of the fall semester presentations

Each team is required to formally present their complete business plan one final time before launching their businesses. This is an opportunity for teams to receive final feedback as well as continue to hone their presentation skills. Teams then receive the final approval to move ahead with the launching of their businesses.

Implementation and operation of the business

Once teams have a clear picture of their business idea and plans, they are then ready for the implementation and operations stage. Each business operates differently. While there is no single set of instructions, most teams are eager to get to this point, and will have some idea on how to get their product to market. Teams will settle on dates, developing schedules, product development, ordering of materials and inventory, and setting into motion their marketing plans. A *Gantt chart* is introduced to the class which they are encouraged to utilize. This tool helps students develop timelines for tasks to be completed. Students have commented on how useful this was in this stage of their businesses' development.

Spring semester: managing the business

Spring semester is when actual business operations fully commence. The class continues to meet once a week with most of the class time devoted to students working in their teams. This is a great time for the faculty to meet with teams, and offer constructive feedback as well as just get a sense of how things are going. Some teams experience frustration as the reality of starting a business begins to sink in. Others continue to express exasperation with lack of team synergy. All teams express how much time it takes to run a small business. During this semester, teams are

asked to give periodic updates in front of the class on their progress. At times these can be painful as progress is slow. Students are beginning to learn things about business from an entirely different perspective. Rather than being a time of elation, it becomes a time of revelation of the unique struggles associated with running a business.

Closing the business

Teams are required to close their businesses, including financial reconciliation, two weeks prior to spring graduation. Financial reconciliation includes a closing company income statement and paying back the initial business loan, with 50% of the net income going back into the Scholarship Fund. The team gets to keep the remaining 50%.

Senior business capstone presentations

At the end of the spring semester, we have an event called Senior Business Capstone Presentation Night. Teams formally present the final state of their business in front of the business department faculty, families, and other business students. Each team presentation is 18 minutes long followed by 2 minutes of audience Q&A. This is a high stress event for students, especially with business faculty asking many of the questions. There are printed programs with the names of each business, student names, majors, and hometowns. This evening is the culmination of two semesters of hard work. The length of the evening is usually four hours with a short intermission and light refreshments. Students express relief and fulfillment at the end of the evening.

Examples of actual businesses

Since the program's inception, students have developed over fifty businesses. These have included a maple syrup company with imported Vermont maple syrup, beautifully designed customized T-shirts, a home cleaning service, and a not-for-profit event planning company that contributed its entire net income to another not-for-profit company that specializes in digging fresh water wells in Ethiopia. Today there is a fresh water well in Ethiopia with the team's name on the well. Other businesses included a Saturday Market, a marketing consulting business, and a business that packaged and distributed locally grown Oregon hazelnuts.

Key learning moments

Students are asked to maintain an informal record of their key learning moments throughout the two semesters. These learning moments then become an important part of their team's final senior capstone presentations. This part of the presentation is always the most interesting. Students, generally, are quite honest about their experiences. The student learning is genuine, at times painful, and always realistic.

During the fall semester, I ask students to begin maintaining a key learning moments log so they can reflect more quickly on their learning during the spring semester when they begin developing their final presentations. I have found that students need to be reminded to do this throughout the year. I have now taken to asking teams what they are learning during both semesters.

Students have learned that vendors don't always follow through on commitments, failure to earn team buy-in on an idea may come back to haunt them, and it is probably smarter to deal with local vendors than ones three thousand miles away. One team was in the business of brokering hay to local farms and horse ranches. A student was making a call to a local farm and was asked what cut of hay her team was brokering. The student had no idea that there are generally three cuts of hay, the first cut containing the most nutrients. She was caught completely off guard. She told this story in the final presentation. Her final comment was powerful! Know your product! One team in the business of cleaning homes first approached the university's physical plant department for training. The training paid off with repeat customers and referrals coming from satisfied customers. A recurring theme among many teams has been the challenge of working with people on their team. Several team leaders said they had learned selecting friends to be on their teams didn't always work out. We had one team that organized a Saturday community market for the small town where the college is located. Team members painfully learned that no matter how well organized one can be, a forecasted ice storm will most certainly scare customers away. One team started a food concessions business selling hotdogs, hamburgers, and chili among other menu items. Thankfully they all had their food vendor's license the day the state food inspector unexpectedly showed up.

SUMMARY

As I look back on these six years, the basic concept of the class has endured the test of time. Students (and their parents) consistently voice appreciation for the class. Our business faculty are strongly supportive. The university has featured the class in one of its major publications. Teams have been asked to make presentations at other campus events. Students face real frustration and anxiety in the midst of managing their businesses, yet have come to see the value of their efforts. Students consistently comment on the stress and time commitment of starting a business, yet strongly support the model as a great learning experience. Often the real learning takes place when things are difficult. The students' decision-making, analytical and critical thinking skills have been developed throughout the two semester class. There are numerous stories and real learning moments that simply cannot be duplicated in the classroom. In the beginning, I had to change my mindset and give away much of my control as a faculty member. My approach to teaching will never be the same. More importantly, what students have received is even more telling. One student summed it up when she wrote, "There is not another major that does anything close to what you are doing in senior capstone. All of my friends who are not business majors don't learn half as much as we have all gained from this experience."

REFERENCES

- Eble, E.K. (1976). *The craft of teaching*. San Francisco: Jossey-Bass Publishing.
- Herzberg, F. (2003). One more time: How do you motivate employees? *Harvard Business Review*, 81(1), 87-96.
- Kim, W.C., & Mauborgne, R. (2003). Tipping point leadership. *Harvard Business Review*, 81(4), 60-69.
- Nicholson, N. (2003). How to motivate your problem people. *Harvard Business Review*, 81(1), 56-65.
- Palmer, P.J., (2007). A new professional: The aims of education revisited. *Change: The Magazine of Higher Learning*, 39(6), 6-13.
- Weimer, M.W. (1990). *Improving college teaching: strategies for developing instructional effectiveness*. San Francisco: Jossey-Bass Publishers.

Manuscript Guidelines, Submission and Review Process

TOPIC AREAS (BUT NOT LIMITED TO THESE):

- Course design – current courses, new courses, new trends in course topics
- Course management – successful policies for attendance, homework, academic honesty ...
- Class material
 - o Description and use of new cases or material
 - o Lecture notes, particularly new and emerging topics not covered effectively in textbooks
 - o Innovative class activities and action-learning – games, active learning, problem based
- Major or emphasis area program design that is new or innovative.
- Assessment – all aspects including AACSB and university level assessment strategies and programs
- Integration of programs or courses with other academic disciplines
- Internship programs
- Business partnerships
- Successful student job placement strategies
- Any topic that relates to higher education business education.

SUBMISSION AND REVIEW PROCESS:

Copyright

- Manuscripts submitted for publication should be original contributions and should not be under consideration with another journal.
- Authors submitting a manuscript for publication warrant that the work is not an infringement of any existing copyright, infringement of proprietary right, invasion of privacy, or libel and will indemnify, defend, and hold Elm Street Press harmless from any damages, expenses, and costs against any breach of such warranty.

Prepare your manuscript

- See the Style Guideline page for specific instructions.
- Articles must make a contribution to business education innovation.
- Manuscripts should be limited to 8 to 10 pages or less, although longer will be accepted if warranted.
- Articles can be either regular research papers, or shorter notes that succinctly describe innovative classroom teaching methods or activities.
- Manuscripts should be completely finished documents ready for publication if accepted.
- Manuscripts must be in standard acceptable English grammatical construction.
- Manuscripts should be in MS Office Word format. Word 2007 files are acceptable, as are earlier versions of Word. If you are using a new version of Word after Word 2007, save in Word 2007 format.

Submit your manuscript

- Manuscripts may not have been published previously or be under review with another journal.
- Submit the manuscript attached to an email to **submit@beijournal.com**
- We will respond that we have received the manuscript.
- Article submissions can be made at any time.
- Submission deadlines: September 15 for December issue, March 15 for June issue.

Manuscript review

- The editor and reviewers will review your submission to determine if 1) the content makes a contribution to innovative business education, 2) is of the proper page length, 3) is written in proper grammatical English, and 4) is formatted ready for publication.
- Submissions not meeting any of these standards will be returned. You are invited to make revisions and resubmit.
- If the submission meets the standards, the manuscript will be sent to two reviewers who will read, evaluate and comment on your submission.
- The editor will evaluate the reviews and make the final decision. There are 3 possible outcomes:
 - Accept as is.
 - Accept with minor revisions.
 - Not accepted.
- Reviews will be returned promptly. Our commitment is to have a decision to you in less than two months.
- If your paper is not accepted, the evaluation may contain comments from reviewers. You are invited to rewrite and submit again.

If your paper is accepted

- Minor revision suggestions will be transmitted back to you.
- Revise and send back as quickly as possible to meet printer deadlines.
- Upon final acceptance, we will bill you publication fees. See www.beijournal.com for latest per page fees. Sole author fees are discounted.
- The fees include all costs of mailing a copy of the issue to each author via standard postal ground.
- Delivery to locations outside the continental US will cost an additional \$10 per author for 5 day delivery.
- Faster delivery methods are available for US and international delivery. Contact the editor for a specific pricing.
- All publication fees should be remitted within 10 business days of acceptance, if possible.
- If you decide not to publish your paper with BEI Journal after submitting payment, we will refund publication fees less \$200 to cover costs of review and processing.
- Cancellation cannot occur after the paper has been formatted into the final printer's file.

Manuscript Style Guide and Example

An example is providing following these instructions.

This style guide represents new style guidelines in effect for future issues.

General Setup:

- All fonts: Times New Roman. 10 point for text. Other sizes as noted below
- Margins: 1 inch on all sides of 8½x11 inch paper size.
- No headers or footers.
- Avoid footnotes unless absolutely necessary.
- Page numbering bottom centered.
- No section breaks in the paper.
- No color, including url's. Format to black. No color in tables or figures. Use shading if necessary.
- All pages must be portrait orientation. Tables and figures in landscape orientations should be reformatted into portrait orientation.
- All paragraphs should be justified left and right, single spaced, in 10 point Times font, no indent on first line, 1 line between each heading and paragraph.
- One line between each paragraph.

Titles, Authors, and Headings:

- **Title centered 14 point bold.** One line between title and author's name.
- **Authors:** centered, 12 point. Name, affiliation, state, country.
- One line space to **ABSTRACT** (title 10 point, bold, all capitalized, aligned left; text of abstract 10 point, no bold)
- After **ABSTRACT**, one line space, then **Keywords**. Followed by one line space to first major heading.
- **HEADINGS, MAJOR**, 10 point, bold, all capitalized, aligned left.
The specific headlines will be based on the content of the paper, but major sections should at a minimum include an abstract, keywords, introduction, conclusion, and references.
- **Sub-headings:** 10 point, bold, first letter capitalized, no line to following paragraph. Align left.
- *Third level headings: Italic*, 10 point, first letter capitalized, no line to following paragraph. Align left.
- **Keywords:** heading: 10 point, bold, first letter capitalized, no line to following paragraph. Align left.
Your list of keywords in 10 point, no bold.

Tables, Figures and Graphs:

- All fonts 10 point.
- Numbered consecutively within each category. Table 1, Figure 1 etc.
- Title: 10 point, bold, left justify title, one space, then the table, figure, etc.
- Example: **Table 1: Statistical Analysis**

References:

- APA format when citing in the text. For example (Smith, 2009).
- References section: 8 point font, first line left margin, continuation lines 0.25 inch indent. Justify left and right. No line spacing between references. List alphabetically by first author.
- Specific references: Last name, First initial, middle initial (and additional authors same style) (year of publication in parentheses). Title of article. *Journal or source in italics*. Volume and issue, page number range.
- Example: Clon, E. and Johanson, E. (2006). Sloppy Writing and Performance in Principles of Economics. *Educational Economics*. V. 14, No. 2, pp 211-233.
- For books: last name, first initial, middle initial (and additional authors same style) (year of publication in parentheses). *Title of book in italics*. Publisher information.
- Example: Houghton, P.M, and Houghton, T.J. (2009). *APA: The Easy Way!* Flint, MI: Baker College.

Example (note that this example represents a change from previous style guides)
Evidence to Support Sloppy Writing Leads to Sloppy Thinking

Peter J. Billington, Colorado State University - Pueblo, Colorado, USA (12 point)
Terri Dactil, High Plains University, Alberta, Canada

ABSTRACT (10 point, bold, all capitalized, left justified)

(text: 10 point Times font, no indent, justified, single space, 150 words maximum for the abstract)

The classic phrase “sloppy writing leads to sloppy thinking” has been used by many to make writers develop structured and clear writing. However, although many people do believe this phrase, no one has yet been able to prove that, in fact, sloppy writing leads to sloppy thinking. In this paper, we study the causal relationship between sloppy writing and sloppy thinking.

Keywords: sloppy writing, sloppy thinking (10 point, bold title, first letter capitalized, left justified).

INTRODUCTION (10 point, bold, all capitalized, left justified).

The classic phrase “sloppy writing leads to sloppy thinking” has been used by many to make writers develop structured and clear writing. However, since many people do believe this phrase, no one has yet been able to prove that in fact, sloppy writing leads to sloppy thinking. Is it possible that sloppy writing is done, even with good thinking. Or perhaps excellent writing is developed, even with sloppy thinking.

In this paper, we study the writing of 200 students that attempts to test the theory that sloppy writing leads to sloppy thinking.

PREVIOUS RESEARCH

The original phrase came into wide use around 2005 (Clon, 2006), who observed sloppy writing in economics classes. Sloppy writing was observed in other economics classes (Druden and Ellias, 2003).

RESEARCH DESIGN

Two hundred students in two business statistics sections during one semester were given assignments to write reports on statistical sampling results. The papers were graded on a “sloppiness” factor using...

Data Collection (Sub-heading, bold but not all caps, 10 point, aligned left, bold, no line after to paragraph)

The two hundred students were asked to write 2 short papers during the semester...

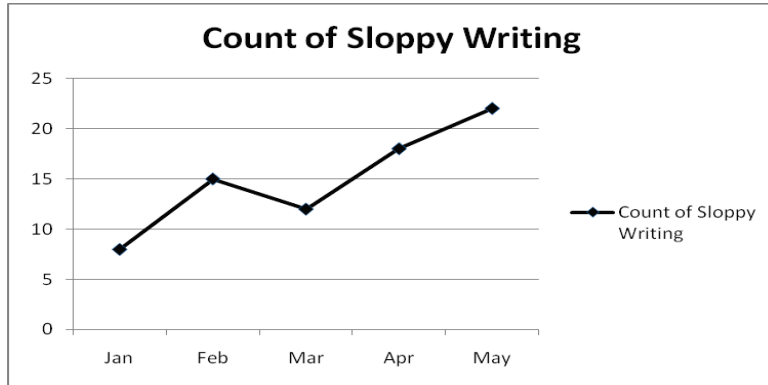
Data Analysis(Sub-heading, bold but not all caps, 10 point, aligned left, bold, no line after to paragraph)

The two hundred students were asked to write 2 short papers during the semester...

DISCUSSION

The resulting statistical analysis shows a significant correlation between sloppy writing and sloppy thinking. As noted below in Figure 1, the amount of sloppy writing increases over the course of the spring semester.

Figure 1: Sloppy Writing During the Semester



The count results were compiled and shown in Table 1 below.

Table 1: Counts of Good and Sloppy Writing and Thinking (bold, 1 line after to table, left justify)

| | Good Thinking | Sloppy Thinking |
|-----------------------|----------------------|------------------------|
| Good Writing | 5 | 22 |
| Sloppy Writing | 21 | 36 |

*-Indicates significance at the 5% level)

As Table 1 shows conclusively, there is not much good writing nor good thinking going on.

CONCLUSIONS

The statistical analysis shows that there is a strong relation between sloppy writing and sloppy thinking, however, it is not clear which causes the other...

Future research will try to determine causality.

REFERENCES (title 10 point, all caps, bold, align left, one line to first reference)

(1 line spacing) (All references 8 point, indent second line 0.25 inch, justify left and right)

- Clon, E. (2006). Sloppy Writing and Performance in Principles of Economics. *Educational Economics*. V. 14, No. 2, pp 211-233.
 Devad, S. and Flotz, J. Evaluation of Factors Influencing Student Class Writing and Performance. *American Journal of Farming Economics*. V. 78, Issue 3, pp 499-502.
 Druden, G. and Ellias, L. (1995). *Principles of Economics*. New York: Irwin.

(short bio section optional, can run longer than these examples; removed before sent to reviewers)

Peter J. Billington, Ph.D., is a professor of operations management at Colorado State University – Pueblo. His research interests span from lean six sigma to innovative education.

Terri Dactil, Ph.D., is a professor of business communication in the College of Business at High Plains University, Alberta, Canada. His research interests include instructional methods to improve student communication skills.

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