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A Study of College Student Business Media Habits and Perceptions of the Wall Street Journal

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ABSTRACT

In this pilot study, principles and advanced finance students are surveyed concerning their business media viewing/reading habits and perceptions of the Wall Street Journal. The design of the experiment enables us to discern differences in student perceptions of the journal due to finance coursework, and due to a separate project required of advanced finance students. We find significant differences in the media habits of beginning and advanced finance students. Our results indicate both finance coursework and a separate WSJ project influence student perceptions of the WSJ, although the effect of the two factors varies between the aspects of intimidation, understanding, usefulness, and importance.

Introduction

College students often find courses in finance intimidating and survey results from introductory finance courses (typically required of all Business majors) show that students find finance difficult, as well (Sivarama Krishnan *et al*, 1999). One way to make finance more student-friendly is by enabling students to link real-world phenomena with textbook material. An example would be a project developed around a guided reading of the Wall Street Journal, WSJ hereafter, (Roever, 1998). However, to operationalize and make effective such an approach, the instructor needs to understand both the perceptions students bring into the classroom about the journal, and their reading/viewing habits of it.

Research shows that college students spend little time engaged in recreational reading (Gallik 1999), and readership of general newspapers among college students has been declining since the 196Øs (Schlagheck, 1998). While these studies may lead us to believe that readership of business media is low and declining, research focused specifically on college student reading habits of business media, such as the WSJ, is scant. Additionally, little is known about college student opinions concerning the WSJ and related media.

In this pilot study, we examine student perceptions of the WSJ by surveying two groups of students: those in a Principles of Finance course (junior level) and those in an International Finance course (junior/senior level). The design of the experiment enables us to discern differences in student perceptions of the WSJ due to finance coursework, and due to a separate WSJ project required of advanced finance students. We also assess student habits concerning reading/viewing of business-oriented media. Our results indicate both finance coursework and a separate WSJ project influence student perceptions of the WSJ, although the effect of the two factors varies between the aspects of intimidation, understanding, usefulness, and importance.

Educational Objectives

Our long-term educational goal is to make finance more accessible and student-friendly through a better understanding of the effectiveness of business media related class projects. Our goal in this initial study is three-fold. First, establish a baseline concerning student perceptions and readership habits of business media. Second, understand the effect of advanced finance coursework in general on student perceptions and reading/viewing habits of business media. By assessing perceptions and media habits of business students with and without advanced finance coursework we can gauge the change to expect among finance majors as they move through their curriculum. We anticipate developing follow-up studies to compare differences in perceptions and reading/viewing habits across business majors. Third, assess the impact of a separate WSJ project on the perceptions and media habits of advanced finance students. In future research, similar projects in other business curricula will be used to assess differences in effectiveness by major.

Methodology

Participants

The sample for this study consisted of 78 college students enrolled in either a Principles of Finance course (junior level) or an advanced International Finance course (junior/senior level) at a metropolitan university in a mid-sized Southeastern city. The majority of the students were business majors: 92% enrolled in the Principles of Finance course (hereafter BFIN3Ø2) and 98% enrolled in the International Finance course (hereafter BFIN412). Students in the BFIN3Ø2 course had typically not taken a finance course previously, while the students in the BFIN412 course had completed a median of two previous finance courses. Seventy-six percent of the BFIN412 students were finance majors, while 22% were accounting majors.

Data Collection and Survey Instrument

The main methodological tool for the study was a web-based survey administered to the students in each class at the beginning and end of the spring 2005 semester. The survey dealt with two issues: a) the habits of students concerning reading/viewing of business-oriented media, and b) general perceptions about the WSJ, including the areas of intimidation, usefulness, importance, and ease of understanding. The perception questions were evaluated through a seven-point scale assessing student sensitivity to each issue, while the viewing/reading habits were measured with numeric scores ranging from 0 (no viewing/reading per week) to 7 (viewing/reading 7 times per week).

Research Design

Students in both classes completed the survey at the beginning of the semester so that a benchmark could be established concerning student perceptions of the WSJ and reading/viewing habits of business media. The students in the BFIN302 class had no additional WSJ projects, and the only finance coursework they participated in was the principles course. The advanced finance students (BFIN412) were required to work through a semester-long project involving the WSJ. Some of the students in this advanced course had previously completed a similar WSJ project. Thus, for various aspects of the analysis, we divided the BFIN412 students into two separate groups. Those who had previously completed a similar project are referred to as the BFIN412P group, and those who had not previously done so are referred to as the BFIN412NP group. The class as a whole is referred to simply as BFIN412.

The effect of advanced finance coursework on student perceptions and reading/viewing habits was assessed by comparing the BFIN302 students with the advanced students who had not previously completed the WSJ project (BFIN412NP). To gauge the impact of the project on student perceptions and viewing/reading habits of business media, we examined the change in responses of the advanced students who had not completed such a project previously from the beginning to the end of the semester. We also compared the responses of those advanced students who had completed a WSJ project (BFIN412P) in a previous semester with those who had not (BFIN412NP).

Results

Student Business Media Habits

How often do college students read business periodicals or watch a business program on T.V.? The pre-survey results in Panels A and B of Table 1 indicate that principles of finance students read and watch significantly less business media than advanced finance students. While BFIN302 students watch a business program on average once a week, advanced students (BFIN412NP) watch business programming two to three times a week. BFIN302 students say that they hardly ever read a business periodical, while the BFIN412NP students indicate that they read some business periodical on average more than once a week.

The post-survey results at the end of the semester indicate that both groups show no major shifts in reading/viewing habits. While both groups show slight increases in reading/viewing frequency, these shifts are not statistically significant. At the end of the semester the advanced finance students continue to read and watch more business material than the beginning finance students.

All students were asked to list what business media they read or watch. In terms of specific media viewed by the students, both the advanced and principles groups view similar types of programs, primarily CNN and CNBC. It is noted, however, that a much larger percentage of the advanced students view business media on a regular basis. A greater divergence was found between the two groups with regard to reading habits. The advanced students read a greater number of different business periodicals, such as *Barrons* and *The Economist*. In addition, similar to the viewing habits comparison, a greater percentage of the advanced students read business periodicals on a regular basis.

Table 1. Student business media habits

Panel A. Principles versus advanced finance student responses

Survey Item		BFIN302	BFIN412NP
1. How many times a week do you watch business-oriented news programs?			
Pre-Survey	N	36	19
	Mean	1.0	2.4
	Std. Dev	1.8	2.4
Post-Survey	N	25	14
	Mean	1.1	2.8
	Std. Dev	1.7	2.0
2. How many times a week do you read business periodicals?			
Pre-Survey	N	36	20
	Mean	0.2	1.2
	Std. Dev	0.7	1.8
Post-Survey	N	25	14
	Mean	0.6	1.2
	Std. Dev	1.3	1.8

Panel B. Principles versus advanced finance students: Change in habits during the semester

Survey Item	BFIN302 versus BFIN412NP	
	Pre-survey (p-values)	Post-survey (p-values)
1. How many times a week do you watch business-oriented news programs?	0.0429	0.0376
2. How many times a week do you read business periodicals?	0.0492	0.3457

General perceptions of the WSJ

Results from the pre-survey indicate that advanced finance students (BFIN412NP) have very different perceptions of the WSJ than the

beginning finance students (BFIN302) at the beginning of the semester. The BFIN412NP students find the WSJ easier to understand as their mean response to the first survey item pertaining to their understanding of the topics in the WSJ is 5.0 compared to 4.2 for the BFIN 302 students (see Table 2 Panel A). This is a significant difference in the means as indicated by the 0.0382 p-value reported in Panel B. Table 2 also reveals that the BFIN412NP students find the WSJ to be less intimidating as their mean response to the second survey item is 3.2 compared to 3.9 for the BFIN302 students. This is also a significant difference in the means as indicated by the 0.0929 p-value in Panel B.

The advanced students feel that the WSJ is a more useful tool in making business decisions than do the beginning students. This result can be seen in the difference in the means (Panel A) of 5.6 for the BFIN302 students and of 6.1 for the BFIN412NP students for the third survey item. Again, Panel B shows this to be a significant difference with a p-value of 0.0569. With regard to the importance of the WSJ in decision making (the fourth survey item), both groups think the WSJ is important, as there is no significant difference in mean responses. The preceding findings are consistent with what one would expect from the effects of continued finance coursework on students' understanding and overall perceptions of the WSJ.

Effect of a WSJ project on perceptions of the WSJ

The advanced finance students were required to work through a semester-long project involving the WSJ. The project primarily sought to integrate current real world developments into the classroom by a guided reading of the WSJ. Student groups summarized the factors impacting stock, bond and currency markets during the week by referring to specific sections in the WSJ. Each week, one group made an oral presentation to the class, summarizing their findings from the previous week's market activity.

We find that at the end of the semester, after having completed the WSJ project, the advanced finance students (BFIN412NP), feel they understand the topics in the WSJ better than they did at the beginning of the semester, as the mean score for Item 1 increased by a significant amount as indicated by a p-value of 0.0886 (see Table 3 Panel A). The advanced students also strengthen their opinion concerning the importance of reading the WSJ. This can be seen by the significant increase in the mean score for Item 4 as indicated by the p-value of 0.0835. By contrast, the beginning finance students (BFIN302) show no change in their perception of the WSJ, as the mean scores for all four of the above mentioned survey items show no significant differences from the pre- to the post-surveys (see Table 3 Panel A).

Furthermore, we see that the divergence in perceptions between the BFIN412NP and the BFIN302 students is even more exaggerated by the end of the semester as indicated by higher levels of significant differences for survey items 1, 2, and 3 (see Panel B of Table 2). We also see that whereas the pre- survey shows that both advanced and beginning students consider reading the WSJ to be equally important, by semester's end, the advanced students consider reading the WSJ to be more important than the beginning students, as evidenced by the significant difference in the means to the responses to Item 4 (p-value of 0.024).

Table 2
Student perceptions of the Wall Street Journa

Panel A. Principles versus advanced finance student responses

Survey Item		BFIN302	BFIN412NP
1. I can very easily understand the topics in the WSJ.			
Pre-Survey	N	36	20
	Mean	4.2	5.0
	Std. Dev	1.3	1.4
Post-Survey	N	25	14
	Mean	4.2	5.7
	Std. Dev	1.2	1.0
2. The thought of reading the WSJ daily is intimidating.			
Pre-Survey	N	36	20
	Mean	3.9	3.2
	Std. Dev	1.6	1.6
Post-Survey	N	25	14
	Mean	4.1	2.9
	Std. Dev	1.2	1.7
3. The WSJ is a useful tool for making informed business decisions.			
Pre-Survey	N	36	20
	Mean	5.6	6.1
	Std. Dev	1.1	0.7
Post-Survey	N	25	14
	Mean	5.6	6.1
	Std. Dev	0.06	0.8
4. How important do you think it is for a college student to read the WSJ?			
Pre-Survey	N	36	20
	Mean	4.6	4.9
	Std. Dev	1.0	1.3
Post-Survey	N	25	14
	Mean	4.9	5.6
	Std. Dev	0.7	0.9

Scale for Items 1-3: 1=Strongly Disagree; 2=Disagree; 3=Slightly Disagree; 4=Neutral; 5=Slightly Agree; 6=Agree; 7=Strongly Agree.

Scale for Item 4: 1=Not at all important; 2=Unimportant; 3=Slightly Unimportant; 4=Neutral; 5=Slightly important; 6=Important; 7=Very important.

Panel B
Principles versus advanced finance students: Change in perceptions during the semester

Survey Item	BFIN302 versus BFIN412NP	
	Pre-Survey (p-values)	Post-Survey (p-values)
1. I can very easily understand the topics in the Wall Street Journal.	0.0382	0.0002
2. The thought of reading the Wall Street Journal on a daily basis is intimidating.	0.0929	0.0206
3. The Wall Street Journal is a useful tool for making informed business decisions.	0.0569	0.0492
4. How important do you think it is for a college student to read the Wall Street Journal?	0.3345	0.0241

Table 3
Effect of the WSJ project on perceptions

Panel A. Change in perceptions during the semester

Survey Item	BFIN302 (p-values)	BFIN412NP (p-values)
1. I can very easily understand the topics in the Wall Street Journal.	0.9860	0.0886
2. The thought of reading the Wall Street Journal on a daily basis is intimidating.	0.5722	0.6110
3. The Wall Street Journal is a useful tool for making informed business decisions.	0.8012	0.7206
4. How important do you think it is for a college student to read the Wall Street Journal?	0.1612	0.0835

Panel B. Comparative differences in advanced finance student perceptions during the semester

Survey Item	BFIN412P versus BFIN412NP	
	Pre-Survey (p-values)	Post-Survey (p-values)
1. I can very easily understand the topics in the Wall Street Journal.	0.0736	0.6657
2. The thought of reading the Wall Street Journal on a daily basis is intimidating.	0.9506	0.7552
3. The Wall Street Journal is a useful tool for making informed business decisions.	0.0886	0.4056
4. How important do you think it is for a college student to read the Wall Street Journal?	0.0034	0.4997

To help further gauge the impact of the project on student perceptions of the WSJ, we compared the advanced BFIN412 students who had completed a WSJ project in a previous semester (BFIN412P) from those students who had not previously completed such a project (BFIN412NP). Comparing the mean scores for the two groups at the beginning of the semester show significant differences between their perceptions for Items 1, 3, and 4 (see Table 3 Panel B). While these differences could be attributed to the additional coursework taken by the BFIN412P group, it seems more realistically attributable to the WSJ project completed by the BFIN412P group in a previous semester. This intuition is borne out by comparing the mean scores for the two groups at the end of the semester. Now, we find a convergence of perceptions as evidenced by the lack of any significant differences across the two groups for all four items in the survey. If the project had had no impact on student perceptions, then the pre- and post-survey differences in means should have been the same. The fact that there is a change, i.e. a convergence of perceptions, can be attributed to the other major factor during the semester, namely the WSJ project.

More specifically, these results (see Table 3 Panel B) indicate that the "intimidation" factor associated with reading the WSJ might be overcome as students progress through the finance curriculum, becoming more familiar with the finance discipline, as Item 2 shows insignificant p-values, both pre and post. However, student perceptions concerning their understanding of the topics in the WSJ and of the importance and usefulness of the WSJ are significantly influenced by the WSJ project. Thus, in summary, our findings suggest that both advanced coursework as well as a WSJ project affect student perceptions of the WSJ.

Conclusion

This study sought to establish a baseline concerning student business media habits and perceptions of the WSJ. We find that beginning finance students watch a business program on average once a week, but seldom read a business periodical. Advanced finance students on the other hand, watch business programming two to three times a week and read some business periodical on average more than once a week. However, both groups show no major shifts in reading/viewing habits by the end of the semester. We also find that advanced students perceive the WSJ more favorably than the principles students.

This study also sought to examine the effect of advanced finance coursework on student perceptions and business media habits. Our findings are consistent with what one would expect from the effects of continued finance coursework on students' understanding and overall perceptions of the WSJ. More specifically, the "intimidation" factor associated with reading the WSJ might be overcome as students progress through the finance curriculum, becoming more familiar with the finance discipline.

The study's final objective was to assess the impact of a separate WSJ project on student perceptions of the WSJ. We find that student perceptions concerning their understanding of the topics in the WSJ and of the importance and usefulness of the WSJ are significantly influenced by the WSJ project. Thus, in summary, our findings suggest that both advanced coursework as well as a WSJ project affect student perceptions of the WSJ.

In future research, similar projects in other business curricula will be used to assess differences in effectiveness by major. Additional inquiry is also needed to compare student habits and perceptions concerning online versus traditional media. As this is an ongoing project, business students will continue to be surveyed, and we expect evidence and ideas to continue to evolve.

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Knowledge of Personality Types Can Enhance Instructional Programs

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ABSTRACT

This paper presents information concerning the possible effects of personality preferences on teaching and learning styles. Special permission was granted in writing by the Center for Applications of Psychological Type (CAPT), Gainesville, FL for extensive summaries of type information from People, Types and Tiger Stripes by G. D. Lawrence. No original research was conducted by the authors of this paper.

Introduction

Research by Dr. Carl G. Jung, a Swiss psychiatrist, confirmed that individuals have mental or psychological preferences for performing certain tasks, just as they have physical preferences such as preferred hand or an eye that is dominant. Many of the mental processes are not conscious but nonetheless dictate many of our choices in life, i.e. preferred communication patterns, study habits, teaching styles, what we consider the ideal vacation, stressors, etc. Jung utilized this knowledge in dealing with patients and people he came in contact with. Jung wrote and lectured extensively on this theory of personality preferences, but only limited research was available to insure practical application of the theoretical principles. Two of Jung's female students (although the students and teacher had not met in person) conducted research in the early 1940's on how to measure personality preferences and invited Dr. Jung to participate in the research. Dr. Jung declined to become involved in the research because of other projects that consumed his time, his age, and the geographical distance between himself and the researchers. Dr. Jung recognized the potential of their proposed research to help bring his theory of personality type into more practical application and encouraged the mother/daughter pair to go forward with their research. Subsequently, as a result of their research and development, the Myers-Briggs Type Indicator® (MBTI®) emerged as a personality instrument having numerous applications, including (but not limited to) teaching and learning preferences, preferred communication, and negotiation styles.

Using The MBTI® to Enhance Teaching and Learning

The MBTI®, developed by Myers and Briggs, identifies and measures within four basic dimensions (energizing, attending, deciding, living) eight mental or psychological preferences for performing certain tasks, outlined as follows by Hirsh and Kummerow (1989, pp. 5-6):

There are two ways a person can be energized. Extroversion is the preference that relates to drawing energy from outside oneself in the external world or peers and activities. Introversion is the preference that relates to drawing energy from one's inner world of ideas, emotions, and impressions.

The two preferences for attending are Sensing and Intuition. Sensing relates to the preference for paying attention to information that is perceived directly through the five senses and for focusing on what actually exists. Intuition refers to the preference for paying attention to information that is taken in through a "sixth sense" and for noticing what might or could be, rather than what actually exists.

The deciding preferences are Thinking and Feeling. Thinking is the preference that relates to organizing and structuring information to decide in a logical and objective way. Feeling is related to the preference for organizing and structuring information to decide in a personal, value-oriented way.

Judgment and Perception are the two preferences that relate to how one likes to live one's life. Judgment is the preference that relates to living a planned and organized life. Perception refers to the preference for living in a more spontaneous and flexible way. (pp. 5-6)

The MBTI® is based on the idea that people have preferences, and there are two opposing behavioral dichotomies for each of the four preferences. Even though people use all eight, only one from each of the four basic preferences is generally favored. The combination of these four preferences results in a psychological type (e.g. Introverted-Intuitive-Thinking-Judging).

Information gleaned from the MBTI® can be used constructively by teachers at all levels to more effectively engage individual students' learning styles. Lawrence (1993, p. 39) admits that the term "learning styles" is used variously and loosely in educational literature and attempts to pin the term down with the following broad definition, which covers four aspects of psychological makeup.

A. Cognitive style in the sense of preferred or habitual patterns of mental functioning: information processing, formation of ideas, and judgments.
B. Patterns of attitudes and interests that influence what a person will attend to in a potential learning situation.
C. A disposition to seek out learning environments compatible with one's cognitive style, attitudes and interests, and to avoid environments that are not congenial.
D. Similarly, a disposition to use certain learning tools, to use them successfully, and to avoid other tools.

Knowledge of personality type can help identify some of the normal differences in learning styles, and will provide instructors (in edu-

cational institutions or industrial/organizational settings) a rational structure for designing activities that will help to encourage learning. Myers (1998, p. 37) in addressing type and learning styles, states that from their earliest years, individuals demonstrate different ways in which they learn best:

- Some children prefer to get careful, complete instructions before they begin a new game or task.
- Some like to observe others playing with a toy before they try it themselves.
- Some like to plunge in right away and learn as they go along.
- Some prefer to learn while interacting with others.
- Some prefer to focus by themselves.
- Some like to know all the rules and follow them.
- Some like to create their own rules and change them frequently.

McClanaghan (2000) points out that helping students understand their learning styles can lead them to become more engaged in the learning process, can enhance underdeveloped aspects of their styles, and can assist them in taking charge of their own success as learners. By enabling students to "learn how to learn," instructors can nurture students' ability to become lifelong learners, capable of learning and working in the diverse settings of the 21st century.

Lawrence (1993, pp. 43-46) provides the following summaries of the learning preferences and their effect on learning as well as the way the trainer or teacher evaluates the learner (see Table 1 on this page and the following three pages).

Discussion

Lawrence (1997, pp. 28-29) offers the following tips for using type:

- Adjusting to a teacher. There are 16 different personality types, and the chances are good that most teachers encountered will have types different from ours. The variety and fresh viewpoints may be an advantage, if one possesses the knowledge to experience type differences constructively.
- **Study style.** The most important advice is to work from the strengths of our type. Extraverts may want to find a study partner to talk issues over with, and remove distractions when studying alone. Studying alone will most likely help introverted students, but they should do a trial run with a partner prior to making an oral presentation. (pp. 28-29)

Kise (2001, p. 4) concluded the following from a one-year-long study in a 375-student middle school with 25 teachers:

Table I
Learning Styles Based on Preferences*

EXTRAVERSION

Cognitive style: The extraversion preference is associated with a cognitive style that favors:

- Learning by talking and physically engaging the environment,
- Letting attention flow outward toward objective events,
- Talking to help thoughts to form and become clear,
- Learning through interactions, verbal and non-verbal.

Study style: The extraversion preference is associated with a study style that favors:

- Acting first, reflecting after,
- Plunging into new material,
- Starting interactions needed to stimulate reflection and concentration,
- Having a strong, interesting, external-extraverted reason for studying,
- Avoiding distractions that will cut into their concentration,
- Studying with a friend, studying to prepare to teach someone.

Instruction that fits E's: The extraverting types do their best work with:

- Opportunities to "think out loud"; for example one-to-one with the teacher, classroom discussions, working with another student, action projects involving people,
- Learning activities that have an effect outside the learning, such as visible results from a project,
- Teachers who manage classroom dialogue so that extraverts have ways to clarify their ideas before they add them to class discussion,
- Assignments that let them see what other people are doing and what they regard as important.

INTROVERSION

Cognitive style: The introversion preference is association with a cognitive style that favors:

- Quiet reflection,
- Keeping one's thoughts inside until they are polished,
- Letting attention flow inward,
- Being engrossed in inner events: ideas, impressions, concepts,
- Learning in private, individual ways.

Study style: The introversion preference is associated with a study style that favors:

- Reflecting first, acting after (if necessary),
- Looking for new data to fit into the internal dialogue that is always going on,
- Working privately—perhaps checking one's work with someone who is trusted,
- Reading as the main way of studying,
- Listening to others talk about the topic being studied, and privately processing what they take in,
- Extraverting just when they choose to.

Instruction that fits I's: I's like learning situations that let them:

- Work internally with their own thoughts: listening, observing, lab work, reading, writing,
- Process their experiences at their own pace,
- Present the results of their work in forms that let them keep their privacy,
- Have ample time to polish their work before needing to present it,
- Have time to reflect before answering the teacher's questions,
- Tie their studies to their won personal interests, their internal agenda.

Table I (Continued)
Learning Styles Based on Preferences*

SENSING

Cognitive style: The sensing preference is associated with a cognitive style that favors:

- Memorizing facts,
- Observing specifics,
- Processing data step by step,
- Starting with the concrete, then moving to the abstract,
- Being careful and thorough,
- Aiming toward soundness of understanding,
- Staying connected to practical realities around them,
- Being attentive to what is in the present moment.

Study style: The sensing preference is associated with a study style that favors:

- A sequential, step-by-step approach to new material,
- Beginning with familiar, solid facts,
- Moving gradually toward abstract concepts and principles,
- Approaching abstract principles and concepts by distilling them out of their own personal, concrete experience.

Instruction that fits S's: S's do the best with instruction that allows them to hear and touch as well as see (or only read about) what they are learning. They like:

- Hands-on labs,
- Relevant films and other audiovisual presentation,
- Materials that can be handled,
- Computer-assisted instruction,
- First-hand experience that gives practice in the skills and concepts to be learned,
- Teachers who provide concrete learning experiences in any learning sequence, before using the textbook,
- Teachers who show them exactly what is expected of them,
- Teachers who do not move "too quickly" through material, touching just the high spots or jumping from thought to thought,
- Assignments that do not expect them to generate possibilities not based on solid facts,
- Skills and facts they can use in their present lives.

Being naturally observant of detail in the here and now, they tend to overlook the big picture, general meanings, and implications for the future.

They believe the adult world has specific skills and facts they should be taught, and they are disappointed in any teacher who expects them to discover them for themselves.

INTUITION

Cognitive style: The intuition preference is associated with a cognitive style that prefers:

- Being caught up in inspiration,
- Moving quickly in seeing associations and meanings,
- Reading between the lines, relying on insight more than careful observation,
- Relying on verbal fluency more than on memory of facts,
- Focusing on general concepts more than details and practical matters.

Study style: Intuitives typically adopt a study style that includes:

- Following inspirations,
- Jumping into new materials to pursue an intriguing concept,
- Finding their own way through new materials, hopping from concept to concept,
- Attending to details only after the big picture is clear,
- Exploring new skills rather than honing present ones,
- Reading.

Instruction that fits N's: The intuitive types do their best work with:

- Learning assignments that put them on their own initiative, individually or with a group,
- Real choices in the ways they work out their assignments,
- Opportunities to find their own ways to solve problems,
- Opportunities to be inventive and original,
- Opportunities for self-instruction, individually or with a group,
- A system of individual contracts between teacher and students.

Intuitive types like beginnings a lot more than endings, because beginnings are fired with the fascination of new possibilities. When they have study assignments they can be enthusiastic about, they are much more likely to carry them to the finish line.

In high school and beyond, they generally like experiences rich with complexities, which may include stimulating lectures.

After a concept or skill is understood to their satisfaction, they may find continued practice boring, shift over to new inspirations, and never achieve complete mastery.

They get frustrated with the teacher who paces instruction "too slowly."

- Type allowed teachers to adapt lessons plans to appeal to all personality preferences. Adjustments were often small.
- Teachers learned to deal better with other faculty and staff, based on understanding type differences.
- Teachers began coaching individual students in ways appropriate to the students' types. Students, feeling more respected and understood, were more receptive.
- Teachers interpreted and handled discipline problems in terms of type, particularly extraversion and introversion.
- Parent-student-teacher conferences went more smoothly when teachers could use their knowledge of a student's type to show respect and valuing of the student.
- Type made study skills teachers less dogmatic about what techniques are "right."
- Teachers working with at-risk students could often link learning difficulties in preferences and take steps to meet the students' type needs.

Table I (Continued)
Learning Styles Based on Preferences*

THINKING	FEELING
Cognitive style: The thinking preference is associated with a cognitive style that favors: ► Making impersonal judgments, aiming toward objective truth, ► Keeping mental life ordered by logical principles, ► Analyzing experiences to find logical principles underlying them, ► Staying fee from emotional concerns while making decisions, ► Naturally critiquing things, aiming toward clarity and precision.	Cognitive style: The feeling preference is associated with a cognitive style that favors: ► Making value judgments concerning human motives and personal values, ► Attending to relationships, ► Personalizing issues and causes they care about, ► Staying tuned to the quality of the subjective tone of relationships and seeking harmony in relationships, ► Attending to the quality of their own emotional life, ► Naturally appreciating people and their accomplishments.
Study style: Thinking types typically adopt a study style that includes: ► Having objective material to study, ► Compartmentalizing emotional issues to get clear thinking on the task at hand, ► Analyzing problems to bring logical order out of confusion, ► Wanting to get a sense of mastery over the material being studies.	**Study style:** Feeling types typically adopt a study style that includes: ► Learning through personal relationships rather than impersonal individualized activities, ► Learning by helping and responding to other peoples; needs, ► Studying with a friend, ► Wanting to choose topics to study that they care deeply about.
Instruction that fits T's: The thinking types do their best work with: ► Teachers who are logically organized, ► Subjects and materials that flow logically and respond to logic, ► Feedback that shows them their specific, objective achievements.	**Instruction that fits F's:** The feeling types do their best work with: ► Teachers who value a personal rapport with students, ► Assignments that have a goal of helping people, ► Feedback that shows warm appreciation for the student and his or her effort, and gives corrective suggestions in that context, ► Personalized assignments.

However, Kise also found (2005) that it can be extremely difficult for teachers to overcome their own type preferences when trying to change classroom practices. A thorough understanding of the instructors' learning styles is necessary before the most effective techniques for improving classroom instruction can be determined. An examination of instructors' assumptions and beliefs, and an understanding of the societal beliefs on which the school operates, are also necessary to change classroom practices. This process requires extensive time, analysis, and commitment, as well as empirical evidence that applying an understanding of personality type can improve instruction.

Myers (1998, p. 42) suggests that we remember the following aspects related to type:

- Type describes 16 dynamic energy systems, rather than defining static boxes.
- There is no right or wrong type, and there are no better or worse combinations of types in work or relationships. Each type and each individual bring special gifts.
- The purpose of learning about type is to help you understand yourself better and to enhance your relationships with others.
- Each person is unique.
- Everyone uses each of the preferences to some degree.
- You are the final judge of your best-fit type.
- Type does not explain everything.
- You may use type to understand and forgive yourself, but not as an excuse for doing or not doing anything. Type should not keep you from considering any career, activity, or relationship.
- Become aware of your type biases (we all have them!) to avoid negative stereotyping. (p. 42)

Summary

Information concerning the influence of personality on learning and teaching styles is important for industrial/organizational training programs just as it is in the educational classroom. Researchers in personality type are convinced that people are born with a certain personality type and that our personality type does not change throughout our lifetime. Much of the research concerning type and learning has been conducted with and focuses on educational institutions but is also applicable in instructional/learning situations in other organizations. Information concerning personality type will enable teachers/instructors and other individuals to consciously choose the appropriate type for approaching and dealing with different situations in their personal or work life.

> For as in one body we have many members, and all the members do not have the same function, so we, though many, are one body. Having gifts that differ according to the grace given us, let us use them. (Romans 12:4-6, Revised Standard Version)

Table I (Concluded)
Learning Styles Based on Preferences*

JUDGMENT	PERCEPTION
Cognitive style: The judging preference is associated with a cognitive style that favors: ► Having a clear structure in a learning situation from the beginning, ► Aiming toward completions and getting closure, ► Having life organized into an orderly plan.	Cognitive style: The perceiving preference is associated with a cognitive style that favors: ► Open exploration without a pre-planned structure, ► Staying open to new experiences, ► Managing emerging problems with emerging structures, ► The stimulation of something new and different.
Study style: Judging types typically adopt a study style that includes: ► Planful and scheduled work, drawing energy from the steady, orderly process of doing their work, ► Wanting to know exactly what they are accountable for and by what standards they will be judged, ► Treating assignments as serious business, and persisting in doing them.	**Study style:** Perceiving types typically adopt a study style that includes: ► Spontaneously following their curiosity, ► Studying when the surges of impulsive energy come to them, ► Studying to discover something new to them, ► Finding novel ways to do routine assignments so as to spark enough interest to do the assignments.
Instruction that fits J's: The judging types do their best work with: ► Pre-planned structure, and a teacher who carefully provides it, ► Predictability and consistency, ► Formalized instruction that moves in orderly sequences, ► Prescribed tasks, ► Milestones, completion points, with little ceremonies to honor successful completions.	**Instruction that fits P's:** The perceiving types do their best work when: ► They can pursue problems in their own way, ► They have genuine choices in assignments, as with a system of individual contracts in which the student can negotiate some of the activities, ► Assignments make sense to them, ► Their work feels like play.

**From People, Types, and Tiger Stripes*, 1993, by Gordon D. Lawrence. Used with permission. Center for Applications of Psychological Type, Gainesville,

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Assessing MBA Student Self-Perceptions of Knowledge Growth: Preliminary Results from a Pilot Project in an MIS Core Course

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ABSTRACT:

Today's managers and executives need to develop an accurate appreciation of the breadth, depth, and limitations of their knowledge in specific subject-matter areas. Data on student self-assessments of knowledge growth in an MBA program core MIS course (Management Information Systems) are presented and analyzed. A literature review examines assurance of learning concepts and standards as well as pedagogical outcomes assessment methodologies. Research protocol considerations are discussed, including the structure of survey content to assess student self-perceptions of learning and knowledge growth; the elucidation of appropriate parameters to correlate with self-assessment data; and potential extrapolations of the research technique to other disciplines/programs. The correlation between self-assessed knowledge improvement level and actual grade performance in an MBA MIS course is presented, and used as a basis for discussing implications about metrics and evaluation tools related to assurance of learning standards. The data collected and analyzed thus far is considered preliminary and considerations are discussed for future research work needed to further develop this line of inquiry regarding assurance of learning objectives, metrics, and assessment tools.

Introduction and Motivations

The line of research reported in this paper is motivated by a broader set of research questions:

> What are the ramifications for the performance of today's managers and executives if they fail to accurately understand their knowledge and skill levels in the IT arena? How do self-perceptions of an executive's competency in a particular discipline impact that leader's reliance on subject matter experts (SMEs) within their team in the process of business decision making? Do analogous ramifications exist for managerial performance in other domains, such as legal or accounting disciplines?

While these broader questions are being addressed by ongoing and future research investigations, they have an important corollary for educational programs. This paper explores the measurement and analysis of MBA student self-assessments of their own knowledge growth in a core Management Information Systems (MIS) course, and discusses such self-assessments from the perspectives of assurance of learning goals and pedagogical outcomes assessment methodologies.

Student self-assessments can be viewed as a "bridge" that connects the two important areas of students' satisfaction with their program of study and educational experiences, and student competency as measured by traditional metrics and standards such as course grades and other objective assessments of achievement in an educational program. The following section summarizes a literature review that addressed these topics.

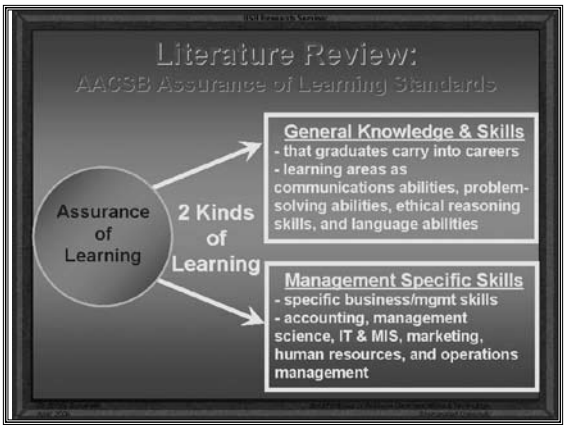
Literature Review

An outstanding resource covering assessment concepts and practices in Business Schools has recently been published by The Association for Institutional Research and AACSB International. *Assessment of Student Learning in Business Schools: Best Practices Each Step of the Way* is a comprehensive collection of papers discussing assessment at both the program level and the discipline/course-specific level. Extensive references to the literature are provided in each of the independently authored papers in this compendium.

In addition to this recently published resource, the AACSB International Web site provides documentation as well as links to many sources in the literature regarding assurance of learning and pedagogical outcomes assessment methodologies.

DePaul University KGSB's "Draft of FAQs To Accompany " 'Assurance of Learning via Course-embedded Assessment' " provides an excellent set of definitions for key terms related to assurance of learning and assessment, including:

- **Assessment**: the process of observing learning; describing, collecting, recording, scoring, and interpreting information about a student's or one's own learning.
- **Learning Outcomes:** Observable behaviors or actions on the part of students that demonstrate that intended learning objectives have occurred.
- **Assurance of Learning:** AACSB requires that each accredited school use well- documented, systematic processes to develop, monitor, evaluate, and revise the substance and delivery of the curricula of each degree program, and to assess the impact of the curricula on learning. Input is expected from all appropriate constituencies. The AACSB standard requires a systematic process for curriculum management, and expects that the school will specify student learning goals for each degree program. In addition to defining the learning goals, the school is required to demonstrate that the learning goals are achieved ("assessment"), and to utilize what is learned through assessment to continually improve each curricular program. Assurance of Learning is a dynamic process. Schools that have made good progress can show a continuous stream of refinement and enhancement of both curricular programs and assessment processes. Faculty involvement in, and ownership of, the Assurance of Learning process is critical. Faculty are expected to be actively involved in all stages of the assessment process including defining goals, curriculum alignment, developing appropriate measures, implementing course-embedded measures, and improving the school's curricula.
- **Course-embedded Assessment:** Reviewing materials generated in the classroom. In addition to providing a basis for grading students, such materials allow faculty to evaluate approaches to instruction and course design. Data gathering about learning that occurs as part of the course, such as tests, papers, projects, or portfolios; as opposed to data gathering that occurs outside the course, e.g., student placement testing. "



AACSB International's assurance of learning standards discusses two kinds of learning, general and management specific, as illustrated in the following chart:

Martell and Calderon's opening paper in *Assessment of Student Learning in Business Schools: Best Practices Each Step of the Way* emphasizes Angelo's 1995 definition of assessment by stating that assessment is "a continuous, systematic process, the goal of which is to improve the quality of student learning." They further define and distinguish direct versus indirect assessment methodologies as follows:

> With the **indirect** approach, students, alumni and/or employers are asked to provide their opinions regarding the learning that takes place in the school's programs. The popular techniques for collecting these impressions include surveys (students, alumni, employers), focus groups, and exit interviews. In contrast, the **direct** approach bases assessment on students' *demonstrations* of their knowledge or skills. ... There are many different direct assessment techniques – some take place in the classroom (course-embedded assessment), while others are part of the programs' graduation requirement (demonstration assessment).
>
> **Course-embedded** assessment is efficient and can produce very effective insight into student learning and the achievement of specific objectives. The distinction between assessment of a student in a course and course-embedded program assessment is an important one.

In terms of these definitions, the study reported in this paper pertains to course-embedded assessment within a specific course (our core MIS course in the MBA program), and examines the relationship between a direct assessment metric (the final course grade in terms of total points earned during the semester) and an indirect assessment metric (a student's self-assessed degree of knowledge growth in specific topical areas of the MIS curriculum based on survey responses).

The importance of assessments for continuous improvement of curricula and student learning is emphasized in the literature. The AACSB International specifies:

- The Assurance of Learning standards (standards 15-21) clearly acknowledge assessment of student learning as part of the curriculum management process. The standards call for schools to define learning goals, assess student achievement for these goals, and utilize what is learned through assessment to continually improve their curricular programs. AACSB expectations regarding Assurance of Learning Standards include: ...
- Student performance on learning goals must be assessed systematically and routinely. No one approach to assurance of learning is prescribed. Assessment programs should include direct measures of learning. Course grades are not program assessment measures.
- Program assessment does not require that every student be assessed. Sampling is acceptable as long as an appropriate and representative sampling methodology is utilized.
- Assessment results must be analyzed, disseminated, and utilized by the faculty toward curriculum planning. ...
- Faculty involvement in, and ownership of, the Assurance of Learning process is critical. Faculty are expected to be actively involved in all stages of the assessment process including defining goals, curriculum alignment, developing appropriate measures, implementing course-embedded measures, and, improving the school's curriculum.

The AACSB International standards for assurance of learning further specify:

> Management of Curricula: The school uses well documented, systematic processes to develop, monitor, evaluate, and revise the substance and delivery of the curricula of degree programs and to assess the impact of the curricula on learning. Curriculum management includes inputs from all appropriate constituencies which may include faculty, staff, administrators, students, faculty from non-business disciplines, alumni, and the business community served by the school.
>
> The standard requires use of a systematic process for curriculum management ... [emphasis added]

The work reported in this paper focuses on direct and indirect student-based components for continuously monitoring, evaluating, and improving the MIS core course curriculum in our MBA program.

As noted in the introduction and motivations section above, a broader set of important underlying questions in business management research concerns the ability of managers and executives to effectively gauge their own level of expertise in a particular subject-matter domain when considering decision making inputs from their subordinate SMEs. The AACSB International assurance of learning standards contain specifications related to the capabilities of business program graduates in this regard:

> Capacities developed through the knowledge and skills of a ... master's level program ... [include]:

- Capacity to apply knowledge in new and unfamiliar circumstances through a conceptual understanding of relevant disciplines.
- Capacity to adapt and innovate to solve problems, to cope with unforeseen events, and to manage in unpredictable environments. ...
- Capacity to critically analyze and question knowledge claims in the specialized discipline.
- Master's level students ... are able to apply appropriate specialized theories, models, and tools to solve concrete business and managerial problems. [emphases added]

Related to these considerations, the work reported in this paper addresses students' self-assessed levels of knowledge and proficiency in the MIS arena while they are in the MBA graduate program of study, as a precursor for their future performance as managers and executives in the business world.

A number of IT curriculum related assessment papers are also available in the literature. For example, Rahmlow, Hartlein and Moulton [2006] discuss direct assessment techniques for IT courses. Greenstein and McKee [2002] report on an empirical assessment of IT educators' and practitioners' self-perceived knowledge levels. Their work examined 36 information technologies of importance to the assurance profession, and provided "insights into issues with which educators, educational institutions, accounting/auditing firms, and government might be concerned in advancing information technology knowledge in the U.S.'s higher education and the accounting profession."

Many individual business school assessment plans and reports are available on the World Wide Web; a few of these have been included in the references and resources at the end of this paper.

Research Methodology: Objectives for Data Collection and Analysis

Data collection utilized a survey instrument, presented in Appendix A, with the three objectives of obtaining basic student demographic data (age, employment status, etc.), collecting data regarding students' usage of various IT devices and systems (such as PDAs and broadband Internet connections), and directly gauging students' self-perceived levels of knowledge and competency at the beginning of the core MIS course in the MBA curriculum and at the conclusion of that course. A variable ("delta knowledge growth") representing self-assessed knowledge growth would then be derived as the difference between these end-of-course and beginning-of-course knowledge levels.

In accordance with applicable laws and regulations, an application was submitted and subsequently approved by the university's Human Subjects Review Board to conduct collection, analysis, and presentation of data obtained from human subjects, i.e., the student participants in these preliminary studies.

The survey instrument was administered to three different sections of our core MIS course in the MBA curriculum. Data were collected by having students mark entries on an Excel spreadsheet questionnaire, and then submitting the spreadsheet as an attachment on en e-mail to the Professor. In some cases, items were left blank or were apparently incorrectly recorded, although all usable responses were included in the analysis (i.e., data were not discarded based on the Professor's suspicion of inaccuracy or hasty and unthoughtful response).

Data processing involved both descriptive and statistical analyses. Two descriptive data analysis objectives were to elucidate the percentage of students currently utilizing various IT devices and systems, and to present the delta knowledge growth (change in self-assessed knowledge levels from beginning to end of the course) in specific topical areas covered in the core MIS course in the MBA program. The specific surveyed topical coverage categories were:

- Overall IT knowledge and skill level
- Computer hardware technologies and systems
- Computer software technologies and systems
- MIS (management information systems) technologies and systems
- TPS (transaction procesing systems) technologies and systems
- Decision support technologies and systems
- ESS (executive support systems) technologies and systems
- KWS (knowledge work systems) technologies and systems
- Office software applications (word processing, spreadsheets, desktop databases, presentation software, etc)
- AI (artificial intelligence) technologies and systems
- Communications and networking technologies and systems
- IT support for business processes
- Data base technologies and systems
- Multimedia technologies and systems
- Programming technologies and systems
- Internet/World Wide Web technologies and systems
- Emerging IT technologies and systems (eg, RFID, dual core processors, etc)

A further analytical objective was to examine the degree of correlation between a student's self-assessment of knowledge growth in the course and the actual course grade obtained by the student in the course. Grades were based on a 1000 point scale as follows:

Exam I and Exam II	600 Points
Term Project	200 Points
Class Participation and Case Presentation	200 Points
Total Course Points	1,000 Points

The working hypothesis adopted for this statistical analysis was that self-assessed knowledge growth is linearly correlated with course grade. For each individual student, the metric for overall self-assessed knowledge growth in the course was defined to be the sum of the deltas for the surveyed topics, i.e., the sum of the knowledge level dif-

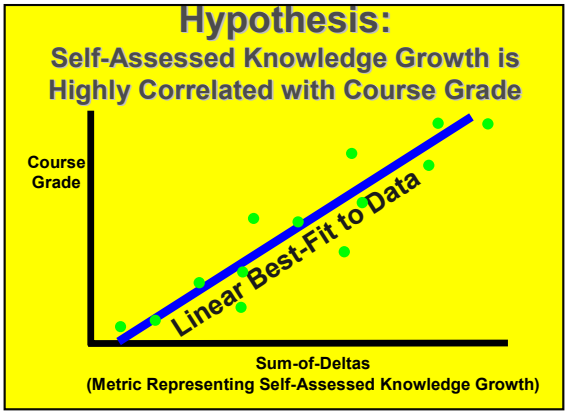
ferences (end-of-course level minus beginning-of-course level) across the surveyed topical coverage areas.

Results of Preliminary Investigation

This section presents the data gathered during this investigation and the statistical analysis of those data. The following section will discuss these results.

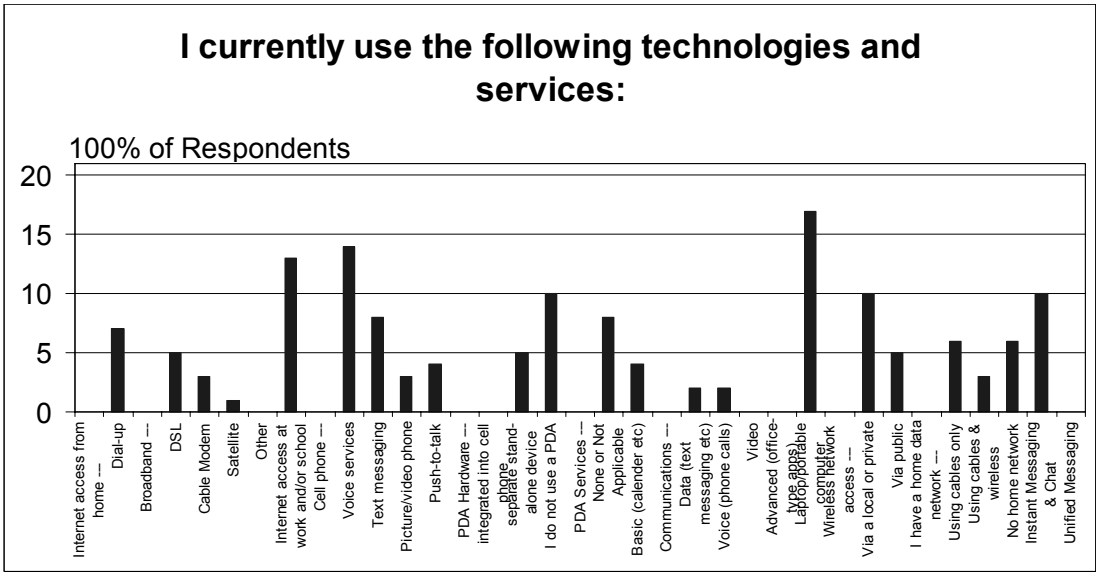
Figure 2 presents the data and Figure 3 plots the data in each topical category covered in the course. In Figure 3, the solid bar plotted for each category represents the range of +/- one standard deviation about the mean of the students responses, while the number within the bar indicates the average value in that category. The grand average (average of the category averages) is represented by a dashed line at a value of 1.53.

Figure 4 plots course grade (number of points earned of a possible 1000 points in the course) versus sum-of-the-deltas (the metric for overall self-assessed knowledge growth). Figure 5 presents the statistical analysis investigating the hypothesized linear correlation.



respondents routinely used the Internet from home or work, which is roughly consistent with usage rates in the overall national population. After laptops, cell phone utilization scored the highest percentage at 67%, although relatively low percentages were using smart phone features such as text messaging (38%), video (14%) and push-to-talk (19%). Somewhat surprising was that less than half (48%) were not using PDA devices (Personal Digital Assistants). 48% of respondents indicated that they use IM (Instant Messaging) and chat services, but

Figure 1
presents the data regarding student usage of various IT devices and systems.



Discussion of Results and Preliminary Conclusions

We first examine the survey results pertaining to use of IT devices and systems. The overall conclusion from the preliminary data set is that the surveyed MBA students do not appear to be aggressive early adopters for the collection of IT devices and systems that were assessed. Laptop utilization was quite high (81%) as would be expected in an MBA program that strongly encouraged laptop usage. 62% of none of the respondents indicated use of unified messaging technologies. Only 29% indicated that they had home networks using cabling (only) and just 14% reported home networks that incorporated wireless access points.

Although the quantity of data in this preliminary assessment is fairly low, if this trend is substantiated in larger data sets then it suggests that perhaps the MIS core course should do more in its curriculum to encourage, promote, and stimulate usage of relatively new IT devices

and systems (certainly those that have been demonstrating strong adoption trends in the ranks of professional business people). In-class demonstrations and some hands-on lab exercises could be used to accomplish this goal.

The second major finding was that, on average, student participants in this study had about a 15% self-assessed improvement in knowledge level across the IT topical categories covered in the MIS core course and included in the survey questionnaire. This statistic was actually measured in two different ways. One survey question specifically asked the students to directly assess their overall knowledge growth in IT, and the average response to this question was about 1.4 points (on a 1Ø point scale), or about a 14% improvement. The second method indirectly measured overall IT knowledge growth by averaging the knowledge growth responses across all of the IT categories included in the survey (but not, of course, the overall IT growth question itself). This estimate yielded the "average of the average" responses to be 15.4% which is consistent with the students' direct response to overall knowledge growth of about 14%. Since the standard deviation of the "average of the average" delta knowledge growth was Ø.21, it appears that a statistically significant overall IT knowledge growth has been observed. Nonetheless, the general result of only about a 15% overall self-assessed improvement seems somewhat underwhelming, and future efforts (in curriculum developments, pedagogical methodologies, and in further and more extensive data collection) should seek to achieve higher levels of overall self-assessed growth.

Figure 2
Specific Topical Course Coverage Areas

Specific Topical Course Coverage Areas:	AVG	Std Dev
Overall, I would rate my IT knowledge and skill level	1.38	1.63
My level of familiarity and knowledge of computer hardware technologies and systems	1.38	1.43
My level of familiarity and knowledge of computer software technologies and systems	1.33	1.35
My level of familiarity and knowledge of MIS (management information systems) technologies and systems	1.48	1.44
My level of familiarity and knowledge of TPS (transaction procesing systems) technologies and systems	1.62	0.97
My level of familiarity and knowledge of decision support technologies and systems	2.19	1.69
My level of familiarity and knowledge of ESS (executive support systems) technologies and systems	2.15	1.76
My level of familiarity and knowledge of KWS (knowledge work systems) technologies and systems	1.75	1.65
My level of familiarity and knowledge of office software applications (word processing, spreadsheets, databases, etc)	0.67	1.85
My level of familiarity and knowledge of AI (artificial intelligence) technologies and systems	2.00	1.67
My level of familiarity and knowledge of communications and networking technologies and systems	1.71	1.42
My level of familiarity and knowledge of IT support for business processes	1.19	1.54
My level of familiarity and knowledge of data base technologies and systems	1.20	1.47
My level of familiarity and knowledge of multimedia technologies and systems	1.40	1.39
My level of familiarity and knowledge of programming technologies and systems	1.35	1.31
My level of familiarity and knowledge of Internet/World Wide Web technologies and systems	1.29	1.42
My level of familiarity and knowledge of emerging IT technologies and systems (eg, RFID, dual core processors, etc)	1.95	1.50
AVG Col Average	1.53	
AVG Col Std Dev	0.20	

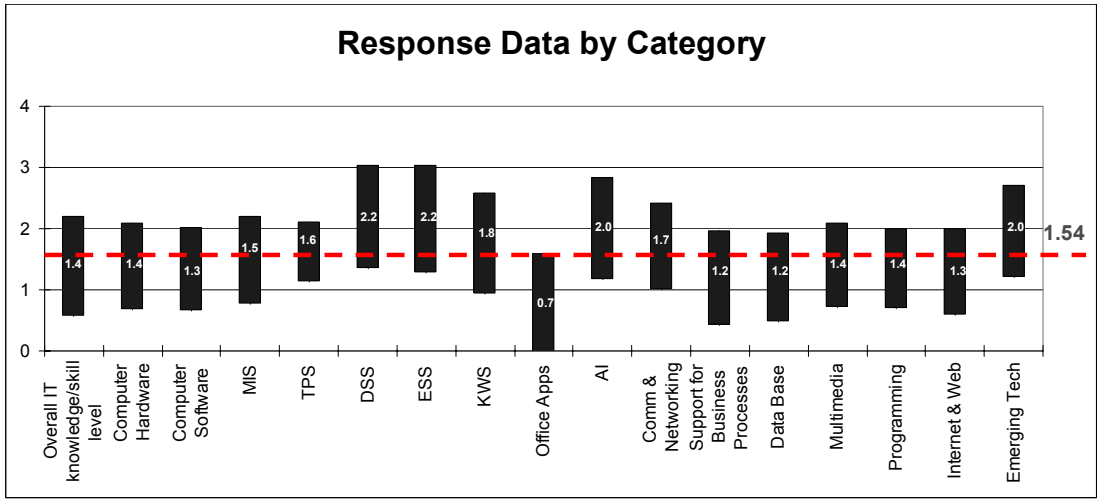
The third major finding indicates that there were variations in self-assessed knowledge growth in each of the individual categories of IT knowledge specified in the survey instrument. Those topical areas showing the greatest self-perceived knowledge growth included decision support systems, executive support systems, artificial intelligence, and generic emerging technologies. On the other hand, the weakest area was in the category of office applications; presumably, the students believed that they had high levels of knowledge on this topic coming into the course and consequently did not see see strong improvements here.

The fourth and final major finding is that the hypothesis that self-assessed knowledge growth is linearly correlated with course grade is rejected. The data plot itself (Figure 4) visually suggests what the formal statistical analysis concluded – there is no statistically significant correlation between grades and self-assessed knowledge growth (based on the limited set of data available for this preliminary study). Possible explanations for this observation fall into two types: generic and study-peculiar. The study-peculiar explanations include the particular course grading rubric, the particular professor's grading style, and other factors common to the students themselves and/or to pedagogical aspects of the course (lecture presentations, use of supporting materials, exam preparation, etc.). Future efforts that are more extensive in scope (spanning different professors, different textbooks, etc.) and in scale (many more data points in the sample) may indicate whether the preliminary results reported here are generalizable or are peculiar to the limited study undertaken thus far. If the lack of correlation between self-assessed knowledge growth and course grade is found to hold-up in studies with greater scope and scale, then more work would be warranted to uncover the reasons behind this independence. Furthermore, the lack of correlation between student perceptions of knowledge growth and their formal grades should be studied in disciplines beyond IT courses, and the implications of such findings will need to be examined to elucidate underlying factors leading to the absence of correlation. Although one might argue that a student with a great deal of knowledge and experience in a particular subject area who takes a core course in that subject would receive a high grade yet might report a low degree of knowledge growth, this case is undoubtedly a relatively rare occurrence and hence might reduce the correlation but not entirely eliminate a correlation expected for the "average" student in a program. (Indeed, an overqualified

student taking a course begs the question: Why is that person paying for the program of study in the first place?)

- Student participants in this study had, on average, about a 15% self-assessed improvement in knowledge level across the IT topical categories covered in the MIS core course and included in the survey questionnaire
- Variations in self-assessed knowledge growth appeared across the individual categories of IT knowledge specified in the survey instrument, with the greatest self-perceived knowledge growth occurring in the areas of decision support systems, executive support systems, artificial intelligence, and generic emerging technologies

FIGURE 3

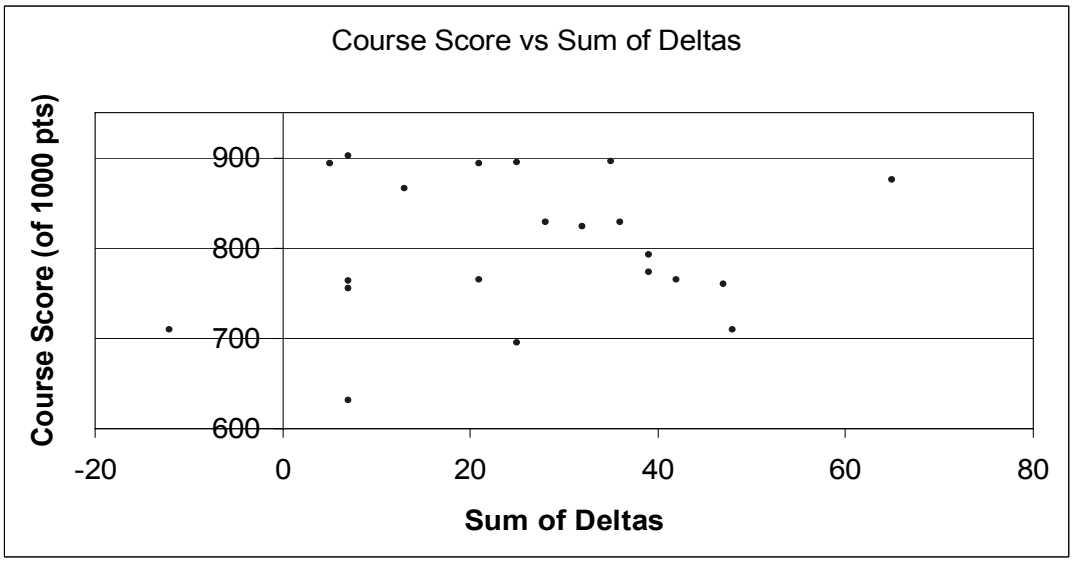


Summary and Considerations for Further Work

In summary, the four conclusions resulting from this preliminary investigation are:

- The MBA student respondents did not appear to be aggressive early adopters of IT devices and systems

FIGURE 4



- Data obtained in this study suggest that there is no statistically significant correlation between grades and self-assessed knowledge growth.

As noted, this work is considered to be a preliminary investigation due to the limited scope and scale of data collection and the initial experimental nature of the survey instrument itself. Nonetheless, the results suggest that further more detailed and expansive data collection and analysis along the research lines explored here is warranted. Towards that end, we briefly discuss considerations for future work.

FIGURE 5

0.528332	787.5374
0.964071	30.15012
0.015561	79.54107
0.300328	19
1900.107	120208.8

m	**b**
se_m	**se_b**
r_2	**se_y**
F	**d_f**
ss_{reg}	**ss_{resid}**

slope in y = m x + b	intercept in y = m x + b
Standard error value for the coefficient m	Standard error value for the constant b
Coeff of Determination; 1= perf corr; 0 min	Standard error value for the y estimate
F-statistic, or F-observed value	Degrees of Freedom
Regression sum of squares	Residual sum of squares

F-Test:

n = 21 where n - number of data points
v1 = 1 where v1 = n - df - 1
v2 = 19 where v2 = df
FDIST: 0.590058 **= probability that an F value this high occurred by chance**

t-Test:
Test the statistical significance of the m (slope) coefficient

Alpha (Leve	df	t-critical	t-observed = m/se_m	
0.1	19	1.729133	0.548021	Stat Insig
0.05	19	2.093024	0.548021	Stat Insig
0.01	19	2.860935	0.548021	Stat Insig
0.001	19	3.883406	0.548021	Stat Insig

If ABS(t-observed) > t-critical, m is statistically significant at the alpha level

Stat Sig **Statistically Significant**
Stat Insig **Statistically Insignificant**

The data collection methodology used in this investigation was appropriate for the scale and scope of the initial effort, but clearly improvements can be made for future work. Data collection would be expedited and accuracy improved (i.e., completeness and thoughtfulness) by converting the data collection instrument to a Web-based form that included validation checks before its submission was accepted.

The survey instrument was administered to students at the conclusion of the semester of study. Thus, students were asked to reflect back on their knowledge level at the beginning of the course some three months earlier. This approach has the advantage that the students' perspectives about the breadth and depth of the knowledge domain has been enhanced by taking the course. In other words, if a student knew essentially nothing about executive support systems before taking our core MIS course, they might perhaps naively overestimate their knowledge level in this category before taking the course, whereas at the end of the course, having been exposed to the subject matter, they have a better perspective about where they stood along the knowledge level spectrum at the beginning of the course. An alternate approach would be to administer two surveys – one at the beginning and one at the end of the course. Two approaches could be trialed: allow students access to their beginning of course self-assessed knowledge level responses, or have them complete the end-of-course assessment without referring back to their initial responses. The former approach might arguably promote greater consistency between the beginning and end-of-course responses, while the latter approach might arguably avoid biasing the end-of-course responses, assuming that the students maintained exactly the same belief function for their knowledge level. A hybrid approach might also be studied. Students could be asked to assess their knowledge level in various areas at the beginning of a course. At the end of that course, they could be asked not only to gauge their knowledge level from an end-of-course perspective, but also to go back and reassess their beginning-of-course knowledge levels, now with "20-20 hindsight" about the breadth and depth of the topical area.

Collection of sufficient quantities of data to facilitate a more significant investigation is limited by the number of students per semester taking our core MIS course in the MBA program. In addition, collecting data at only one university raises issues of program-specific and professor-specific influences that may skew results, especially the attempt to observe a correlation between course grades and self-assessed knowledge growth. To remedy these deficiencies, future studies should incorporate data from multiple MBA programs at different universities. Such an approach will generate adequate quantities of data in a shorter time frame and may help mitigate the undesirable influences that can plague an investigation based on a single institution's program.

Finally, three questions should be addressed in future studies. What does the correlation, or lack thereof, between self-assessed knowledge levels (an indirect assessment) and actual grade performance (a direct assessment) in an MBA program imply about metrics and evaluation tools related to assurance of learning standards? What are the underlying factors that account for this correlation, or lack thereof? What future research work might be undertaken to further develop this line of inquiry regarding assurance of learning objectives, metrics, and assessment tools?

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Appendix A
Survey Instrument

This is a preliminary survey assessment tool being developed for research purposes within the Byrd School of Business (BSB).
The purpose of this tool is to assess improvements in the correlation between student self-perceptions of their IT knowledge/skills and their actual IT knowledge/skill level at the start of, and conclusion of, an IT-related course or program of study completed in the BSB MBA program. This information is used solely for statistical purposes and individual responses are kept confidential.
This information has no relationship or impact on a student's graded performance in a course or program of study, except that final course/program grades may be correlated with student self-perceptions after the course/program is completed.
Please answer all questions as truthfully and accurately as possible. Thank you for helping us with this research effort.
INDICATE YOUR RESPONSES by typing a lower case x in Column A to the left of rows to which you are indicating an affirmative "YES" response
Your SU Student ID Number

Part I:

1) Your gender:
   - Male
   - Female
2) Your age group:
   - under 25
   - 25-30
   - 30-35
   - 35-40
   - 40-45
   - 45-50
   - over 50
3) Your highest educational level already completed thus far:
   - High School
   - College
   - Master's Degree
   - PHD or other Professional Degree (JD, MD, etc)

4) You routinely use the following products or services:
   - Internet access from home ---
     - Dial-up
     - Broadband ---
       - DSL
       - Cable Modem
       - Satellite
       - Other
   - Internet access at work and/or school
   - Cell phone ---
     - Voice services
     - Text messaging services
     - Picture/video phone services
     - Push-to-talk (eg, Nextel or similar) services
   - PDA (Personal Digital Assistant) Hardware ---
     - My PDA is integrated into my cell phone
     - My PDA is a separate stand-alone device (eg, Blackberry, Palm, etc)
     - I do not use a PDA
   - PDA (Personal Digital Assistant) Services ---
     - None or Not Applicable
     - Basic (calender, contacts, scheduling, etc)
     - Communications ---
       - Data (text messaging, e-mail, Internet browsing, etc)
       - Voice (phone calls)
       - Video
     - Advanced (office-type software applications)
   - Laptop or other portable computer
   - Wireless network access
     - Via a local or private wireless network such as a home or office wireless access point (WiFi or similar)
     - Via public wireless access points (WiFi, WiMax, or others)
   - I have a home data network ---
     - Using cables only
     - Using cables and wireless
     - No home network
   - Instant Messaging & Chat (text/audio/video/file sharing)
   - Unified Messaging
5) Your current employment status:
   - I am a full time MBA student (skip to Part II below)
   - I am a full time graduate student but not in the MBA program (skip to Part II below)
   - I am a part-time student currently employed in a managerial/executive position
   - I am a part-time student currently employed in a NON-managerial/executive position
   - I am a part-time student currently unemployed (skip to Part II below)
6) If you are currently employed, do you work in an IT-related business or industry?
   - Yes
   - No

APPENDIX A (CONTINUED)
SURVEY INSTRUMENT

7) If you are currently employed please select the best description of the industry in which you are employed:

- Accounting
- Agriculture/Forestry
- Chemicals/Mining
- Computer Services (Data Processing/Sales/Repair/Leasing/Training)
- Construction/Engineering/Architecture
- Consulting/Business Services
- Education/University/Research & Development
- Energy Production/Generation/Distribution/Exploration
- Finance/Banking/Securities and Investments
- Food Services: Retail/Distribution
- Health/Medical/Dental Service Provider
- Hospitality/Recreation/Hotel/Travel/Tourism
- Insurance
- Legal
- Manufacturing/Design: Automotive
- Manufacturing/Design: Business Products, Office Equipment other than IT
- Manufacturing/Design: Consumer Products and Durable Goods (non-electronic, non-automotive)
- Manufacturing/Design: Defense/Arospace
- Manufacturing/Design: Electronics (Consumer and other systems including microelectronics)
- Manufacturing/Design: Heavy Equipment, Manufacturing/Production Equipment
- Manufacturing/Design: IT including Computers, Peripherals, Networking, Communications
- Manufacturing/Design: Public Sector Products and Systems (other than defense, aerospace)
- Manufacturing/Design: Transportation/Shipping
- Marketing/Advertising
- Media Services (Radio/Television/Publishing/Printing/Entertainment Production; non-telecom)
- Non-Profit Organization
- Pharmaceuticals/Biotechnology
- Real Estate (Residential, Commercial, Development)
- Repair/Refurbishing/Re-Manufacturing
- Retail (Consumer and Household Products, Durable Goods)
- Service Provider to the Public Sector and/or Government(s)
- Software Production and Design
- Systems/Network Integrator; Value-Added Reseller (VAR); IT Distributor
- TeleCommunication Service Provider (Telephone/Wireless/Online/ISP/Web Hosting
- Trade (or other) Associations
- Transportation/Shipping Services
- Utilities (Water, Electric, Gas, etc. provided to end-users - NOT Telecom)
- Others

APPENDIX A (CONTINUED)
SURVEY INSTRUMENT

Part II:
For the following questions, the 0 to 10 point scale indicates none (eg, 0) to 100% (eg, 10) knowledge and/or proficiency level in the specified IT category. For each question, place a lower case x under the number on the blue bar that best indicates your response.

Please answer the following questions from your perspectives at the START of your current IT-related course/program of study in the BSB MBA program:

8) Overall, I would rate my IT knowledge and skill level as:

0	1	2	3	4	5	6	7	8	9	10

9) My level of familiarity and knowledge of computer hardware technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

10) My level of familiarity and knowledge of computer software technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

11) My level of familiarity and knowledge of MIS (management information systems) technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

12) My level of familiarity and knowledge of TPS (transaction procesing systems) technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

13) My level of familiarity and knowledge of decision support technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

14) My level of familiarity and knowledge of ESS (executive support systems) technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

15) My level of familiarity and knowledge of KWS (knowledge work systems) technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

16) My level of familiarity and knowledge of office software applications (word processing, spreadsheets, desktop databases, presentation software, etc):

0	1	2	3	4	5	6	7	8	9	10

17) My level of familiarity and knowledge of AI (artificial intelligence) technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

18) My level of familiarity and knowledge of communications and networking technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

19) My level of familiarity and knowledge of IT support for business processes:

0	1	2	3	4	5	6	7	8	9	10

20) My level of familiarity and knowledge of data base technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

21) My level of familiarity and knowledge of multimedia technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

22) My level of familiarity and knowledge of programming technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

23) My level of familiarity and knowledge of Internet/World Wide Web technologies and systems:

0	1	2	3	4	5	6	7	8	9	10

24) My level of familiarity and knowledge of emerging IT technologies and systems (eg, RFID, dual core processors, etc):

0	1	2	3	4	5	6	7	8	9	10

APPENDIX A (CONTINUED)
SURVEY INSTRUMENT

Please answer the following questions from your perspectives at the END of your current IT-related course/program of study in the BSB MBA program:

25) Overall, I would rate my IT knowledge and skill level as:
0 1 2 3 4 5 6 7 8 9 10

26) My level of familiarity and knowledge of computer hardware technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

27) My level of familiarity and knowledge of computer software technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

28) My level of familiarity and knowledge of MIS (management information systems) technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

29) My level of familiarity and knowledge of TPS (transaction procesing systems) technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

30) My level of familiarity and knowledge of decision support technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

31) My level of familiarity and knowledge of ESS (executive support systems) technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

32) My level of familiarity and knowledge of KWS (knowledge work systems) technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

33) My level of familiarity and knowledge of office software applications (word processing, spreadsheets, desktop databases, presentation software, etc):
0 1 2 3 4 5 6 7 8 9 10

34) My level of familiarity and knowledge of AI (artificial intelligence) technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

35) My level of familiarity and knowledge of communications and networking technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

36) My level of familiarity and knowledge of IT support for business processes:
0 1 2 3 4 5 6 7 8 9 10

37) My level of familiarity and knowledge of data base technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

38) My level of familiarity and knowledge of multimedia technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

39) My level of familiarity and knowledge of programming technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

40) My level of familiarity and knowledge of Internet/World Wide Web technologies and systems:
0 1 2 3 4 5 6 7 8 9 10

41) My level of familiarity and knowledge of emerging IT technologies and systems (eg, RFID, dual core processors, etc):
0 1 2 3 4 5 6 7 8 9 10

International Student Intensive Seminar in Europe—A Case Study in Learning Innovations for Global Awareness

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ABSTRACT

The importance of providing global perspectives within business curricula continues to gain the attentions of industry, governments, accrediting bodies, and institutions of higher education. Many methods supply facts, but fall short of the cultural experience. One approach mimics a multinational professional seminar. A four-day international IT (Information Technology) Student Seminar was held in Helsinki, Finland in March 2006 attended by 28 upper division undergraduate students representing seven countries. Participating planners and speakers came from institutions in Finland, United States, Denmark, Malta, and Spain. This paper, presented as a case study, summarizes the planning and organization, event procedure, post-event evaluation, factors critical for success, and the tremendous potential impact on student learning and cross-cultural understanding for future business people.

Introduction

Globalization, international business, and cultural awareness are concepts most in the business world accept as fact. The assessment of preparedness is more relative; questions for study include what skills are needed most, how are business students being prepared, is it enough, and which method(s) work best. Sung Joo Kim, the founder of a South Korean retail chain and educated in both the U.S. and Europe was asked in an interview for BizEd how she thought business schools could give students a global perspective. She reflected that most Americans, in their self-contained market, continue to be very parochial and do not travel internationally. While acknowledging that her American education provided great leadership and fiscal training, it still presented an American-centered view of the world. Her European education offered cultural diversity with its multiple approaches to problem-solving. Kim believes students need to understand different cultures to prevent future isolationism (Shinn, 2006)

AACSB considers global awareness to be of great importance, listing it as a precondition for application to accreditation as well as being an Assurance of Learning standard. In its eligibility and standards document, AACSB (2006) states "Every graduate should be prepared to pursue a business or management career in a global context. That is, students should be exposed to cultural practices different than their own." Cant (2004) has explored the cultural aspects of global awareness and has identified five key cultural competencies needed by successful global managers: cultural self-awareness, cultural consciousness, ability to lead multicultural teams, ability to negotiate across cultures and a global mindset. Cant states, "Given U.S. business students very limited understanding of other societies and their cultures, business colleges face a major challenge to prepare students for global assignments." In studying U.S. business programs in the early 2000s, Cant found that a designated major, designated course, or infusion into other courses were the three commonly used paradigms to develop these cultural competencies. He concluded that these are helpful, but can still lack the depth of cultural values and the impact they have on international business.

If language trainers agree that immersion is the best way to learn a foreign language, then study/work abroad experiences could be the best way to gain cultural understanding a foreign culture. While the number of U.S. students studying abroad has more than doubled since 1995, for the 2003/2004 academic year the total number of students was approximately 191,000. Even with 17.5% of that number (33,500) being in business programs, it is far short of the numbers needed for business overall. (IIE, 2005). A study abroad experience for all business students is optimal, but unrealistic due to costs, time commitments, and other responsibilities. Schools offer academic tours lasting one to three weeks that are a blend of tour and discipline, but may lack the intercultural aspect desired. If the environment were such that the duration was shorter, participants more culturally varied, the setting more professional, and the structure more intense it might be possible for more students to have a high quality study abroad experience.

This case study offers one pedagogical approach that directly addresses the issue of global awareness and includes all five competencies identified by Cant, embodies the AACSB expectation, and is in line with the reflection of Sung Koo Kim. Due to its unusual academic nature it is referred to as an "event" rather than "course" although some students did receive credit for participation.

Event Planning and Organization

The idea for offering an intensive international student seminar for IT students originated in concept two years prior to the actual event. As with any innovation, it took time to discuss the idea, consider its merits, identify participating schools and lecturers, budget the costs, and become part of academic schedules. Constraints of the seminar were practical in nature: limited budgets, varying academic schedules of institutions and potential speakers, organizational staff resources, and time to put all the pieces together once a schedule was set. An additional constraint was the possible lack of students, i.e. the seminar needed be perceived as interesting enough to attract sufficient enrollment.

Goals

Specific goals existed that steered the seminar's framework. Firstly, lecturers from multiple European institutions having a pre-existing foreign exchange relationship were to be speakers. This would help fulfill obligations for those relationship agreements and give students an international awareness of education in their discipline. Secondly, IT students would do pre-seminar readings on current topics and be in their second, or preferably, third year to permit advanced topics and serve as a gateway to a professional career. Thirdly, the seminar would occur in an intensive week, or compressed time schedule, that involved day-long sessions with daily workshops in order to simulate a professional conference and enable students, granted one week of absence from their regular routine, to participate.

Chosen Framework

After considering the variables and constraints, the operational model included a four day conference with Day 4 as a planning day for organizers and speakers. Four institutions would have student participants, with the majority coming from the hosting school whose students were offered an incentive to register by eliminating any course conflicts, counting the seminar as one of the required IT elective courses, and faculty encouragement to key students. A limit was set at approximately 30 students who could be offered 3 ECTS if they wrote an additional post-seminar report. Prior to the seminar, all students were to be sent topics for self-directed research and preparation for workshop exercises. Workshop activities for students would follow-up the morning lectures. Students would be divided into mixed international groups for purposes of the seminar events, with a minimum of three countries represented on every team. The language of the seminar would be English.

Pre-event Preparations

Five people from the hosting school collaborated on planning and organization: three faculty, one program director, and the international affairs coordinator. Tasks were identified and delegated; most decisions were made as a committee or by the director. Local students were asked to serve as hosts to the guest students for evening shopping and social activities. The intent was to elevate student perceptions about the seminar, in turn to encourage them to act professionally. It is estimated that these tasks took a combined effort of 50-60 hours. Tasks included:

- Logistics (lodging for guest speakers and students, lunch and refreshment arrangements, seminar room reservations, Internet and computer resources for students, event sightseeing bus tour, student registration and email list)
- Program (itinerary, topic list, student groupings, communications with speakers, pre-seminar email announcements, workshop exercises, evaluation questions)
- Documents / materials (program brochure, attendee list, speaker handouts, etc.)

Pre-event Assigned Readings

An email was sent to students and guest speakers two weeks prior to the seminar dividing all participants into three research groups. The themes, shown in Table 1 were intentionally broad to allow student self-exploration. Students were asked to become familiar with several

Table 1
Pre-Seminar Research Themes

GROUP 1 IT/IS and Business	GROUP 2 Systems development	GROUP 3 Continued education
▸ key issues in IT management ▸ organizing increasing end user support and help desks ▸ outsourcing (domestic and offshore) ▸ problems and benefits of outsourcing ▸ skills and knowledge needed by CIO ▸ problems and obstacles for exploiting IT/IS in business ▸ end user support, help desks, and call centers ▸ outsourcing (domestic and offshore)	▸ end user training ▸ human computer interface ▸ decentralization and end user system development ▸ content management systems ▸ web application service providers and entrepreneurs for web services ▸ Business Process Reengineering or Enterprise Resource Planning ▸ development methodologies ▸ usability assessment ▸ development for intranets, web portals, and the paperless, self-service model ▸ quality web design developing accessible systems (for disabled users) ▸ post-implementation assessment	▸ professional certifications ▸ professional organizations and workshops ▸ role of higher education in alumni training and post-graduate schools ▸ creating successful IT-networks in the organization ▸ blogs, discussion boards and other tools that help you keep up-to-date ▸ the new borderless user community: how to manage heterogeneity in users

topics within their assigned themes. The groups would be redistributed at the seminar such that each team would have someone within its membership having additional information for each day.

Event Procedures for Days 1-3

During the morning sessions, presentations were made by speakers. Each afternoon student teams were assigned problems or topics to research. Teams presented their work at the end of each day.

Effective Use of Student Teams

Teams consisted of five-six members with at least three nationalities represented in each team. In some cases, exchange students from the host school were used to offset teams with fewer guest students. Each group also needed to include representation from each of the three pre-assigned reading topics. To promote effective use of student teams, a specialist in team-building techniques on the guest lecturer staff conducted daily briefings on team formation and theory, and rotated through the afternoon workshops to help teams overcome barriers. This external expertise was important in jump-starting the team bonding that ultimately occurred. After awarding certificates on the final day, team photos were taken.

Speaker Presentations

Speaker topics were chosen to extend topics covered in courses already taken: IT Management & Entrepreneurship in IT, Systems Development & Software Quality, Keeping the Skills of IT Professionals Up to Date – IT Education. Themes were broad enough to allow discussions on perspectives in different countries, and for workshops to follow various routes. Each IT speaker was given 50-60 minutes. A shorter, but daily timeslot, was given to the team-building expert.

Workshops

The afternoon workshops were left very fluid. Each day's speakers could suggest tasks or exercises for students to complete relating to the presentations. Other ideas came from seminar organizers. At the end of the morning sessions, teams were given handouts for afternoon workshops (samples are shown in Appendix A.) Multiple tasks were offered and teams could choose a preferred subtopic. Two hours were allocated for teams to use their knowledge, their previously located materials, and Internet access to address a team choice of topics. Computer access and meeting rooms were given to each team. Teams prepared a 10 minute presentation on their efforts which were presented at the end of each day. Each team decided how the presentation would be delivered.

Sightseeing Tour

To further simulate a professional conference and to encourage participant bonding, a city sightseeing tour was arranged. The tour, lasting two hours at the conclusion of Day 1, used a special tram popular with tourists and city residents.

Day 4 - Planning Day Summary

The planning day was attended by all organizers and speakers for a total of 9 people representing a range of viewpoints. The meeting consisted of three parts: review of student evaluations, brainstorming of ideas for the next seminar, and a group consensus time resulting in tentative plans.

Review of Student Evaluations

The two evaluation forms given to 28 students at the close of the seminar were compiled into a chart and graph for numerically rated items, and a summary of written comments for the likes/dislikes open end questions. The results of 26 responses, shown below in Tables 2 and 3, and Figure 1, were reviewed and seen as highly positive. The international aspect consistently rated high in both numeric and written feedback. While it is possible that the international aspect provided a "halo" or "goodwill" impact on the rest of the questions, taken at face value the evaluations indicate that the conference-type setting with daily themes/topics was an effective venue for the seminar. Areas with slightly lower numeric ratings and noted suggestions for improvement were the pre-seminar student preparation and level of depth, i.e. newness of information. The latter was split and probably was due to differences in the educational programs and student levels. Other suggestions for improvement related to increasing the seminar duration with more discussion time and student presentations.

The second survey involved the attitude of the students prior to the start of the seminar. Students self-reported English proficiencies were Good/No problem (15), Medium (8), and Hardly survival (3). Approximately one-half of the students had previous experience abroad, either for fun or work/study. When asked to answer Y/N on specific worries prior to the start, students answered "Yes" to oral communication (11), written communication (3), presentation skills (12), technical skills (11), teamwork (2), closer work with teachers of home university (0), sharing time with people of other cultures (1), organizing life in a foreign country (1). Most of the written comments mention a fear of presenting in general, regardless of the language used. The language issue increased their nervousness. Approximately one-half reported having prior experience in English oral and written communication and presentations with foreigners.

After reviewing the student feedback, planner and lecturer opinions were offered. In all cases, the seminar was thought to be highly successful and that the format was basically sound and effective. During all three days, we observed a relaxed and highly interactive atmosphere. Students were notably nervous during presentations and sometimes confused on the workshop expectations. Absenteeism was very low, almost non-existent. Some students had a harder time using the English language than others, but all made the effort. Oral

comments from guest students to their teachers confirmed that the seminar had gone a long way in giving students an international perspective in both academic and business IT environments. Informal networking with colleagues is as important to attendees of IT professional conferences as new knowledge gained. This seminar simulated that setting for these students, and thus prepared them in a broader way for their professional careers.

Table 2
Seminar Evaluation Results - Data

Question	Mean	great 5	4	3	2	bad 1
1. Division of days by themes / topics	4,54	16	8	2	0	0
2. Division of days into morning presentations and afternoon workshops	4,35	12	12	1	1	0
3. Choice for Day 1 theme: IT Management & Entrepreneurship	4,04	7	14	4	1	0
4. Choice for Day 2 theme: Systems Development & Software Quality	4,42	14	9	3	0	0
5. Choice for Day 3 theme: Keeping the Skills of IT Professionals Up to Date – IT Education	4,54	15	10	1	0	0
6. Lecturers / speakers from different countries	4,85	22	4	0	0	0
7. Working with IT students from other countries	5,00	26	0	0	0	0
8. Sitting at team tables during morning presentations (rather than in a lecture hall)	4,27	14	6	5	1	0
9. Process for the afternoon workshops (teams assigned problem or in-depth topic to research)	4,08	8	13	4	1	0
10. Resources available for afternoon workshops (rooms, computers, etc.)	4,52	15	9	0	1	0
11. Team presentations	4,38	12	12	2	0	0
12. Structure of a professional seminar rather than a class	4,40	14	7	4	0	0
13. Size limited to 25-30 students	4,35	16	5	4	0	1
14. Pre-seminar information for student preparation on themes / topics. (NOTE: it was meant to be general to allow more flexibility at the seminar. In the end, was this OK?)	3,56	3	8	14	0	0
15. New information learned at the seminar	3,96	7	11	4	2	0
16. International perspectives learned at the seminar	4,64	18	5	2	0	0
17. Overall quality of the seminar	4,23	10	13	2	1	0

Figure 1
Seminar Evaluation Results - Graph

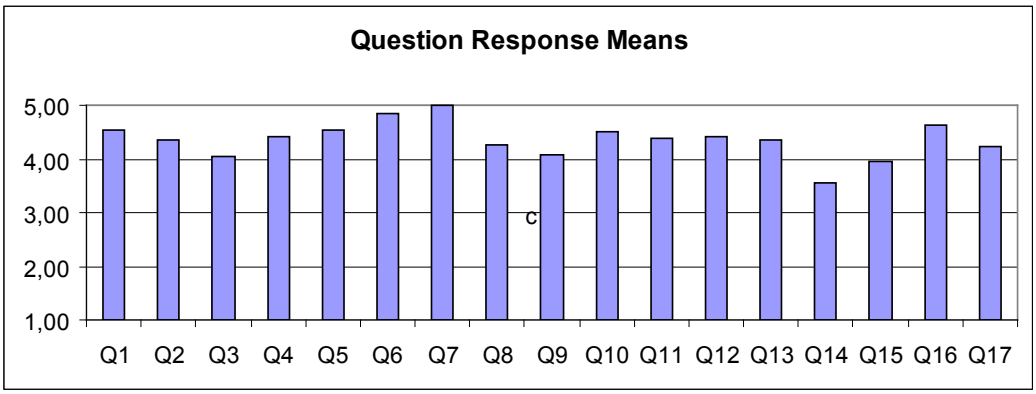

Table 3
Seminar Evaluation Summary of Written Comments

Liked		Suggestions for Improvement	
International experience	21	Improvements on themes / lectures	5
Learning new topics / ideas	8	Better/clearer/earlier information for advance student preparation	4
Meeting / work with new people	7	Have more discussion time / time for student presentations	4
Group work	7	Last longer (more days)	3
Socializing and relaxed atmosphere	6	Start later, eat lunch later	3
Learning about other educational systems	4	Do student introductions on 1st day (name and school/ home)	3
Student presentations	2	More students / countries/other locations	3

Brainstorming of Ideas Based on Lessons Learned

Based upon all feedback, it was concluded that there should be a "next" seminar. Approximately one hour was spent brainstorming ideas for the next seminar. The issue was one of refining to make it even better. Examples of ideas are listed here without evaluative comment.

- To improve team effectiveness in the short timeframe
  - Use team-building activities, preferably discipline-related as an icebreaker
  - Use role-playing of situations or problems
  - Assign the groups before the seminar so they can make virtual contact prior to arrival and/or begin an assigned task that will be completed at the seminar.
  - Have all students make an introduction about him/herself using a bulletin board before or on Day 1
- To improve team presentations
  - Give basic guidelines for presentations, perhaps a one page guide sheet similar to what is given to speakers at professional conferences
  - Let each student, or group of students from the same institution, present a sample of their work in a short, portfolio-oriented presentation. All students have done some kind of project and are thus more confident.
  - Require a more concrete team outcome developed during the workshops that would encompass many of the issues related to being a professional
  - Have a competition between groups for a project done
- To improve planning and organization and costs incurred
  - Use a web forum to post comments and ideas. especially in advance for information and communication between organizers and lecturers
  - Consider a virtual meeting where all planners are together online.
  - Consider having speakers from business deliver presentations rather than, or in addition to, lecturers.
  - Develop a list of host expectations and expenses to maintain consistency, avoid misunderstandings, and better budget
  - Determine number of credits that are consistent from location to location
  - Consider contacting businesses to be sponsors or look into grant funding to offset costs for students and faculty. Student travel is particularly difficult.

Critical Success Factors for Future Seminars

Given the multinational makeup of this planning group, it was important for ideas and rationale to be restated and revisited until it was clear everyone understood. Variations of ideas were suggested, discussed, evaluated and modified.

Theme: "How to be a Professional" is a good overall theme with a final list of sub-topics to include fundamental concepts and current events.

International participation: Representatives (students and lecturers) from at least four schools is needed to give the international flavor. This was the clear high point for the students and was agreed must continue.

Population: Limit the registration to 25-30 students with approximately half of the students coming from the host school. Too many students could make the groups too large, reduce the feeling of friendship, and remove the closeness of the group as a whole. Fewer students could lessen the international experience and discussion. Students should be upper level, likely to be considered to be high achievers by their peers/faculty.

Duration: The seminar should be extended from 3 to 4 days. This gives more time to incorporate student presentations and discus-

sion while maintaining the workshops and lectures. Adding one day, rather than two, is less risky in the sense that ending with an eagerness to want more is preferable to ending with a sense that it dragged on too long. Student evaluations were very high, with some specific requests for more time. Responding with a one day increase allows for another assessment on duration which could go up further, or back down, by one day.

Location, Dates, and Schedule: The seminar should rotate to different hosting institutions that may set the absolute dates. Running the seminar 9:30-16:30 is a solution to student requests for a later start time. A possible four day schedule is:

- Days 1 and 2 are a mix of team-building and student showcase presentations. Doing just one thing for a full day is likely to become boring. The workshop scenario would also be introduced early, as well as a possible social event (fully or partly outside of the 16:30 ending time).
- Days 3 and 4 would be a mix of group workshops and application lectures. Group presentations resulting from the workshops could occur at the end of Day 3 and 4, or just Day 4, depending on the nature of the workshops.

Components: A blend of team-building exercises, student showcase presentations, group workshops, faculty lectures, and a social event was considered optimal to achieve student interaction, technical knowledge, and open discussion.

- Since IT professionals are expected to work in teams, learning techniques for building and maintaining successful teams is very valuable. These team-building exercises provide an interpersonal component to the seminar, and if at least some exercises are structured around an IT situation, they also add a technical component. These exercises should be developed by a person with team-building expertise, in consultation with an IT person to ensure effective relevance.
- Use a showcase format for student presentations. A showcase of work already accomplished allows students to present with more confidence, shares technical knowledge and techniques, is likely to generate more discussion during and after the presentations, gives all students an insight into the kinds of work done at other institutions, and lets students work on concrete tasks prior to the seminar. All these reasons address problems stated in the student evaluations. These could be software applications, websites, design models, testing or training plans, or any other concrete work product. These are not abstract or academic concepts. It is an important distinction that these presentations are done by national groups who prepare in advance rather than the seminar groups. Students will be sent guidelines on how to make an effective presentation prior to the seminar.
- Group workshops should continue, but more planning is needed on the tasks involved. Using a running scenario or problem that is distributed on the first day and worked on throughout the seminar is the favored model. Student groups would present their work at the end of the seminar rather than the end of each day. A competitive environment was *not* chosen. While competitions would likely increase cohesion within individual groups, it could also deter a more relaxed discussion of open sharing between all students.
- Theoretical lectures by faculty, or industry representatives, should continue and also need more pre-event planning. Ideally, they would be a little less abstract theory and should tie the group workshop scenario to the themes.
- A structured social event should occur that is part of the seminar where all participants are expected to attend. It is up to the hosting school to pick an activity that reflects their location. Suggestions were sightseeing bus or walking tour, outing in nature, food-tasting event -- anything with a focus that helps to include the shy. A general open party without an activity is less likely to work for all.

Available Event Resources: Based upon results of the first seminar, a list of expectations was developed. Actual details are left to the host.

- A seminar room that holds all participants and allows for a professional atmosphere of presentation, including a computer, Internet connection, writing easel or board, and projector.
- Multiple group work areas to allow groups to work comfortably on their workshop tasks and includes computers, Internet access, memory sticks, and printers
- Name cards, programs, and certificates
- Beverages during the seminar, speaker lunches, and some provision for lunch facilities on or very near the premises for students. Providing food service reduces the risk that participants get distracted by the locale and fail to return after lunch.
- Assistance with reservations for accommodations for speakers and students.

Planning Communications: An organizational meeting (actual or virtual) with all institutions represented and email communications are needed six months prior to an event to plan themes in more detail.

Hosting Costs: Each location will have different costs, but for purposes of future hosting the following costs were incurred by the host.

- Speaker lunches, three days 135 € + Students lunches 90 €
- Coffee, beverages in seminar room, etc. 100 €
- Sightseeing excursion: 750 €
- Photocopies: 100€
- Closing dinner for lecturers: 235€
- Time of hosting staff: 60-70 hours before seminar, 10 hours during seminar (exclusive of seminar hours).

Summary

The goal of the planners was to offer an intensive, conference-style seminar on current topics, using existing faculty resources from

exchange partnerships, delivered to upper division students in an international atmosphere. As an innovative learning environment, this first event was highly successful – primarily from the growth in cultural awareness, breakdowns of stereotypes, and learning how to work in professional multicultural teams. With every student participant rating "working with students from other countries" as 5 out of 5, the gains were more cultural than discipline-related. First-time events are uncertain entities with lessons to be learned. These lessons were discussed, documented, and used to plan a second year event. The pedagogical approach of this case study is admittedly narrow in the number of students it can impact, but broad in the potential impact to tomorrow's businesses by those involved students. It can be used in any business discipline, and is less intrusive and more manageable than a longer study abroad experience.

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Appendix A
Seminar Workshops Samples

The following are offered as ideas. Teams may take a topic and develop a different end product based upon their interests and findings.

Offshoring

What is offshoring? The term "offshoring" is often considered as being opposed to national interests. Is it really bad for a country to offshore? If so, in what way? How large is the issue? Some economists believe that to offshore is actually good for a country's economy. What are their reasons? Can these two different opinions be both correct?

Entrepreneurship

What does it take to be a successful entrepreneurship? What problems exist for entrepreneurs? What sort of training is needed to encourage entrepreneurship in IT?

Will software developed by outside entrepreneurs be of higher quality than software developed within a firm? Should governments promote entrepreneurs? If so, how?

Knowledge Management

What is the value of knowledge to an organization? How can it be measured? How can knowledge be managed so a company can locate the right person with the right knowledge at the right time? What knowledge management software exists? Do many companies use this software? What multi-cultural issues are related to knowledge management? Does knowledge management invade employee privacy?

Development of accessible systems

People with disabilities have been given some help by governments and business, such as handicapped-accessible entrances, lifts, and public services. How can the IT professional make software accessible to people with disabilities? Is this a large problem? What are the added costs to the disabled users, and to the system provider?

What barriers exist in standard software to people with disabilities? What human computer interface components should be considered during design to overcome those barriers? Is there a trend for governments to step in and require accessible systems?

End User Support

How should businesses organize End User support? What are the major concerns managers of Help Desk and End User support centers? What solutions have been tried? What solutions are the most effective? What kind of IT employee is the best fit for work and management of Help Desk support centers?

Keeping the Skills of IT Professionals Up to Date – IT Education

A Diagnostic Cards technique poses problems for students to solve by reflecting on their career five years in the future. There are no right answers. Each diagnostic card has the following components: Problem statement worded as a contradiction (A ... but ... B); Cause (why does problem exist), Consequences (how important is the problem); and Solution (what can we do about the problem). Samples problems were:

There are a lot of certifications and I have a lot of them, but they don't really get me anywhere in the working situation.

I can see that the technology and tools change all the time, but I can't keep up

1. The new methods increase the speed and lower the costs of our software development, but I just feel my work is getting less and less interesting.
2. I can see that the technology and tools change all the time, but I can't keep up
3. The new methods increase the speed and lower the costs of our software development, but I just feel my work is getting less and less interesting.

Recommended Guidelines for Formatting and Writing Introductory Business Statistics Case Study Reports

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ABSTRACT

Business students learn many of the fundamental analytical skills they will use in the workplace in their business statistics courses. A good business statistics curriculum will also foster the development of written communication skills needed to convey the analytical results effectively (Radke-Sharpe; Boger; Nolan and Speed; Hiemstra). Case studies were recently incorporated into the Introductory Business Statistics course at the University of Alabama in Huntsville as a means of teaching the basic concepts of this second dimension of statistical learning. Unfortunately, the written submissions failed to meet the instructor's expectations and exposed two weaknesses: (1) students did not understand the results of their analysis to the point where they could explain the implications of their results to others in written form; and (2) current recommended writing formats for such reports were inadequate for this particular application.

This paper examines how the guidelines for the Business Statistics case study report can be revised to help students write papers that effectively communicate the results and implications of statistical analyses to the target audience. This paper covers the following:

- *Reviews of student case reports and scholarly research*
- *Suggestions for pedagogical guidelines*
- *Suggestions for the explanation of statistical material.*

The recommendations are based upon a review of student writing and best practices in business and technical communication considered in light of genre theory, the role of writing in the Statistics classroom, the constraints associated with writing in an introductory course, and the instructor's pedagogical goal for the assignment.

Introduction

A popular workplace motto is "Speak with Data," which refers to the strategy of backing up your opinions concerning business operations and strategy with appropriate and properly executed analysis of relevant business data. Using this approach for making business decisions, particularly in a team environment, will reduce the conflicts and strife that result from attempts to resolve issues with intuitive opinions and hearsay evidence from the group members rather than with hard data. This is in addition to the obvious benefit of optimizing business decisions through the use of data analysis.

Business students learn many of the fundamental analytical skills they will use in the workplace in their business statistics courses. These skills not only prepare them to "speak with data" in the workplace—they prepare them for future investigations in economics, marketing, finance, accounting and other business disciplines. A good business statistics curriculum will also teach critical thinking skills through statistical problem-solving, as well as the written communication skills needed to convey the analytical results effectively (Radke-Sharpe; Boger; Nolan and Speed; Hiemstra). One technique for teaching the basic concepts of this second dimension of statistical learning is to use case studies within the statistics courses (Chatterjee et al.). Case studies increase student learning because they require self-discovery and innovative problem-solving, they are interesting and stimulating, and they encompass a comfortable learning approach that the student may have encountered in other courses (Parr and Smith).

A case study involves the evaluation and study of a particular real world event, process, or organization for the purpose of understanding the inside workings and dynamics of the phenomenon through relevant analysis, then communicating the results of the analysis to a target audience. By engaging with real situations and circumstances, students learn to place data in context, thus turning it into information that decision-makers can use. Case studies create a learning experience by using factual data and situations (Naumes and Naumes). Hence, case studies function not only as a pedagogical instrument to reinforce learning, but also as a chance for students to apply their knowledge in a way that helps them transition to the workplace (Williams and Strother 230). Other benefits of the case study pedagogy, not possible with other instructional techniques, are the evaluation of real and familiar events, making a tangible connection between the real-world and classroom writing, and the challenges of addressing ambiguous and complex problems for which more than one solution is possible (Williams and Strother).

Case studies were recently incorporated into MSC 287, Introduction to Business Statistics, at The University of Alabama in Huntsville. The first time students submitted reports in Fall 2005, their writing failed to demonstrate an understanding of the processes they used and of the graphs they generated to solve the case study problem they were assigned. The guidelines for writing the case study report for MSC 287 covered purpose and audience, as well as the instructor's expectations for the format and content of the case study report. From this first trial of case study use in these classes, the instructor learned two things: (1) students did not understand the results of their analysis to the point where they could explain the implications of their results to others in written form; and (2) current recommended writing formats for such reports were inadequate for this particular application.

This paper examines how the guidelines for the MSC 287 case study report can be revised to help students write papers that effectively communicate the results and implications of statistical analyses to the target audience. This paper covers the following:

- Reviews of student case reports and scholarly research
- Suggestions for pedagogical guidelines
- Suggestions for the explanation of statistical material.

The recommendations are based upon a review of student writing and best practices in business and technical communication considered in light of genre theory, the role of writing in the Statistics classroom, the constraints associated with writing in an introductory course, and the instructor's pedagogical goal for the assignment.

Review of Student Case Reports

Seven of the eighty student reports written by students in MSC 287: Business Statistics I (Fall 2005) were randomly selected for detailed review in this study. The findings are summarized in Appendix A. The instructor had communicated the purpose, audience, and grading criteria for the assignment (Appendix B). The purpose of the case study report was "to foster the development of writing skills used to communicate results and conclusions to a variety of audiences" (Appendix B). Students were to write the results of their analysis for "a general audience, with a basic familiarity of statistical techniques" and present the findings in a formal report that included a cover page and the following report sections: Introduction, Analysis, and Summary and Conclusions. The instructor indicated that she valued creativity in problem-solving and stated, "Grading will be based not only upon the accuracy of the analysis, but the quality of the writing as well." The reports the instructor received, however, fell short of her expectations.

What Did Students Write?

A review of case study reports that MSC 287 students prepared on an average life span analysis of Huntsville residents reveals that six out of seven students were not able to explain their results to a layperson (see Appendix A). Only one student, Student 3, used the report format guidelines for presenting information to readers. On the surface, these findings appears to support a common pitfall in technical writing: "Form and style become, in theory, self evident as content" (Miller 50-51). By not explaining their data, these student writers seem to assume that the meaning of their data is transparent.

A textual analysis shows that five of the seven students sought to create a significance that overlapped with real-life concerns for the statistical analyses they had performed. One writer compared his data to the Alabama Department of Health statistics for Madison County and the Census Bureau figures for Alabama. Another compared his findings to numbers for Charlotte, North Carolina. The rest of the students sought a practical application for their results: Is Huntsville a good place to choose to live? What was the cause of death for people under 40? How can Huntsville residents extend their lifespans? Their attempts to contextualize their data emerged at the end of the reports.

Why Did the Reports Not Meet the Guidelines?

Three factors contributed to the students' difficulty with the case study reports: inexperience with the genre, cognitive overload, and a false rhetorical situation.

Inexperience with Genre

The genre that the students were expected to write in goes by many different names, including feasibility report, recommendation report, analytical report, managerial report, and problem-solving report (Rude 170). What these all have in common is that they are reports intended for decision-makers and that their form derives from the scientific method, which drives the standard structure of a scientific paper: introduction, methods, results, discussion (IMRD). IMRD structure, and the positivist rationale underlying it, discourages interpretation and encourages allowing facts to speak for themselves through the style and format of the paper. Rhetoricians refer to this as a "product" approach to writing, wherein the writing process is viewed as a matter of filling in required elements, as in a template.

Certainly, writers and readers profit from "awareness of the rhetorical structure of a genre and of the meaning of specific linguistic features of the genre" (Luzon 287). But prescribed structures alone do not give sufficient guidance. Rather, effective writing requires writers "to interpret genres in relation to a social context" (Beaufort qtd. in Luzon 289). Interpreting genres requires experience in reading and writing in the genre, experience that second-year college students rarely have. Reports for decision-makers differ significantly from persuasive essays, which is the type of writing sophomore students are most familiar with. Without an understanding of the purpose of the genre and its underlying IMRD structure, the students were not equipped to use the format.

Cognitive Overload

Added to student inexperience is the related factor of learning a high volume of new knowledge at the same time as trying to write in a complex genre. Lovett and Greenhouse point out the adverse effect of too many demands being place on a learner: "Learning becomes less efficient as the mental load students must carry increases" (197). They maintain that students learn more when fewer cognitive demands are placed on them (201). Lovett and Greenhouse argue that statistics teachers should therefore reduce "the complexity of activities to be performed during learning"(201). Applying statistics presents a challenge at the introductory level, as does learning to write in a new genre.

False Rhetorical Situation

While the data in the case study is itself real, the writing assignment presents a hypothetical situation that students respond to as if it were real. This creates a false rhetorical situation because the writ-

ers are students and the readers are instructors. Forman and Rymer call attention to this problem in their critique of the Harvard Case Method. They argue that this case study method encourages students to project an authoritative persona and take an argumentative stance that conforms to instructor biases and idiosyncrasies, rather than simulating communication in an authentic rhetorical context (394). The dynamic between student and professor purports to be a real-life business situation, completely ignoring the fact that these situations are played out in a course and students are graded.

Ignoring the authentic rhetorical context leads to false expectations of why people write and how they write for the workplace. Situating writing within the real framework that it is produced for is more conducive to learning and avoids creating a schema of business writing that ill-prepares students to write in the real world. Freeman and Adam's research shows that significant differences exist between learning a genre in the classroom and learning one in the workplace. Students learn new genres through facilitated performance for the purpose of learning. Employees learn new genres through performing the work for the purpose of completing a task (402-03). The danger of using case studies in the classroom is that writer and reader might assume that the rhetorical situation replicates the workplace. The actual writer, reader, and purpose should not be lost in the assignment (Gottschalk and Hjortshoj 409-10).

How then does one accommodate the difficulty of writing in a complex genre without creating a false rhetorical situation or cognitive overload in order to teach students to interpret data for decision-makers?

Guidelines for Case Study Reports

The authors propose that the way to achieve these pedagogical goals is to reinterpret a genre specifically for the business statistics classroom. Rather than expecting business students to write a traditional recommendation report interpreting their data, we propose a modified approach to make their initial writing experience more profitable.

Why not Use the Traditional Recommendation Report Format?

Format requirements for the traditional recommendation report can mask the processes that led to a recommendation, which can lead inexperienced writers to assume an inappropriate argumentative stance (Rude). Adhering to the formats of a genre can also hinder a writer's problem-solving strategies and the invention stage of writing, unnecessarily resulting in a predictable text that offers no new or creative insight into the situation that called for the creation of the report (Winkler). Students in an introductory business statistics course are not usually familiar with formal reports for decision-makers. Requiring them to use this format increases their cognitive load and is counterproductive for acquiring skills in statistical applications. Therefore, while the genre of recommendation reports fits the problem and methods, the genre, in its strictest sense, is inappropriate for the actual writing situation, which requires students to produce a document for an instructor that demonstrates through writing a student's ability to generate, analyze, and interpret data.

In addition, the genre of recommendation reports is itself vague and inconsistent, as demonstrated by the way it is defined in textbooks for professional writing courses. Textbooks closely examined for this study differ in approaches to teaching students to invent and organize report content (Anderson, Cunningham et al., Lannon, and Reep). Where some emphasize a comparison of alternatives in the body of the report (Reep and Anderson), another instructs writers to address whether or not the recommendation meets the criteria (Lannon).

What Guidelines Should Students Follow?

Drawing on the reviews of MSC 287 student case reports, literature, and recommendation report writing practices, the authors recommend that case study reports for introductory business statistics classes be in the form of a short memo, written as first person narrative structured by criteria stated as headings guided by questions that encourage students to generate a story-like account of their analysis and interpretation processes.

Use Memo Format

A memo suits the nature of the communication as well as the paper length typically expected at the introductory level (Cunningham et al. 405). Moreover, the memo format allows students to present their findings in a familiar format rather than in a potentially daunting genre such as the formal recommendation report. Memo format thus eases students' cognitive load, allowing them to focus their energies on synthesizing and applying statistical knowledge to generate, analyze, and interpret data. The language associated with memos is more casual than that of formal business reports, so the form might influence the way students present and explain their results, encouraging them to use a tone and vocabulary that is directed toward a lay person. Memos are associated with practical communication, thus emphasizing the usefulness of the subject matter and the practical application of the students' data. The memo can also be shorter than a formal report, allowing teachers to assign preliminary exercises that get students ready to write about their data.

Use First Person Narrative

In the student case reports reviewed, five of the seven writers created a problem at the end of their reports in order to try to situate themselves and their analyses within a scenario. Teachers can capitalize on this to help students engage with the problem they are working on as well as to provide them with a context and reader for which they are writing. Writing in first person facilitates a narrative approach to writing the case study report. While storytelling tends to be discouraged in professional writing, Rentz points out that narrative is particularly effective for recommendation report writing, which is "story-

like" (302). Narrative is not only easy to read, it is easier to write than rigid business prose for students struggling to apply foreign concepts. To encourage students to use the first person effectively in case study reports, teachers can give them opportunities in class to observe and role-play a statistician and a decision-maker, and include activities that require them to generate criteria and questions that are relevant to the scenarios. In-class exercises can prepare writers to assume the role of someone with specialized knowledge and skills at a later date (Gottschalk and Hjortshoj 44).

Structure Content with Criteria

The memos that students write should reflect the same types of information and explanation that would be found in a formal recommendation report. This can be achieved by showing them how to establish criteria for evaluating their data. Organizing by criteria helps students overcome the obstacles that the IMRD structure creates for writers (Rude). Prescribed patterns of organization, like the structure of the scientific report, influence a writer's invention process and what kinds of things the writer thinks can and cannot be said in a text, as well as how facts and ideas can be communicated (Winkler, Rude). According to Gattis, "[C]riteria provide a rational basis for a recommendation. When students develop their arguments from the systematic use of criteria, their conclusions are more likely to be grounded in a body of evidence, rather than based on a person's opinion"(282). In addition, the use of criteria in a case study report makes it easy for students to role-play within the scope of the problem, taking into account the hypothetical context and audience (Gattis 282).

Direct Writing with Questions

The authors recommend that student memo reports follow a three-part structure, with each part guided by a series of questions. This structure takes into consideration genre theory, best practices from a sample of four writing textbooks, and the understanding of statistical analysis students should be able to demonstrate. Figure 1 illustrates how this format might be presented to students. Teachers will need to add specific guidance as to particular aspects of the statistical cases assigned, so the guidelines in Figure 1 are a generic beginning.

To write the **Introduction**, students will need guidance about setting up key information that decision-makers need, particularly the required level of significance and the risk associated with estimating process parameters and behavior from a subset sample. The level of significance and the variability of the phenomenon being evaluated will drive their sampling design and subsequent sample size selection. Students need to know that an effective analysis for the purpose of business decision-making will acknowledge the risk associated with estimating process parameters and behavior from a subset sample, and will subsequently quantify that risk alongside the analytical results. Teachers should emphasize that effective communication of that risk is critical for accurate statistical reporting.

In the **Explanation of Data**, organized by the criteria and/or constraints, students may include a discussion of sampling design and sample size limitations, and availability of data, etc., but should emphasize test results, such as hypothesis tests, regression results, confidence or prediction intervals. Students will need guidance about when to use tabular, graphical, or written form for presenting results. Preliminary exercises with the three presentation methods can help them get a sense of which type of analysis lends itself to which kind of presentation.

Figure 1
Sample Generic Guidelines for Students

Introduction

- Who has a problem or situation that calls for these data?
- What statistical tests have you performed in response to the situation?
  (Identify the statistical analysis approach or method used.)
- Why are the tests you performed appropriate?
  (Justify the approach or method used.)
- What criteria constrain the solution? Specifically, what is the decision-maker's required *level of significance,* α, of the analysis and level of tolerated risk if the answer is wrong?

Explanation of Data

- Organize by the criteria and/or constraints associated with fulfilling the goal.
  Support with test results presented in tabular, graphical, or written form.
- Does the dataset meet the criteria? Why or why not?
- Do the analytical results meet the criteria? Why or why not?

Conclusion and Recommendation

- Address the original business objective for which the case was analyzed.
  Explain the probability of meeting that objective, where appropriate.
- What do the analytical results mean as a whole?
- What do you think is the best decision in this situation?
- Why are you confident of your recommendation?

To write the **Conclusion and Recommendations** section, students need to understand that strategic business decisions are made by examining a set of alternatives and choosing the one that will most likely lead to the achievement of a business objective. They will need guidance in how to express this objective. For example, the objective may be expressed in the form of an upper or lower bound of a process performance parameter, such as "meeting a stated minimum sales goal" or "achieving warranty returns of no more than a maximum limit." The evaluation of each business alternative will likely involve a statistical study, with the associated sampling variability attached to the appropriate statistical estimators. Students will need guidance in how to express alternatives. For example, they may present a point estimate of a process parameter and, based on the variability of the data and the required level of significance, develop an interval estimate of the parameter as well. With the results of the point and interval estimates, they may express the probability of meeting the stated business objective. This gives decision-makers valuable additional information beyond a basic analysis that will help them make fully informed business choices.

Conclusions and Recommendations

Research about the teaching of business and technical writing, as well as experience with student business case study reports, both indicate that students need specialized guidelines in order to create a rhetorical situation that will enable them to interpret statistical data in ways that are useful for decision-makers. The modified memorandum format, coupled with key statistical elements, provides business statistics students with a user-friendly writing format that addresses critical verification and validation issues inherent in statistical analysis.

The guidelines described in this paper are grounded in rhetorical theory, but they need to be tested in the business statistics classroom before they can be formally recommended. We are presently planning a follow-up study to do just that. Our study will include preliminary exercises and a sample memo, in addition to more detailed guidelines.

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APPENDIX A
Data Collected from Student Case Study Reports

Student	Grade	Intro'd Problem/ Topic	Used Headings	Analysis or Explanation	Only Data?	Content Comments	Other
1	90	No	No	Yes	No	Compared data to CDC's numbers. Assigned a significance/ purpose.	One page typed explanation with work attached.
2	88	No	No	No	Yes		
3	87	Yes	Yes	Attempted	No	Used his research to compare Huntsville and Charlotte. Assigned a purpose/ significance.	When the data became complex, stopped explaining.
4	98	Yes	No	Attempted	No	Concluded that because lifespan is lower, Southerners should try live healthier lifestyles. Assigned a significance/purpose.	Explained the data but not in lay terms.
5	78	Yes	Yes	Attempted	No	Tried to generate meaning/cause to age of death. Assigned a significance/ purpose.	Did not include a visual and some data was wrong; made intuitive leaps in logic.
6	81	Yes	Yes	No	No	Asked, Is living in Huntsville a positive action? Assigned a significance/ purpose.	Collapsed objective and data analysis, and left out the analysis.
7	70	No	No	No	Yes		

APPENDIX B
Original Case Study Report Format

One of the objectives of our business statistics curriculum is to teach the student to think critically in constructing a statistical analysis strategy, teach the essential tools and methods necessary for solving problems in the real world, and foster the development of writing skills used to communicate results and conclusions to a variety of audiences. The case study format is used in this course to develop skills in the latter, providing the opportunity to broaden the student's experience in communicating analytical results in a written form.

In addition to the required analytical tasks of a given case, the case study report should be prepared for a general audience, with a basic familiarity of statistical techniques. In addition, the case study report should follow the following format:

Case Study Report Format:

A. *Cover Page*. Should contain the problem definition, student name, course number, and date.
B. *Introduction*. Approximately one paragraph in length, it should detail the pertinent facts about the case and an explicit statement of the problem as you interpret it.
C. *Analysis*. Most of the case studies ask for specific analyses to be performed. The results of these analyses should go here. Show all work in detail, and give reasons for using certain analyses where appropriate. All graphs and charts should be included neatly within the text, not as a separate attachment. (i.e., no Excel printouts). Interpretations of specific analyses should be placed here.
D. *Summary and Conclusions*. Interpret your findings. Use the analyses conducted to answer the problem posed in the problem statement. Any additional insights, comments, and recommendations should be included here and elaborated on as appropriate.

Creativity in problem solution is just as important as the actual analyses, so you are encouraged to "think outside the box" where appropriate to determine and suggest correct and possibly innovative solutions to the problem posed. Grading will be based not only upon the accuracy of the analysis, but the quality of the writing as well.

APPENDIX C
Example Business Statistics Case Study: Huntsville Lifespans

As medical knowledge advances, average life span increases, as has been seen very definitively over the last 100 years. It has also been theorized that average life span may vary from region to region, due to differences in diet, physical fitness, and overall lifestyle habits. As a Huntsville region resident, you may be curious as to your expected lifespan – not just average, but the distribution of lifespans. The attached Excel file contains the ages at time of death of all people appearing in the obituaries of the Huntsville Times from January 2005 through June 2005. Due to the large size of the sample (2532 people), the dates used, and the nature in which obituaries appear in the Times, we may assume that this distribution is representative of the lifespans of Huntsville region residents at the present time. (In reliability theory we refer to this as "time until failure"). What can you learn about lifespan here, overall health of Huntsville residents as compared to other areas of the country, and your own expectations of lifespan given your choice of location?

Tasks:

1. Develop two frequency distributions of the Huntsville lifespan data: (1) The first should contain a cell for each decade; (2) the second should be developed using the 2-to-the-k rule to determine the number of cells, then use appropriate rules to develop class limits. Build frequency histograms for both, properly labeled and presented. Which is best for interpretation, and why? Give a general description of the shape, scale, point of central tendency, and amount of dispersion of the data as seen in the histograms.
2. Calculate the basic descriptive statistics for the raw data (mean, mode, median, variance, std. Deviation, range, skewness, kurtosis, max, min, and etc.) and discuss their values. Discuss how the values you calculate are graphically illustrated in the frequency histogram.
3. Build a relative frequency distribution for the 2-to-the-k frequency distribution built above and determine probabilities for each cell.
4. Based on the relative frequency distribution, determine:
    a. The probability of a Huntsville region resident living past 90 years old.
    b. The probability of a Huntsville region resident dying before age 40.
    c. The probability of a Huntsville region resident dying in his/her 80's.
5. The data used here was collected as one sample of size n (i.e., a subgroup size of 1). Re-group the data into two different, additional subgrouped formats: (1) $^{n}/_{3}$ subgroups of size 3 each; and (2) $^{n}/_{5}$ subgroups of size 5 each. Develop frequency histograms and calculate descriptive statistics for the subgroup averages of the two subgrouped formats, then compare them to the statistics and histogram of the original dataset. What happens to the skewness, mean, and standard deviation of the subgrouped data as the subgroup size increases? Explain your observed changes in these measures.

Hofstede's Cross-Cultural Typology and the Ethical Values and Behavior of Japanese and US Students: An Empirical Examination Using Vitell *et al.'s* Behavior Classifications[1]

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ABSTRACT

The paper examines whether cross-cultural differences in ethical values and behavior are consistent with Hofstede's cultural dimensions. Three of the five Hofstede cultural dimensions – Individualism versus Collectivism, Uncertainty Avoidance, and Masculinity versus Femininity -- are included in this study. Japanese and US students studying in universities in West Virginia are used as subjects. The testable hypotheses are developed from the behavior classifications proposed by Vitell, Nwachukwu and Barnes. The study reports mixed results.

1 **We are grateful to Nancy Niles for some helpful comments.**

I. Introduction

Hofstede's (1984) seminal study on cultural typology provided a much needed theoretical framework to examine cross-cultural issues in business ethics. Since then a large number of researchers have used the Hofstede framework to examine if indeed there existed any differences in cultural values and ethical predispositions and behavior.. While a large number of these studies are in the area of marketing ethics, others have espoused almost any area of business ethics. Indeed, in an era of rapid globalization, understanding cultural differences facilitates appropriate business communication and strategy and are, therefore, pertinent in achieving success in international business.

Hofstede's typology classifies four cultural dimensions. These are: (a) Individualism versus Collectivism – the degree to which a culture relies on and has allegiance to a group (b) Uncertainty Avoidance – the means a cultural chooses to adapt to change and cope with uncertainties and tries to avoid them by establishing more structure (c) Masculinity/Femininity – the degree to which a culture values such behavior as assertiveness and acquisition of wealth versus caring for others and quality of life (d) Power Distance – the degree to which a culture believes institutional and organizational power should be distributed unequally (equally) and whether the decisions of the power holders should be challenged or accepted. Hofstede also developed and applied indexes to measure the degree of cultural differences among many countries including Japan and the USA. In later research, Hofstede (1994) adds a fifth dimension dealing with Long versus Short-term orientations; this dimension is not addressed in the current research.

Based on Hofstede's indexes, Japan and the USA are sharply different in the first three dimensions, whereas the index scores were close for the Power Distance dimension. Specifically, the US (Japan) is high (low) on individualism and low (high) on collectivism; low (high) on uncertainty avoidance, respectively. Although both cultures are highly masculine (low on femininity), Japan's masculinity index score is much higher than that of the US. Therefore, it can be said that relative to the United States, Japanese culture is more masculine.

Hofstede's cultural comparisons became the basis of studies by Hunt and Vitell (1992) in which they proposed a general theory of marketing ethics, easily generalizable to business ethics, suggesting that "cultural norms affect perceived ethical situations, perceived alternatives, perceived consequences, deontological norms, probabilities of consequences, and desirability of consequences." The categories just mentioned are not distinct. Together, they relate to individual or group behavior. Vitell, Nwachukwu, and Barnes (henceforth Vitell et al.)(1993), proposed a conceptual framework where more distinct behavior classifications followed Hofstede's cultural dimensions and from which testable hypotheses can be developed to measure the impact of cultural differences on belief and behavior of individuals or groups. These Hofstede induced beliefs and behaviors proposed by Vitell et al. fall into the following categories: (a) Professional, Industry, and Organizational Ethics and Norms, (b) Self versus the Organization as the most important stakeholder, (c) Taking ethical cues from superiors versus fellow employees, (d) Perceived Ethical

Problems and (e) Acceptance of negative consequences of questionable actions. This study does not investigate two of these five classifications. As mentioned before, we do not address the Power Distance Dimension as the index scores for Japan and the US are close; as such the relevant Vitell et al. classification—Taking Ethical Cues from Superiors versus Fellow Employees—is not addressed also. We also ignore classification (e)—Acceptance of negative consequences—as it received the least attention in the Vitell et al. study. The conceptual linkage between the remaining behavior categories and Hofstede's typology will be discussed later.

As is evident, Hofstede's typology addresses broad cultural underpinnings that influence beliefs and behavior, whereas Vitell et al. translate these cultural underpinnings into plausible beliefs and behavior. In other words, Vitell et al. decode how Hofstede's dimensions relate to our everyday beliefs and behaviors as they apply to business. Since Hofstede, many studies have endeavored to examine cross-cultural differences in business ethics. To the best of our knowledge, the instrumentations used in these studies are based on a set of ad hoc questions or vignettes and any conceptual linkage between Hofstede and the instrument questions are not clear cut. In the absence of such conceptual linkage, their results cannot be interpreted to measure the validity as to whether Hofstede's cultural dimensions do describe ethical behavior nor do the authors necessarily claim to do so. Since the behavioral classifications of Vitell et al. follow from Hofstede's dimensions, examining the empirical validity of their classifications give credence to Hofstede's typology. Additionally, empirical verifications of the Vitell et al. classifications are themselves valid stand alone investigations of cross cultural differences in business ethics and behavior. The preceding two objectives are the purpose of the current research. To the best of our knowledge no previous investigation examines the issues along the lines suggested.

The rest of the paper is as follows. Section II discusses the conceptual linkages between Hofstede's typology and Vitell et al.'s behavioral classifications. Section III discusses the survey instruments, data, methodology and results. In section IV, we conclude the discussion

Cultural Dimensions and Business Ethics: Some Propositions

Hofstede's cultural dimensions and Vitell et al.'s behavior classifications are not one to one connected. This is because the former does not imply an exclusive set of norms and consequences. Rather, a particular ethical belief or behavior may be related to one or more dimensions. As will be discussed later, adherence to group or intra-organizational gain follows from both high collectivism and high uncertainty avoidance. In this section, we clarify theses linkages and develop some testable propositions for empirical evaluation.

Proposition 1: Individualism versus Collectivism and Professional, Industry and organizational Codes (PIO) of Ethics

According to Hofstede, the US ranks high on individualism and low on collectivism and Japan ranks just the opposite. In terms of ethical implications, a US subject will be more willing to pursue self interest and less interested in organizational benefit in comparison to a Japanese subject. Promotion of self interest may require that a subject compromises on the professional, industry, and organizational codes of ethics whereas the reverse is true for the promotion of organizational interest.

Proposition 2: Individualism versus Collectivism, and Self versus the Organization as the Most Important Stakeholder

Proposition 2 is similar to Proposition 1. In fact, Proposition 2 is a generalized version of Proposition 1 since adherence to or lack there of the PIO codes require that a subject has resolved as to which stakeholders' interest is paramount – the subject him- or herself or the organization. It follows therefore that a subject from the US will promote his or her interest first in contrast to a Japanese subject for whom the organization is the most important stakeholder.

Proposition 3: Uncertainty Avoidance and Professional, Industry and Organizational Codes of Ethics

In examining this dimension, Hofstede ranked the US low in uncertainty avoidance whereas Japan was ranked high. Uncertainty avoidance requires that organizational rules be followed. As such, a Japanese subject will be more likely to adhere to the PIO codes in forming their own ethical norms.

Proposition 4: Uncertainty Avoidance and Self versus Organization as the Most Important Stakeholder

Vitell et al. posited that in countries high on uncertainty avoidance, subjects are likely to be motivated more by group interest than self interest. As such Japanese subjects will be more willing to be unethical for organizational gain than for serving personal interest.

Proposition 5: Uncertainty Avoidance and Perceived Ethical Problems

Subjects from countries with high uncertainty avoidance are less likely to perceive problems and dilemmas as having an ethical component. For example, for an accepted business practice, a Japanese subject is less likely to take into account its unethicality relative to a US subject.

Proposition 6: Masculinity/Femininity and Perceived Ethical Problems

A masculine culture (as opposed to a feminine) puts greater emphasis on such traits as assertiveness and acquisition of wealth. Therefore, the subjects will be more prone to ignore (or simply not perceive) the unethical nature of an action if the action is a necessary component in the way of maximizing wealth. The issue here is similar to those

of proposition 5, where the unethicality of an accepted business practice could be ignored.

Data, Methodology and Results

In this section the validity of the above propositions are tested and analyzed. The data for the study was collected by mailing surveys to the Japanese and the US students studying at various institutions of higher education in the State of West Virginia. Collecting data from West Virginia students was for the sake of convenience as two authors of this research are higher education faculty in the same State. Collecting data from institutions in the proximity of researchers' employer institutions has been a popular practice in Business Ethics research. Selecting students as subjects has also been a popular choice. Principally, it makes data collection convenient. Also, students are future business leaders which offers partial justification for using them as subjects. However, one important question remains. Is it justified to use students as subject population to study ethical norms among adults working for businesses? This is especially important for the current study since Hofstede's dimensions were developed from surveys of International Business Machine (IBM) employees working in forty countries. In the literature of business ethics we did not find any study that compares ethical norms of students and business personnel. However, this much can be safely assumed. Within the same societal context, ethical values are determined by a set of complex cultural factors and although factors such as employment and age that distinguishes a student from a non-student may make some difference, they may not be enough to break the norm – thereby justifying student subjects to research ethical issues. In the current study we find that age and employment status are insignificant in explaining ethical differences.

It is apparent in propositions 1 through 6 that ethical values of Japanese and US subjects are contrasting. To the best of our knowledge, previous research on cross-cultural ethics examined beliefs, values or norms but they are silent on action. Even though a subject may believe a particular action to be unethical, still he/she may be willing to engage in the unethical action to promote self interest or organizational gain. In other words, the determinants of beliefs and behavior may be different.

To empirically verify these conjectures we collected opinions of 112 full-time undergraduate students (79 US and 33 Japanese) studying in West Virginia universities. Each subject student was asked to respond to six ethically challenging business situations (vignettes) as to whether he/she (a) believed the described action, decision, communication, etc. to be ethical or unethical (belief question) and (b) would engage in the activity as described regardless of his/her opinion about its ethicality (behavior question). For each behavior question, the respondent had six choices – ethical (6), generally ethical (5), somewhat ethical (4), somewhat unethical (3), generally unethical (2), and unethical (1). For each belief question there were six choices – yes (6), very likely (5), probably would (4), probably would not (3), very unlikely (2), and no (1). The vignettes were designed to reflect ethical situations relating to three of Vitell et al. behavioral classifications that are under current investigation. We designed six vignettes that are reproduced in Appendix 1. Of these, Vignettes A, B and C are regarding individualism versus collectivism, Vignettes D and E are regarding uncertainty avoidance, and Vignettes F is regarding masculinity and femininity.

The scales for the responses to the belief and behavior questions were tested for reliability based on evaluation by a panel of experts. The panel consisted of (a) a professor at a large university who teaches business ethics and travels to Japan for research, (b) a college professor who publishes business ethics research and is active in the international community, (c) a college professor of economics who teaches international trade, (d) an Asian professor of computer science, and (e) two US missionaries who spent their professional teaching careers in Japan (now retired in US). Cronbach's alpha coefficients were computed to test for reliability. The overall alpha coefficient was computed to be Ø.8841, and those for each question came to be greater or equal to Ø.88—thus establishing reliability.

To see if the survey responses were affected by factors other than national origin, we collected data on a selected number of demographical variables such as gender, religious devotion, age, employment experience, academic background; residence (i.e. grew up in rural or urban areas, etc.) Of the demographic variables' subsequent analysis, only gender and residence were found to have some power in explaining the dependant variables. All other demographic variables were found to be inconsequential in explaining ethical beliefs and behavior. Gender has stood out to be a significant factor in explaining differences in ethical values in some of the previous studies. Hofstede's Masculinity/Femininity dimension underscores the importance of gender in explaining differences in ethical values. No previous studies tested the explanatory power of residence.

In view of the above, a dummy variable regression model with nationality, gender and residence as the only three independent variables were used to assess the variation of student responses to the belief and behavior questions.

$$Y = \beta_0 + \beta_1 \text{ Nationality} + \beta_2 \text{ Gender} + \beta_3 \text{ Residence} + u$$

Nationality is a dummy variable representing nationality with Nationality=1 if the subject is American , Ø otherwise; Gender is a dummy variable representing gender with Gender =1 if the subject is male, Ø otherwise.; and Residence is a dummy variable if the subject grew up in urban /semi urban areas with Residence=1 if the subject is urban/semi urban, Ø otherwise. The regression coefficients, β_1, β_2 and β_3, measure the differential impacts due to nationality, gender and residence on the subject responses. It follows that the mean responses relating to various combinations of subject attributes (nationality, gender, residence) are:

$$E(Y/\text{Japanese, female and rural}) = \beta_0$$

E(Y/Japanese, female and urban) $=\beta_0+\beta_3$

E(Y/Japanese, male and rural) $=\beta_0+\beta_2$

E(Y/Japanese, male and urban) $=\beta_0+\beta_2+\beta_3$

E(Y/US, female and rural) $=\beta_0+\beta_1$

E(Y/US, female, and urban) $=\beta_0+\beta_1+\beta_3$

E(Y/US, male and rural) $=\beta_0+\beta_1+\beta_2$

E(Y/US, male and urban) $=\beta_0+\beta_1+\beta_2+\beta_3$

The expected signs of the nationality coefficients β_1 are now discussed. There is no apriori reason as to whether the sign of β_1 will be positive or negative; it will depend on the situation being confronted. For example, in the case of individualism versus collectivism case, a US subject will be more willing to violate PIO codes if such violation is in the subject's self interest (i.e. $\beta_1>0$) and less willing to do the same if it is in organizational interest (i.e. $\beta_1<0$). Therefore, the expected sign of β_1 has to be determined from the situation being discussed in the vignettes.

Similarly, we can argue that when uncertainty avoidance is the issue, a Japanese subject will be more prone to regard an ethically challenging situation as less unethical if it reduces uncertainty (i.e. $\beta_1<0$) and vice versa.

In the case of masculinity/femininity, ethical belief can be nested in action regarding a situation. For example, for an accepted business practice, a situation may not be regarded as unethical or the question of ethicality may not even cross the mind. Therefore, if a subject's response to a behavior question is that he/she would engage in an ethically questionable action, then the likelihood is that the subject at least will not view the situation as unethical. Since such behavior and belief is more likely in a masculine culture such as Japan , we hypothesize that $\beta_1< 0$.

Table 1 Mean Responses by Japanese and US Students on Belief Questions Vignettes A through F

Vignette	Mean Scores for US Students (n=79)	Mean Scores Japanese Students (n= 33)
A	2.03	2.38
B	2.43	2.91
C	2.59	3.11
D	2.53	3.25
E	1.56	2.22
F	2.24	3.27

Table 2 Mean Responses by Japanese and US Students on Behavior QuestionsVignettes A through F

Vignette	Mean Scores for US Students (n=79)	Mean Scores Japanese Students (n= 33)
A	2.24	2.88
B	2.40	2.88
C	2.65	3.44
D	2.40	3.16
E	1.32	1.94
F	2.43	3.66

In Tables 1 and 2 we give comparisons of mean responses by Japanese and American students for each of the vignette questions

Any score less than or equal to 3 indicates that the mean response falls in the unethical category, any score greater than or equal to 4 indicates that mean response falls in the ethical category, whereas mean scores falling between 3 and 4 indicate neither (ethics neutral). As each of the six vignettes describe an ethically challenging situation, there is scope to rate them unethical which the US student tend to

do (mean scores less than 3), whereas the Japanese students ratings are more in line with ethics neutrality. On the behavior question, the US students' ratings indicate that they are unwilling to engage in an action that they believe would constitute unethical behavior. On the other hand, the Japanese students are less adverse to engage in these actions (relative to the US students) in that they believed the vignettes to be neither ethical nor unethical.

The differential impacts of nationality, gender and residence as obtained from the regression results are presented in Table 3. We analyze these results by noting that nationality does contribute to meaningful difference in a subject student's belief and behavior. Of the twelve vignettes questions, the nationality coefficients are statistically significant in nine cases (of which they are significant at the 1% level in eight cases). This is strong result. Since the computed β1 are negative, we conclude that on the belief front, US students tend to judge an ethically challenged situation as more unethical relative

Table 3
Differential Impacts of Nationality, Gender, and Residence on Ethical Belief and Behavior (Regression Coefficients)

Vignette	Question	Constant	Nationality	Gender	Residence
A	Belief	2.30*	-0.97*	0.32	0.96*
	Behavior	2.74*	-0.52	0.46***	0.04*
B	Belief	2.95*	-1.43*	0.25	0.98**
	Behavior	2.78*	-1.45*	0.65*	0.04*
C	Belief	3.05*	-0.81	0.20	0.41
	Behavior	3.40*	-1.2*	-0.03	0.51
D	Belief	3.26*	-1.10	0.03	0.77
	Behavior	3.07*	-1.0*	-0.18	0.60
E	Belief	1.90*	-0.94*	0.11	0.40
	Behavior	2.23*	-0.71***	-0.16	0.18
F	Belief	3.33*	-1.2*	0.19	0.52
	Behavior	3.75*	-1.64*	-0.21	0.71

*, **, *** represent that the results are significant at the 1%, 5%, 10% level, respectively

Table 4
Expected and computed signs of β1

Vignette	Question	Expected sign	Computed Sign
Individualism versus Collectivism			
A	Belief	negative	negative
	Behavior	negative	negative*
B	Belief	negative	negative
	Behavior	negative	negative
C	Belief	positive	negative*
	Behavior	positive	negative
Uncertainty Avoidance			
D	Belief	positive	negative*
	Behavior	positive	negative
E	Belief	negative	negative
	Behavior	negative	negative
Masculinity/ Femininity			
F	Belief	negative	negative
	Behavior	negative	Negative

*not statistically significant

to those of their Japanese counterparts. If we assume that action is influenced by belief, at least partially, then US students will be less inclined to engage in a questionable action than Japanese students.

In spite of these strong results, they only partially support the Hofstede and Vitell et al. lines of causation. This is indicated as some of the computed signs of β_1 (all negative) are different from the expected signs of β_1 (not all negative) as shown in Table 4 as well as the fact that some of the regression estimates are statistically insignificant.

As is seen in Table 4, for the individualism versus collectivism dimension, the expected sign of the belief question for Vignette C does not match the computed sign; for the behavior questions, the expected sign does not match the computed sign for Vignette C, and although for Vignette A the signs do match, the computed sign is statistically insignificant. For the uncertainty avoidance case, the expected signs do not match the computed signs for both the belief and behavior questions of Vignette D, whereas they do match for Vignette E. The results, therefore, are mixed. Both the belief and the behavior implications of the masculinity/femininity typology are, however, supported as the expected signs match the statistically significant computed signs.

Gender does not appear to cause much difference in either behavior or belief as only two out twelve gender coefficients are statistically insignificant. Residence plays a role in explaining belief and behavior that follow from the Individualism versus Collectivism dimension. Specifically, there is partial support that those who grew up in urban areas are more individualistic than their rural counterparts.

Conclusions

In this paper we have investigated the belief and behavior implications of Hofstede's cultural typologies as proposed by Vitell et al. We have found the lines of causation outlined by Vitell et al. are only partially supported by survey data collected from Japanese and US students. Gender was found to play an insignificant role. We found partial support that students who grew up in urban areas are more individualistic than those who grew up in rural areas.

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Appendix 1
Issues in Business Survey

Directions: The Vignettes in this survey describe a variety of business situations. Please assess each situation and respond to it on the scales provided. **Your answers should be marked directly on the survey.** Mark no more than one answer per question.

Your participation is important and I thank you for helping with this research. Please do not write your name on this survey form. Your individual responses will remain confidential, the collected data will be combined and the resulting statistics will be used only for research purposes.

Vignette A) As a middle manager in a medium sized industrial firm, Mark Smith communicates with his employees regularly. In October, an employee, Mr. Joe Jones, tells Mark confidential information about his personal life. It is company policy that any confidential information communicated to management is not to be disclosed to others.

However, in order to make a judgment on Joe's upcoming promotion, Mark shares the conversation about Joe's personal life with Mr. Winfrey, another middle manager.

1. Do you believe Mark's communication to Mr. Winfrey to be ethical?

2. Would you engage in the practice under the circumstances described?

Vignette B) The Board of Directors of Anderson, Inc. has requested a special team to prepare a report about selling rejected merchandise to employees. Company officials are expected to be as factual as possible in producing such reports. The employees in the special team know the merchandise is rejected. From the data collected, six reasons have emerged against selling the rejected merchandise and four have emerged in favor of the practice.

In finalizing the report, Mr. Richard Web, manager, decides to disregard two of the four reasons that favor selling rejected merchandise to employees. These two reasons were weak arguments at best and might not be too important. But the main reason Mr. Web is disregarding them is because he, himself, did not agree with the proposal to sell.

3. Do you believe Mr. Web's decision to delete two of the rationales to be ethical?

4. Would you engage in this practice?

Vignette C) You are an assistant manager in a large retail department store. The past several months have been very profitable for your company; its market share has risen 3% in the northeastern region of the United States. You are currently preparing to apply for a promotion in the company. One of the criteria by which you can be promoted is your ability to attract new customers.

You want to show your ability to attract customers. Therefore, you include in your list of prospective customers a group that has shown some interest in buying the product. However, you do not believe more than 15% of them will actually purchase the product.

The company will use your list to forecast sales for the next year. Therefore, the company's interest may be harmed as the forecast will be based on prospective customers, not confirmed buyers. However, you believe you need to include them in documenting your ability to attract customers, as this promotion is important to you.

5. Do you believe this practice to be ethical?

6. Would you engage in this practice?

Vignette D) Mrs. Welch, a stock broker for Martin Corporation. A client calls her and asks whether he would buy some shares of the ABC company stock. Although Mrs. Welch does not particularly like ABC Company, he lets the client believe that it may not be such a bad idea to buy the shares.

Of course, one of her main motivations in this decision is the commission she will earn. Martin Corporation will also profit from this sale as the 2% commission is shared evenly between the broker and the company. However, if the recommendation turns out to be a bad investment for the client, the Martin Corporation may receive bad publicity.

7. Do you believe Mrs. Welch's action to be ethical?

8. Would you engage in this practice?

Vignette E) James Kelly, a U.S. government defense consultant, met with officials of Delta Defense Contractors to negotiate a contract. When James left the meeting, he accidentally left a file on the table. It contained information about a unique technology that had just been developed by Becker Corporation, Delta's chief competitor.

The information in the file was considered to be proprietary. In other words, the products the file referred to were made and marketed by Becker Corporation, the only company with an exclusive right to manufacture and sell them. Information in the file could allow readers to develop similar technologies, saving the company that acquires it millions of dollars in development costs. Three of Delta's corporate officers noticed the file and did not notify Mr. Kelly of its location.

Delta has a policy that states "Delta employees are prohibited from using information not obtained in an appropriate, acceptable, and business-like manner." If this situation becomes known, the company could be removed from the government's list of approved contractors, but there is a chance no one will ever discover where the file is.

9. Do you believe the officer's actions to be ethical?

10. Would you engage in this practice?

Vignette F) Tom Anthony, the manager in a gourmet food store, promises to cater a large party for one of the store's best customers on Sunday. As they prepare the food, employees realize they do not have two of the main items, fresh salmon and imported Beluga caviar. These important and expensive ingredients cannot be purchased quickly from the suppliers, because their businesses are closed on Sundays.

Tom solves the problem by substituting other items, hoping that "the customer will never know anyway." Tom does NOT lower the price of the catering. Tom is a successful and aggressive manager, known to be highly competitive, as well as innovative, when it comes to sales. On Monday after the party, the customer calls and compliments Tom about the catering and promises to use the store's services in the future.

11. Do you believe Tom's decision to be ethical?

12. Would you engage in this practice considering the company's interests?

Daring to Teach Without a Text

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ABSTRACT

Textbooks have long been part of the American classroom at the primary, secondary and post secondary levels of education. While the majority of teachers at the primary and secondary levels have little input into textbook choices, professors have considerable influence over textbook decisions. In fact, given the right set of circumstances, a professor may have total freedom either to choose any text (within the bounds established by the appropriate authority, usually the department chair) or to choose no text at all. Choosing no text may raise more eyebrows than choosing a text not in keeping with the tradition of the department. The no text option is the hard road, but the road may be less confining (more intellectually scenic) than the textbook interstate, where restricted entry and exit inhibit exploring appealing side roads, and the road is more uniform (and perhaps, boring) for those who travel on it.

Reasons to Consider the No-Text Option

What are some reasons for considering the no-text option for a course? First, many universities are extremely concerned about the high costs of textbooks, and have adopted policies that encourage saving students' money as much as possible. This climate offers a legitimate reason for not using a text in some classes because the professor is seen as doing the right thing under the prevailing circumstances. Second, textbook adoptions can have some ethical ramifications under the current, highly competitive market in textbook publishing. Unwise choices can have serious ramifications for the reputations of the school and the professor. Thirdly, the content of texts may not be what a professor is looking for in a field that changes rapidly. Other potential problems exist related to content such as the omission of an area when the content is not currently in vogue.

Textbook Costs Are Coming Under Increased Scrutiny

Looking back, articles appeared about textbook prices in major newspapers in the early 1990s and continue through today (See Bartlett, 2003, http://chronicle.com/weekly /vol49/i42/42a00801.htm; Helderman, 2006; Lee, 2005; Masters, 1992; Pressler, 2004; Silverstein, 2004 and Zhou, 2005). "The average college student pays $800.00 plus a year for texts—more than a community college's fees (Easing the Textbook Pinch, 2004, B 12)." Ayres (2005) reported, "At state universities, textbooks and supplies account for 26 percent of all student fees, including tuition. At junior colleges, they are a whopping 72 percent." Ayers took his statistics from the Government Accounting Office (GAO) Report released in August of 2005 (available at www.gao.gov/htext.do5806.htm).

The Association of American Publishers (AAP) refuted the data used in developing the information for the GAO report. The AAP contended the average text cost for a four year college student was about $600. per year. Additionally, Bruce Hilldebrand, the executive director of higher education at the AAP, used data from the College Board and concluded "Books accounting for 6% of students' full college costs (Bartlett, September 2, 2005, (http://chronicle.com/weekly/vol52/i02/02a04501.htm)."

Publishers claim their prices reflect the development costs and resulting value of resources used in developing texts which incorporate both the input of professors (Cameron, 2003; Davis, 1985) and new technology. College texts today come with many resources for the professor and the students to use to enhance learning (The Nation, 2003; Pressler, 2004). As teaching and learning options proliferate and broaden in scope through technological innovation, texts are updated more often than in the past.

Yet, the frequent editions of texts make previous editions harder for students to sell; thus, raising the overall costs of texts to students. Some texts are reissued in a newer edition, but the changes occurring are minimal (Lee, 2005; Pressler, 2004, Silverstein, 2004). This practice angers students who must pay a higher price for the newest edition for which there are no used copies available. The enhancements for students and professors may not be worth the additional cost as not all of them may be used (Helderman, 2006; Pressler, 2004). Texts and enhancements are normally sold as a bundle—and students often have no choice but to buy the entire bundle (Pressler, 2004). In conclusion, textbooks may not be good buy for students.

The Textbook Adoption Process Can Be Fraught With Ethical Dilemmas

Textbook choices can be tainted by borderline bribery. Instead of making the choice to use the best text for students, some professors can be persuaded to use a text in exchange for a gratuity. Professors' buy-in to a text can be initiated by the publisher asking the professor to do a review for an honorarium (Bartlett, 2003, (http://chronicle.com/weekly /vol49/i42/42a00801.htm). "A marketing specialist of a large textbook company, who asked not to be named, acknowledges that the primary reason for paying a professor to write a review is to get that professor to adopt the book (Bartlett, 2003, (http://chronicle.com/weekly /vol49/i42/42a00801.htm). Bartlett (2003) identifies other enticements—outright checks for adopting a text, paying

royalties on books professors did not write, and even a finally challenged department deciding on a text (by merit) and then asking the sales representative to give them $30,000 from the publisher (which the publisher agreed to do). Although the state of Virginia passed a law in 2005 banning such activities, the practices are otherwise legal (Bartlett, 2005, http://chronicle.com/daily/2005/02/2005/022305n.htm). As the textbook publishing industry continues to consolidate, pressure will increase on sales representatives to make sales of new editions, which is where the money is made.

Textbook Content May Be a Problem

There are several potential difficulties with textbook content that were identified. First is the time lag between a significant change in the field and incorporation of changes into the text. In the sciences a major discovery can challenge and change current practice; while, in business, the scandals involving major respected corporations resulted in an increased emphasis on ethics. The time issue also includes subject areas where current events can significantly impact learning. In labor relations, for example, the Boeing strike in the fall of 2005 provided a rich and real-time example of labor relations in action. Following and discussing the activities of the union and management would have been lost if the class were bound to a tight textbook schedule. When students buy a text, professors may feel duty bound to use it and finish it, irrespective of what is happening in the world of the subject matter they teach.

Another potential issue with textbook content is the newer editions may retain most everything found in the old edition and then integrate the new material. Textbooks can become tomes after a few editions. A more serious situation occurs when seminal studies either prove to be unsubstantiated or based on falsified data, the material based on those studies can stay in a textbook (Hechinger, 1987). Hence, texts can cause professors to assign, discuss and legitimatize incorrect material (Hechinger, 1987). Texts can also lie by commission (deliberately including incorrect information) and omission (deliberately omitting material to mold the opinion of the reader). As professors, we tend to rely on the text to be objective, which is a mistake. For instance, Southwest Airlines is touted as a positive example for many aspects of management, but how often do you concurrently read the firm is about 80 percent unionized? Here, omission leads the reader to believe that management is totally responsible for the firm's success, when the unionized workers hustle to keep up their end of the bargain. Or, to use a United States history example, how many baby boomer students recall ever reading about the internment of Japanese citizens in the US in their US history books?

Another concern with some required texts and books assigned in college today is the books are based on opinion and anecdote rather than on the results of research. In an effort to be appealing to students, substance may be traded for allure (Cameron et al., 2003). For authors who write using only material based on established research, publishers can get in the way. Development people hold more sway with the publisher than the author. With the market as competitive as it is, innovative texts may be rejected on the basis of business risk, so the probability of new texts is not as likely in this maturing market (Cameron et al., 2003).

Going It Alone
Considerations to Think About

How does a professor know when (s)he is ready to teach a course without a text? Here are some things to consider.

Some authors feel the life of the textbook is limited as technological advances continue. In fact, a high school in Arizona no longer uses textbooks – they have switched to laptops and no texts– something most universities have not done yet. The overall response from teachers is positive, who say students are more engaged (Morrison, 2006). If texts are going to disappear, the professoriate might as well get ready (Gates, 2005).

If you are the only one teaching a course, you can proceed without the concern about comparison of faculty approach to the same subject. Unless a professor is immune to the potential impact of cross professor comparison for the same course, sticking with the text might be a more prudent plan. Be honest about your level of interest in this course. If you love the subject, proceed. However, if this is an area where you lack the interest and/or are uncertain about the material, you are better off using a textbook.

If there is adequate material to draw upon on the Internet, in the library databases, in the library in hardcopy, and in the popular press, such as The Wall Street Journal, Business Week, etc., the course may lend itself to being taught without a text. Not having a text means you will have to have a specific, well developed list of topics to cover. For each item on the list, you will have to have either classroom material, or reading material, or both. You will have to go to original articles to verify what you are teaching is currently accurate – you can't hide behind the textbook for teaching any incorrect information. Internet sites will have to be individually evaluated before assigning students to go to them. You need to read anything you assign completely to make sure you don't get surprised.

Adequate time is essential to develop the course. Rather than just deciding to drop the text at the conclusion of a semester, make the decision at least a year ahead so you have time to locate material outside the text. Going back to some of the seminal pieces in your field is a good place to start. You will also have to locate information on the Internet to provide supplemental material. One large time commitment is developing and grading tests; with no textbook you are on your own—there is no test bank. However, once you have written an extensive pool of questions, tests can be constructed relatively easily.

Either a tough hide or idiosyncratic credits already established with students and your department chair will help when things get rough. Despite the fact that college students are young and theoretically flexible and open minded, you are going to encounter mass neuro-

sis of students the week before a test without their crutch (the text). There will be days when an untried methodology just doesn't work. You have to be prepared to fail, especially at first.

You need to be prepared to be unprepared. Once freed from the tyranny of the text, a few students may actually find things you have not encountered before. Faculty can't read everything. There is more active participation without the text. Accept student input and evaluate it – if it's correct – use it.

Things won't come out the same way twice because sites on the Internet are here one minute and gone the next. Links stop working, websites are abandoned and this makes life interesting. In one instance, an online newsletter which provided fodder for quizzes and new developments in the field was discontinued. In its place appeared a BLOG, with links to articles from other sources. Unfortunately, students and the faculty alike did not have unlimited access to all of these websites.

Conveniently, and with a willing colleague, you can tailor the material to reinforce learning in other classes students take in the major. It is also possible to challenge material students learn in other classes in the major.

Develop your own pretests and posttests and make changes in the course in areas where students show weakness (or get your faculty Development person to help you develop these). Use the pre and post tests in addition to any other assessments of student learning to reinforce the credibility of your class. Develop other ways to check student learning.

Lastly, enjoy yourself and your students will pick up on that. Success may not come right away, but the effort required is worth the control of what topics are presented and how they are presented, and how much time you can spend on each.

It Is Not for Everyone!

Teaching without a text is NOT for everyone. You have to evaluate your own situation before proceeding to throw away your textbook order form from the bookstore. Political environments, department chairs and personnel committee members differ for each faculty member as does the subject matter each faculty teaches. Some courses lend themselves to a no text situation much more than others. However, if the opportunity presents itself to teach without a text, it can be a liberating yet intimidating experience.

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In the Meantime... Creating Financial Statements for Case Materials in Principles of Management and Principles of Marketing Classes

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ABSTRACT

Case studies are one of many pedagogical tools used in the teaching of Principles of Management and Principles of Marketing courses. Case studies help students learn the subject matter while giving them an opportunity to become engaged in a real-life, albeit simulated, business problem-solving situation. Often, however, the cases used in Principles of Management and Principles of Marketing classes lack integrated financial statements. This paper calls for the inclusion of financial statements in management and marketing cases at the introductory level in order to help build a more integrated understanding of business operations. Assessment data from the past three years highlight the impact of such an intervention within our business school.

Introduction

Calls for the integration of business education have bounced around the academy for years (e.g., Porter & McKibbin, 1988), and various ad-hoc enhancements (Cannon, Klein, Koste & Magal, 2004) to the basic model of functionally structured programs and pooled-interdependent curricula (Hyslop & Parsons, 1995) have been proposed and implemented. While there is agreement that improved integration of material is needed (Ammons & Mills, 2005; Livingstone & Bluedorn, 2000), just how we go about making programs more interdisciplinary (Stover & Byers, 2002) and more in step with real world practice (Hamilton, McFarland, & Mirchandani, 2000; Luse, 1999; Michaelsen, 1999; Pearce, 1999; Porter, 1997; Reece, 1999; Schmotter, 1998) remains uncertain. In the meantime, program assessments continue to show (Barber, Borin, Cerf & Swartz, 2003) that students do not effectively integrate functional subject matter as undergraduates, and often regress in their understanding of basic concepts as they progress through the business course sequence.

In order to address the need for integration, a number of different approaches have been tried. Bliss and Potter (2000), Simione, Cadden and Thompson (2005), and Atchison, Hamilton, Kehoe and Zeithaml (2005) describe an integrated approach using integrated introductory business courses. Smith and Fletcher (2002) utilize the balanced scorecard, and Koste and Klein (2005) and Cannon et al. (2005) describe the use of ERP as an integrating mechanism. Kennedy and Russell (2002) propose the use of entrepreneurship as an integrating mechanism, and Hamilton et al. (2000) describe a number of different approaches including team classes (e.g., Michaelsen, 1999), coordinated syllabi, internships, interdisciplinary courses (e.g., Cannon et al., 2004; Luse, 1999; McKinney & Yoos, 1998; Michaelsen, 1999; Schaller, Cavarkapa & St. Onge, 2004), simulations, course coordination through scheduling and mentoring. Yet there exists a host of simple, basic changes to current course materials that can enhance integration without involving curriculum committees, accreditation teams, and the heavy use of university resources (Stover & Byers, 2002). In this paper, we present a change, albeit small, to the current case pedagogy to allow for the increased integration of financial business concepts in introductory management and marketing classes. The purpose of this change is to enhance student understanding through a realization of the integrated nature of the functional disciplines to their programs of study in business, and to support the development of financial literacy in business students through more consistent practice with financial analysis concepts.

Case Materials in Principles of Management/Marketing

Case studies have long been used in business schools as a pedagogical tool to help students apply the subject matter in various courses (Jain, 2005). Most undergraduate business programs or majors consist of a sequence of classes that culminate in a capstone business course (e.g., Strategy, Business Policy and Strategy, Strategic Management, etc.) taken in the senior or final year of study. The typical sequence uses a building block approach where functional subject matter is taught in discrete blocks and advancement is based on a mastery of fundamental concepts. Given the nature of the required course sequence that needs to be completed, years may elapse between the completion of introductory accounting courses (Financial and Managerial Ac-

counting), for example, and the capstone policy or strategy course. In the meantime, the other functional courses (here we focus on courses in Management and Marketing) in the business curriculum are offered in order to prepare students for the integration that is believed to occur in the capstone (senior) class. However, if faculty do not consciously consider subject matter integration (i.e., how the functional courses relate to one another) in their course design, the resulting functional courses end up being very discrete or subject specific. With regard to the subject matter contained in Principles of Management/Marketing classes, if case materials are used, the case materials provided by textbook publishers tend to run the gamut from being focused on a few esoteric issues, to broad and varied presentations of general management or marketing themes. In most instances, the presentation of the case problems seem antiseptically insulated from other business disciplines. The primary reason for this may be the author's desire to keep the functional themes separate from each other so as not to confuse the students. However, we have found that the addition of integrated financial statements enhances student understanding of the (functional) subject matter as well as the integrated nature of *business*. Specifically, by tying accounting concepts to the management and marketing concepts illustrated in the cases, instructors may be able to show how the inappropriate application of management or marketing course concepts within the case organization can lead to negative financial consequences.

One of the main benefits of case learning is that students get practice diagnosing "real-life" company problems and developing operable solutions - students practice making decisions as managers of the case company. The cases expose the students to decision making under conditions of uncertainty, the benefits and limitations of individual and group decision making processes, conflict management, team building, and a host of other instrumental managerial competencies. In addition, the students have the opportunity to apply the functional subject matter, and as such, demonstrate their learning of the requisite material. We have found that the simple addition of including financial information, in the form of fictitious, but case-company realistic, financial statements, enhances cross-functional subject matter integration, student learning of core business concepts, and ultimately, retention of fundamental material. More specifically, we have three goals in mind (in increasing order of importance) that are addressed through the inclusion of case financial information: 1) students get practice calculating various financial ratios, a skill-building activity that enhances their ability to understand management and marketing planning and control concepts; 2) students see how the problems in the case impact financial metrics important to company stakeholders (e.g., profit margins, ROI, debt load, etc.); and 3) analysis of financial statements helps support the development of financial literacy in business students by linking accounting and finance concepts and measures to management and marketing subject matter, thus helping to integrate the subject matter of the disciplines.

Creating and Using Financial Statement Templates

It is relatively easy to create a set of financial statement templates and adjust them for any number of case narratives or case situations, depending on the learning objectives of the case exercise. We use Microsoft Excel to create a set of templates with accounts and account values (see Figures 1 and 2 for examples of a balance sheet and income statement, respectively). We focus primarily on the balance sheet and income statement, as those two statements allow us to enhance student understanding of the case material with tangible changes in relevant account values.

For example, consider the following: in order to demonstrate how the financial statements of a case company with production scheduling problems might look, the instructor would create a sample balance sheet with relevant account values. The instructor would then manipulate the account values for the present year showing a dramatic increase in inventory value, or a trend increase over some period of time (see Figure 1). Any number of manipulations is possible, as it is possible to use sections of the financial statements or full statements in their entirety. Principles of Management instructors could use the statements in our example to highlight a case situation where there are difficulties with production scheduling; Principles of Marketing instructors could use this information to suggest that the marketing function has not accurately forecast demand for company merchandise. In short, we try to match the situation in the narrative with the situation as described by the financial statements. The instructor is free to adjust any and all account values that may indicate the problems the narrative is describing. In fact, the more there is correspondence between the narrative and the financial statements, the more clearly students "see" the case problems.

Financial Ratios as a Skill-Building Activity

Financial ratio analysis is an effective way of presenting the benefits (and limitations) of various management and marketing planning and control processes. In essence, financial statements are snapshots of things that *have happened* in the organization. Like the case narrative, they present information to the students from a different, but related perspective about what has happened in the case company based on past organizational plans. Financial statements are backward looking, as is the case narrative. The students must then use the complementary information provided by the financial statements to help diagnose and solve the case company's problems. By calculating financial ratios (e.g., liquidity, asset management, leverage, profitability), the students start to get a feel for basic planning and control processes in organizations (i.e., how did the results match up with the organization's plans?), and how they relate to management and marketing concepts.

For example, we might direct the students in our Principles of Management classes to take the basic financial data and create common size financial statements (vertical analysis). We then have them cal-

culate a set of ratios (e.g., current ratio, debt ratio, inventory turnover, net margin) for their case company. We talk about the plans the organization might have had for revenues, profits, etc. After the students calculate the appropriate ratios, they compare the most recent year's results to the previous years' (horizontal analysis). At this point students start to notice changes in the relevant ratios, and consider what may be causing those changes. For example, if profitability is decreasing, they get a sense that something, perhaps, is not going according to plan. They may then engage in a more detailed reading of the case narrative to try to uncover the causes. The content of the Management class may be related to the case study in any number of ways - it is up to the instructor, then, to manipulate the financial information to highlight or emphasize those elements of the case narrative that demonstrate the learning objective of the exercise or class.

FIGURE 1

	X Company		
	Balance Sheet		
	31-Dec-06		
ASSETS	2004	2005	2006
Current Assets			
Cash	$ 78,000	$ 61,000	$ 38,400
Short-term investments in marketable securities	$ 82,400	$ 63,000	$ -
Accounts receivable	$ 124,000	$ 151,000	$ 306,000
Less: Allowance for uncollectible accounts	$ (3,300)	$ (4,700)	$ (16,100)
Merchandise inventory	$ 759,000	$ 921,000	$ 1,377,000
Notes receivable	$ -	$ -	$ -
Prepaid expenses	$ 4,300	$ 3,700	$ 4,100
Total current assets	$ 1,044,400	$ 1,195,000	$ 1,709,400
Property, Plant, and Equipment			
Land	$ 260,000	$ 260,000	$ 260,000
Buildings	$ 1,868,000	$ 1,868,000	$ 1,868,000
Equipment and trucks	$ 906,000	$ 905,000	$ 940,000
Accumulated depreciation	$ (77,200)	$ (107,200)	$ (137,200)
Total property, plant, and equipment	$ 2,956,800	$ 2,925,800	$ 2,930,800
Total Assets	$ 4,001,200	$ 4,120,800	$ 4,640,200
LIABILITIES AND STOCKHOLDERS' EQUITY			
Current Liabilities			
Accounts payable	$ 458,000	$ 501,000	$ 663,000
Salaries payable and other accrued expenses	$ 25,400	$ 31,800	$ 90,800
Current notes payable	$ -	$ -	$ -
Income tax payable	$ 189,000	$ 143,000	$ 15,800
Mortgage payable - Current portion	$ 14,000	$ 14,000	$ 14,000
Total current liabilities	$ 686,400	$ 689,800	$ 783,600
Long-term debt			
Long-term bank loan payable	$ -	$ -	$ 500,000
Mortgage payable - Long-term portion	$ 555,000	$ 541,000	$ 527,000
Total long-term debt	$ 555,000	$ 541,000	$ 1,027,000
Total liabilities	$ 1,241,400	$ 1,230,800	$ 1,810,600
Stockholders' Equity			
Common stock, $10 par (40,000 shares outstandi	$ 400,000	$ 400,000	$ 400,000
Additional paid-in capital	$ 760,000	$ 760,000	$ 760,000
Retained earnings	$ 1,599,800	$ 1,730,000	$ 1,669,600
Total stockholders' equity	$ 2,759,800	$ 2,890,000	$ 2,829,600
Total Liabilities and Stockholders' Equity	$ 4,001,200	$ 4,120,800	$ 4,640,200

For students in the Principles of Marketing class, we might discuss the following relevant planning questions: should a firm introduce a new product, expand into a new market, increase advertising levels, offer promotions (coupons or rebates), or increase the size or activity of the sales force? Ratios that allow students to understand profitability per territory or product line communicates the ability of a firm to take on another marketing expense. Too often, undergraduate students fail to link the relationship between financial strength and proposed marketing decisions. Utilizing financial ratios and information forces students in Principles of Marketing classes to consider the link between marketing costs and the ability of the firm to invest in and sustain these new endeavors. This sets the stage for the second element alluded to previously – getting the students to understand the information provided by the ratios, and how that information supports the case narrative.

Linking the Ratios to the Case Narrative

Using the account data from the financial statements the instructor creates, the instructor can manipulate the account values to reflect and support the information provided by the case narrative. To continue with our inventory example, the increase in value in the merchandise inventory accounts (from years past to the most recent year) reflects a buildup of inventory. There could be any number of potential reasons for the increase in the account values, but excessive inventory build-up, if that is the case, may signal potential problems that could play out a number of ways in the case narrative. The instructor could also manipulate (reduce) the cash and marketable securities account values (i.e., to indicate the use of liquid assets to purchase inventory) in the most recent year so that the quick ratio (liquidity) based on the most recent year would be decidedly lower than in years past. It is important to give the students at least two years of financial information for comparison purposes; that way, they can see if the relevant ratios are increasing or decreasing (our example

provides three years of financial information). More importantly, the students should start to understand the relationships between ratios and organizational actions. The numbers have a story to tell, but it is part of the larger story told in the case narrative.

The "numbers story" should complement the narrative of the case. As we prepare each set of financials, we give consideration to the narrative problems in the case material. We then try to match those problems with effects on the financial statements. In most cases, the ratios and raw numbers will indicate problems – falling revenues, decreasing net income, increasing expenses, holding more inventory, assuming greater debt, etc. It is not difficult to create a set of statements for each case being discussed or used in class (including short, end-of-chapter cases). The statements can be copied in part or whole, and supplied to students in hard copy or presented via audiovisual technologies for use in individual or group work. The students can complete an entire set of vertical and horizontal analyses, or limited selected ratios based on the intended learning objectives of the case. The beauty of such an approach is the ease and flexibility that faculty have in adding depth to case work by the inclusion of financial statements through the simple manipulation of a few spreadsheet cells. The possibilities for enhancing student learning outcomes using this approach are endless. The example lists a fairly generic set of accounts, and although conceived as a merchandising company, any number of sales, service or manufacturing organizations could be represented by the statements.

By forcing the students to reconcile the financial and narrative data, they may be better prepared to glean the appropriate information from the materials. Armed with this enhanced information, the students will be better prepared to apply the subject matter in support of their intended solutions. The student solutions to case problems often build not only from their knowledge of appropriate management and marketing activities (as learned in the course), but also from their analysis of what is going right or wrong as evidenced in the financial statements. The complementary analyses (case narrative and financial statements) help build toward increasing student financial literacy.

Enhancing Financial Literacy

There is a perception among educators, and certainly those at our institution, that students are/were growing increasingly deficient in what is generally referred to as "financial literacy" (Chen & Volpe, 1998; Mandell, 1999). In essence, financial literacy means knowing how to read financial statements and understanding financial measures used to evaluate business performance. In our business school, we were dismayed that students in senior level classes seemed to have forgotten how to perform financial statement analysis, if they ever really learned it effectively in the first place. We engaged in a comprehensive process of assessment over the course of 4 academic years (2002-2003 to 2005-2006) to document and assure student learning of this important skill set. We also instituted changes to curriculum to insure that students have more practice and exposure to financial statement analysis in a variety of courses between their sophomore level accounting classes and their senior capstone experience. We have documented a modest but noticeable improvement in assessment performance on this skill set (seniors assessed on their ability to calculate financial ratios and appropriately analyze the firm's financial position and health) from 30% unacceptable/unsatisfactory in 2002-2003 to 21% unacceptable/unsatisfactory in 2005-2006. However, the cohorts graduating in 2007 and beyond should have better assessment performance due to two tangible curriculum improvements instituted in AY 2004-2005. The Department of Accounting and Finance created a case analysis project for all students in Financial Accounting, and the Department of Business Administration created a set of financial statement templates for instructor use with case materials in Principles of Management and Principles of Marketing classes. We anticipate that follow-on classes will show improvement in skill set retention in their senior year assessments.

FIGURE 2

X Company			
Income Statement			
For the year ended 31 December, 2006			
	2004	2005	2006
Sales	$ 4,350,000	$ 4,171,000	$ 3,915,000
Cost of goods sold	$ 2,904,000	$ 2,843,500	$ 2,701,300
Gross profit	$ 1,446,000	$ 1,327,500	$ 1,213,700
Operating expenses			
Selling expenses	$ 595,300	$ 618,500	$ 612,400
General and administrative expenses	$ 333,500	$ 342,300	$ 459,900
Total operating expenses	$ 928,800	$ 960,800	$ 1,072,300
Income from operations	$ 517,200	$ 366,700	$ 141,400
Other revenues and (expenses)			
Interest revenue	$ 63,600	$ 35,500	$ -
Interest (expense)	$ (42,000)	$ (39,000)	$ (96,000)
Total other revenues and expenses	$ 21,600	$ (3,500)	$ (96,000)
Income before income tax expense	$ 538,800	$ 363,200	$ 45,400
Income tax expense	$ 189,000	$ 143,000	$ 15,800
Net income	$ 349,800	$ 220,200	$ 29,600

Anecdotal evidence from our business faculty suggests that our attempts to change student perceptions of the importance of this skill set are having an effect.

We share the concern of Fridson (1996) that financial statements are not totally clear indications of the financial situation of an organization, and that some organizations purposefully manipulate financial data to affect the perceptions stakeholders have of the financial viability of the organization. However, in order to proceed to the point where a student (or business person) can become proficient at financial statement analysis, the requisite foundation knowledge must be built. We also share the optimism of Montano, Cardoso and Joyce (2004) that students can learn and retain case materials better when financial statement analysis is made a part of integrated case materials.

We believe that business schools have a duty to educate students in the art and science of business practice. Before students can understand the art that is often applied to the creation and analysis of financial information, they must understand the science behind ratio and financial statement analysis. If we are to truly work toward achieving integration of our business subject matter, we must seek ways, even small ways, of breaking down the silos of our own functional areas and working toward a more integrated approach to business education. We see the addition of financial statements to the case pedagogy in Principles of Management/Marketing as a useful tool to help students learn and retain important information as part of their business education.

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Who's Responsible for the Learning Process In Higher Education?

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ABSTRACT

This paper looks at causes that are responsible for the long term shift of the burden of the learning process away from students. This subject has become more significant with a continued push for quality teaching in higher education. The paper explores the changing educational and institutional variables that have caused the shift in learning responsibility. A current reality tree, a systems-based tool, is used to explore the system phenomena and relationships among numerous variables. The results from this research are expected to lead to outcome-based solutions that narrow the gaps among student, faculty, and institutional expectations.

Introduction

> "I thought class participation was worth way too much. It favored those who knew the material better than others."
>
> "Most students do not read the chapters before class. I personally find that to be a waste of time... I don't have time to read every chapter in every class."
>
> "The professor was worthless. I had to learn the material myself."

If you have ever received student comments like the actual student comments above, take heart, you are not alone. It appears that the responsibility for learning in higher education is shifting. The reason for this shift is an unintentional consequence of many interrelated phenomena that affect our system of higher education. The result is the tendency for students to not take responsibility for their learning. This paper examines this shift in learning responsibility using a systems approach. Our goal is to identify causes and provide suggestions on how to alleviate these causes.

The state of education in the U.S., including higher education, has increasingly become a controversial subject in recent years. Evidence of this growing attention includes political statements and articles appearing in the popular media (e.g. Mote, Washington Post, 2004) and academic journals (e.g., Ewell, 1997). Higher education, like other business environments, operates in an increasingly complex and competitive arena. (Twitchell, 2004) The growth of online education, reduced state funding, and high expectations of quality have forced colleges and universities to reconsider the products they offer in this competitive marketplace. Parents, students, and the general public question whether higher education is providing adequate return for their tuition and tax support. (The Economist, May 22, 2004, pp. 61-63; Poindexter, 2004, p. 26; Twigg, 2003) Ewell states:

> ..this flurry of activity [to reform higher education] arises because external pressure for "improvement" has become unavoidable: Employers, politicians, and citizens at large have growing doubts about what is really learned in college. (1997, p.3)

These concerns, along with changing cultural, societal, and demographic variables, have a strong influence on higher education. These changes are not limited to the United States. For example, a University of Kent student is suing the school after being caught plagiarizing. It is his contention that his teachers are at fault for his plagiarizing as he had been doing it for three years and they should have caught him sooner. (Lyall, 2004)

The purpose of this paper is to identify and connect the factors affecting one portion of higher education – responsibility for student learning. The paper uses a systems approach to make these connections. While researchers have used systems approaches to understand the dynamics of other organizational environments, this approach has not been used in higher education. Senge states "systems thinking is a conceptual framework, a body of knowledge and tools that has been developed over the past fifty years, to make the full patterns clearer, and to help us see how to change them effectively." (1990, page 7). This paper uses a systems analysis methodology called a Current Reality Tree (CRT). (Dettmer 1997, Goldratt 1994.) The CRT in this research identifies and explains the factors impacting student learning. Starting with a review of relevant literature and observation of trends in our classrooms, a CRT for the higher education as it relates to student learning was developed and presented below. In this CRT we identify causes of the shift in learning responsibility. Of these causes teachers have direct influence over one cause. The recommendations section of the paper then provides some suggestions to faculty based on the CRT analysis.

Classroom Observation and Reason for this Study

A primary concern in higher education is the general decline in overall student performance in the classroom.[1] We define student performance as a combination of students' grades, participation in classroom discussion and interest in learning (measured by time and energy engaged in course related activities). Some of the possible symptomatic factors that contribute to this decline that we identified both within and outside the classroom and supported in the literature include:[2]

Increased absenteeism: Several factors contribute to this long-term trend toward increased absenteeism, such as the increased cost of higher education. This cost requires many students to work full or part-time to subsidize their tuition, books, fees, and other educational expenses. Many non-traditional students have financial obligations that require full-time employment income and benefits. Increased numbers of single parents attending college with limited time and conflicting family obligations also result in increased absenteeism. Furthermore, students have more distractions today than ever before.

Lack of quality and depth in responses to questions asked in class: Fewer students respond to open questions asked in class. Like absenteeism, the quality of student responses is strongly affected by factors that divert students' time and attention. If students find it difficult to attend class, it is also fair to assume that allocating the necessary time to study and prepare for class is difficult. Some professors are actually responding to this problem by using class time to read the material to students. The time in class is therefore no longer available for the in-depth discussion that would occur if students came to class prepared. As a result, professors increasingly must call on students individually for participation.

Students have only a cursory understanding of the material. This is evident in classroom participation and outside the classroom discussions with students. Students are not gaining the in-depth understanding of material necessary to perform well either on in-class grading opportunities or outside the classroom. Students are not demonstrating learning they can apply to make new connections or to understand new concepts. (Ewell, 1997)

1 Other faculty and researchers have already observed or noted strong causal relationships among the phenomena occurring in higher education. For example, Ewell (1997) suggests that the underperformance of the current higher education system is due largely to the organizational structures, values, and patterns of communication.

2 Grade inflation has also received considerable attention in the media. We chose not to include this factor in our CRT because many schools have not responded to the problem of declining enrollments with actions that compromise academic standards. Some schools have actually increased enrollments in the long term by raising standards, thereby raising the quality image of the institution to their constituencies. (e.g. Idaho State University).

There is a perception of students as customers, by students, administration and faculty. Arguably, there is legitimacy to this perception, especially given the increasing costs of higher education and the strong customer focus in many U.S. corporations. More than ever, colleges and universities are charged with more accountability for measuring and demonstrating educational outcomes. The perception of students as customers drives many other factors in our educational systems. The shortcoming of this approach, however, is that customers must have the knowledge and expertise to define both what they want and how it should be delivered. Similar to a patient telling a doctor how to perform a surgical procedure, students have input in the educational outcomes they desire yet are not in positions to prescribe the particulars of the educational process.

The ultimate result of these phenomena has been a shift of the burden of the learning process toward the teacher. Through the perception of students as customers which must be satisfied, the onus has shifted to those who can directly ensure that students are satisfied, the professors. This is the observation is validated both in the literature (Carroll, 2002; Greenberg, 1999; Sasse, 1998; Twitchell, 2004 and Wallace, 1999) and through interactions and discussions with students, colleagues and administrators. Understanding the reasons for the shift of who is responsible for learning in higher education is the focus of this paper.

Numerous solutions are available to address the above problems. The drawback of most of these solutions, however, is that they only alleviate the symptoms and not the causes. "In the past, higher education has dealt with pressing issues by using short-term solutions. Now it's time to systemically address the issues we face by adopting a systemic view of our institutions and mobilizing the will to change." (Engelkemeyer, 2004, p. 55) In fact, symptomatic solutions actually can create new problems and/or worsen existing problems. Furthermore, some of these solutions directly conflict with long-term learning objectives. For example, a common and seemingly obvious solution to poor class attendance is to make it required. Unfortunately, this short-term solution further shifts the responsibility of the learning process to the instructor and requires additional class time to take attendance. Such symptomatic solutions result in faculty and administrators spending time throughout their careers treating recurring symptoms of larger problems. We might even go so far as to blame these problems on those nearest to the situation, such as students. The purpose of this paper, however, is not to blame anyone, especially not students. The problems cited above are not the fault of any one group and are symptoms of deeper problems in the higher education system. Finding solutions therefore requires understanding the dynamic complexity of higher education. Failure to recognize that many problems in higher education are systemic results in:

- Solutions which only treat symptomatic problems
- An inability to recognize the urgency of important problems, while over- emphasizing the urgency of minor problems (fire-fighting)
- Making decisions without understanding the larger, long-term consequences on the higher education system.

Without a clear understanding of the educational system, faculty and administrators become frustrated with an inability to create meaningful change.

Methodology

The CRT methodology maps cause-and-effect relationships to find causes within a system.[3] The cause-and-effect logic used in a CRT differs from traditional correlation analysis in that cause-and-effect seeks to identify why a phenomenon occurs, whereas correlation analysis focuses on patterns and trends to explain how one phenomenon acts in relationship to another. With correlation, an outcome could be the result of variables you have not identified. As a result, one may focus efforts on the wrong cause. This possibility also exists with the CRT methodology, but should be minimized through the use of established CRT procedures.[4]

According to CRT logic, there is only one (or very few) cause in any system. These causes explain the majority of phenomena in the CRT and, if corrected, have the greatest positive impact on the system.

Explanation of the CRT Diagram

The CRT for this paper is illustrated in figure 1. The causes appear at the bottom while the ultimate effects appear at the top of the CRT. In its final form, a CRT is read from the bottom up following the arrows using if..., then ... statements between the entities in the diagram. For example, if "students are not taking responsibility for learning"...then it is logical to conclude that "students are not reading and preparing for class." An ellipse indicates that multiple entities are combined to explain the effect. For example, if "students are embarrassed by saying something wrong in front of their peers" and if the "instructor has to call on students for participation" and if "students do not make linkages between classroom discussions and reading materials" ...then "students feel uncomfortable responding to questions." If only symptoms are resolved (in bold in the middle of the diagram), they will likely reappear unless the cause is eliminated. For example, mandating attendance does not encourage students to take responsibility for their learning nor does it change all of the symptoms and effects resulting from this cause.

The resulting CRT diagram can be viewed as two primary parts that have some overlap. The right side primarily addresses the administration and culture of learning while the left side explores the dynamic between faculty and student. The following is a detailed discussion of the CRT diagram starting with the causes. The reader can therefore follow the CRT diagram along with the step-by-step discussion.

Administrative Culture side

One cause identified in the CRT is students do not recognize their responsibility in the learning process. (Waehler et al., 1999, p.47) An explanation for this cause may be the feeling of entitlement by the students. While this CRT does not explore the larger societal system to trace the causes for the feeling of entitlement or for students failing to accept their responsibility in the learning process, students may very well learn at least some of this behavior at home.[5] (Roper, 2002, p.22) The problem we see in accepting responsibility in academia, however, may only be part of a larger problem many students have in accepting responsibility in other areas of their lives. (e.g., Wendover, 2002, p.42; Gest, 1992, pp.67-69) Considering that much of what we learn and how we live our lives is already fostered in us by kindergarten, getting students to accept their responsibility in the learning process and, to a greater extent, in their lives may be a daunting task. Still, our collective effort as faculty, though individually small, can help in the bigger picture of shifting responsibility in the learning process.

Increasingly, students feel they are entitled to good grades without any substantive input from themselves other than to attend class. (Sacks, 1996, p.154) To be sure though, not all students feel this way. In an informal survey of students, Sacks finds that about half agreed and half disagreed with the statement: "I'm the consumer who pays the bills, and so my instructor should be mostly responsible for making sure that I learn and receive my money's worth." (1996, p.58) Still, having half the students agreeing (and some strongly agreeing) with this statement is an indication of a serious problem in higher education,[6] especially when coupled with research studies showing that the professor actually has very little direct control on student learning. Learning requires students not to simply be compliant "receptacles" of knowledge, but active learners with a desire to learn. (Ewell, 1997)

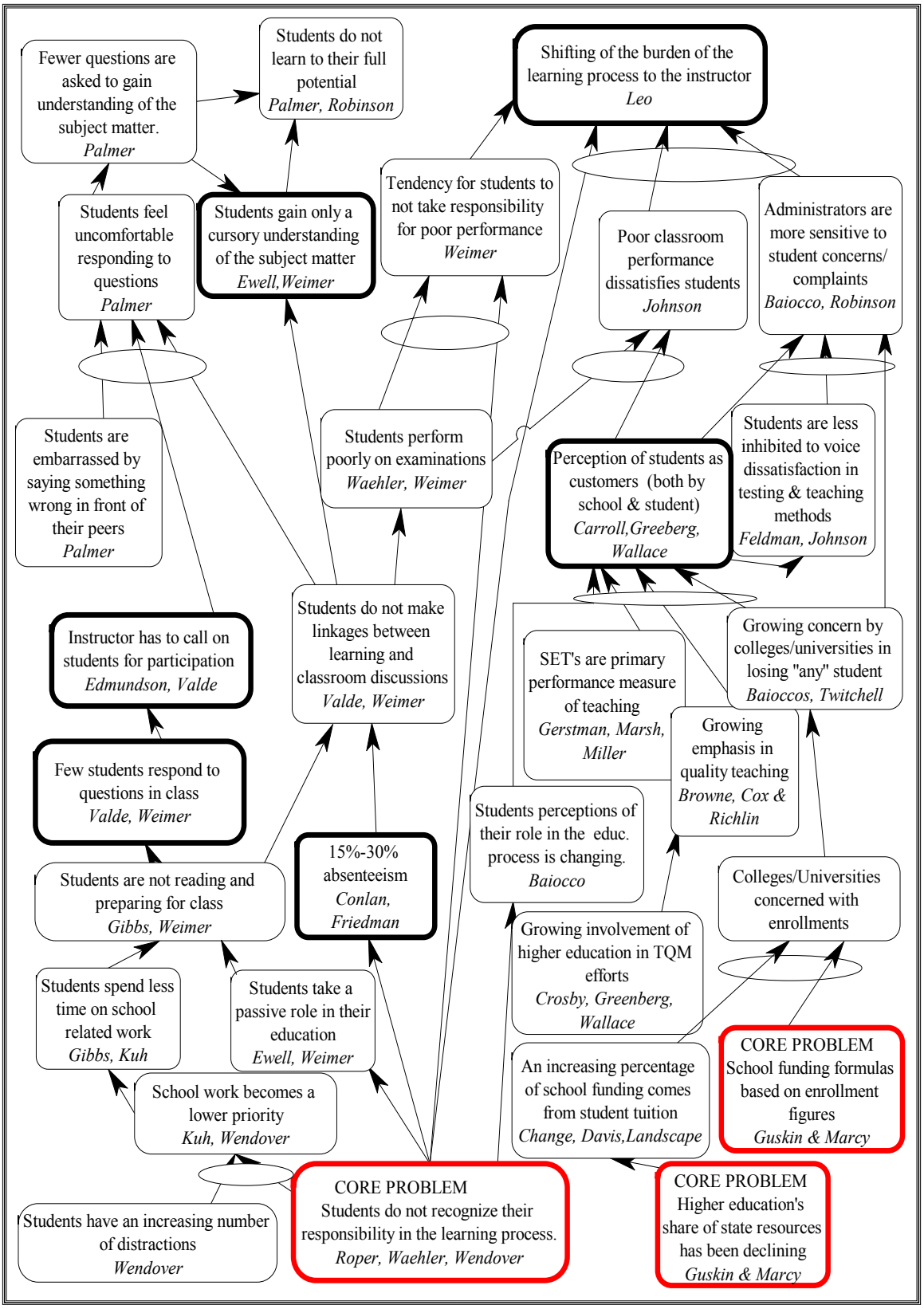
At some schools professors are actually afraid to challenge students, as these students may drop the class. (Sacks, 1996, p.75) Lower class enrollments can be directly coupled to a decline in both tuition and state funding. Students therefore have significant (financial) leverage, especially if they realize this power exists. This financial leverage would be strong enough in its own right, but when combined with the other two causes, this leverage becomes even stronger.

3 Kim defines a system as "any group of interacting, interrelated and interdependent parts that form a complex and unified whole that has a specific purpose." (page 2, 1999)

4 CRTs use specific rules that test and validate the logic connecting the entities of the diagram (Dettmer 1997, Goldratt 1994). These rules of logic, called Categories of Legitimate Reservation (CLR), verify the validity of the CRT cause-and-effect logic. These CLRs provide confidence in the validity of the logic and help researchers trace effects and symptoms back to causes.

5 Students' home life is an example of something we considered beyond our sphere of influence.

6 We do not contend in this paper that all students lack responsibility for their role in the learning process. We merely propose that a troublesome number of students have shed this responsibility. Even if this number is still a diminutive number of students, adherence to their position could have deleterious impacts on the learning process for many students.



The other two causes facing state supported higher education today are the use of formulas to determine school funding and a declining share of state resources dedicated to higher education. (Guskin and Marcy, 2003) These are nationwide concerns that are viable prob-

lems for all publicly funded higher educational institutions. Whatever formula a state uses to determine how to divide an ever-decreasing pie, the formula is likely based on full-time equivalent students (FTEs). At some institutions (including ours), administration made the decision several years ago to 'open the gates' for all students, to increase enrollment and thereby receive an increased share of state appropriations. According to Twitchell, higher education's motto is "enrollment, enrollment, enrollment." (2004, p. 47) When states experience economic difficulty, the increased funding for these new enrollments is not forthcoming as the total portion of the state budgets available for higher education decreases in size. So who pays for these new demands on our higher education systems? Ultimately, this financial burden may well shift back to the students, who now pay an ever-increasing amount of the total costs. (USA Group Foundation, 2000) The increase in tuition rates has been dramatic in the last twenty years, especially at public universities, with average increases in tuition as a percentage of total funding nearly doubling. (Change, 2000, pp.53-56) With students directly paying more of the costs, they justifiably want a larger voice in the higher education process.

To help in providing improved services, colleges and universities are applying principles learned from the business community. One of these approaches is total quality management (TQM). Scholars espouse the benefits to be gained from implementing TQM through changing how we teach in the classroom. These TQM efforts are generally designed with the underlying assumption of students as customers. As customers, students provide feedback on the learning opportunities and teachers then use this feedback to redesign their courses or rethink their teaching methods. (Cox and Richlin, 1993, p.3; Greenberg, 1999, p.12) TQM can take several forms. For example, Browne describes a system of teaching that sets an example of 'lead management' for students. (1996, pp. 5-16). Whatever form it takes at an educational institution, TQM is tied to the concept that students are the primary customers and primary input for quality improvements. (Carroll, 2002; Wallace, 1999, pp. 47-51) The final measure of quality in the classroom generally means that all students should succeed, "at any cost." (Sacks, 1996, p.164) In order to successfully apply this quality mentality, institutions must also recognize the importance of the quality of the inputs or suppliers to the higher education process. Elite schools, some with refusal rates of applicants approaching 90%, have long recognized the importance of the selectivity of inputs. In fact, most of the national rankings of institutions are based on the characteristics of the inputs to the university rather than the outputs. (Twitchell, 2004) As such, the practice of admitting any high school graduate into a higher education system, regardless of their high school performance would be inconsistent with the TQM approach.

Implementing TQM requires measuring student learning and satisfaction with the learning process (to determine if changes are needed). While other measures are available, (Richlin and Cox, 1992, p.1-3) the most common measure of this satisfaction with learning is the student evaluation of teaching (SET) form. (e.g., Gerstman, 1995; Miller et al, 1993) Peter Seldin and associates (1999, p. 26) state "many colleges and universities rely heavily, if not solely, on student rating data as the only systematic source of data collection to evaluate teaching." And while the SET is used for formative teaching purposes, it is also typically used for evaluative teaching purposes.

Schools' emphasis on SETs could result in encouraging teachers to conform to standards of performance in the classroom rather than learning outcomes. Sacks contends that this reliance on SETs means a loss of control for the teachers in the classroom in the form of potential grade inflation, lowering of demands, and less creativity. (Sacks, 1996, p.32) If colleges and universities are increasingly concerned with losing any student, either currently enrolled or potentially enrolled, and student evaluations of teaching (SETS) are the primary measure of classroom teaching performance, and students' own perceptions of their roles are changing, and schools are focusing more efforts on quality teaching, then students are being treated as customers.[7] Because higher education receives its money primarily from state funding and tuition dollars, schools must be particularly cognizant of student matriculation and retention rates. Schools are therefore very concerned with losing any student, whether currently enrolled, or potentially enrolled. (Baicocco and DeWaters, 1998, p.24)

Where does all this lead us? If you combine universities' drive not to lose students, the emphasis on quality teaching using SETs as the primary measure of this quality, and students' changing perceptions of their role in the educational process (Baicocco and DeWaters, 1998, p.18), then students are perceived as customers (whether or not we agree) by both the students and administration. (Wallace, 1999, p.47; Greenberg, 1999, p.12; Carroll, 2002, p.1; Sasse, 1998, p.1) According to Twitchell, this perception is exacerbated at second-tier schools as the premier schools can be more selective about the students that matriculate, but second-tier schools are in a marketing war for student customers. (2004, p.57) With the focus on the student as customer, students feel much freer to provide feedback. (Johnson, 2002, p.14) Also, university administrators are much more likely to be sensitive to these customer complaints, (Baiocco and DeWaters, 1998, p.24; Robinson, 1998, p.1) due to the monetary concerns. Students may recognize their leverage as perceived customers and understandably use this power to push for the short-term needs they want from faculty – grades. They could not do that, however, without the combined assistance of faculty and higher education administrators. Whether the pressure to supply students with their desired grades is overt or covert, the pressure on faculty is real, regardless of the evidence indicating that grades don't influence teacher ratings. (Sacks, 1996, p.23-27, Seldin & Associates, 1999, p.28) "[Higher education's] content has been profoundly changed – dumber down, some would say. There's a reason for that. At the undergraduate level, it's now in the business of delivering consumer satisfaction." (Twitchell, 2004, p. 48)

7 We are not taking a stance that the student is the customer, nor are we negating the need for student feedback. There is much literature that debates this issue. We merely are demonstrating the logic supported in the CRT.

As concerned academics, we realize that the burden for learning and failure to learn must fall somewhere, either in whole or as a shared responsibility. If students do not recognize their responsibility in the learning process, yet are dissatisfied with their classroom performance, it is logical to conclude they will complain. When they complain to either faculty or administration, administrators take these complaints seriously. If students do not accept their responsibility in the learning process and the responsibility must lie somewhere, then that responsibility logically falls on faculty. This shifting of the responsibility or blame is not isolated to education nor is it new, yet it is an increasing phenomenon in American society. (U.S. News and World Report, October 17, 1988, p.68; June 18, 1990, p. 16; February 24, 1992, p.67) This is a dynamic reinforcing process that continues to shift learning responsibility away from students.[8]

Faculty Student side

There are myriad reasons why students may fail to attend class regularly. If students do not recognize their responsibility in the learning process, then this partially explains why students do not attend class regularly. (Friedman, et al, 2001, p.124) For these students schoolwork takes on a lower priority (Kuh, 1999, p. 2) and students play a more passive role (Ewell, 1997, The Teaching Professor, 1998, p. 2; Weimer, 1998, p.96) in their education (i.e. they view themselves as receptacles of knowledge and expect professors to 'learn them the material'). Another factor why students do not give schoolwork its due priority is the number of distractions available to students today that were not so readily available a generation ago. (e.g., cell phones, instant messaging, internet, etc.) (Wendover, 2002, p.42) Some professors try numerous tactics to encourage and motivate students to attend class, including the popular methods of quizzes and class participation points. (Sacks, 1998, p.13) Although these tactics have some short-term benefits, they still do not address the cause that students do not recognize their responsibility in the learning process. This is a symptomatic solution that often results in the opposite long-term effect of further contributing to the cause. In this way, the CRT helps us to recognize and explain why many of our best intentions (prospective solutions) have the opposite effect.

The culmination of today's distractions combined with the lower priority school holds for many students means that they spend less time on school related work, (Gibbs, 1999/2000, p.1) that is less time reading and studying material in preparation for their classes. (Weimer, 1998, p. 105) This explains why, as we noted initially in our own classes, fewer students are responding to open questions in class (Valde, 1997, pp.67-68; Weimer, 1998, p.96), requiring teachers to call on individual students more in class. (Valde, 1997, p.68; Edmundson, 1997, p.45) In fact, it is not uncommon for some students to actually read the assignments during class time instead of in preparation for class. (Sacks, 1996, p.13) As further support that faculty are acceding to student expectations, some faculty now use class time to read the assignments.

Why else are students reluctant to respond to teachers' questions in class? Of course, some of the answer lies in the tenor of the class, as set by the teacher. Still, some responsibility lies in the students' lack of recognition of class discussion and learning and with their possible embarrassment from giving an incorrect or incomplete answer. This effect is compounded if the teacher actually calls on particular students in class. The combination of all these factors creates a strong reluctance of students to actively participate in class. Palmer calls this a 'culture of fear.' (1998, pp. 35-60) Most of us have felt afraid to speak up at one time or another. In fact, public speaking is often cited in popular studies as the greatest fear of a majority of people, even greater than the fear of death. While classroom participation may not constitute public speaking in its fullest sense, classroom participation does require students to speak up in front of their peers.

If students are not actively participating and engaged in class, then the learning process breaks down, resulting in students gaining only a cursory grasp of the material. (Weimer, 1998, Chapter 5 – The Responsibility for Learning) The ultimate result is students not connecting with course material and learning to their full potential. (Palmer, 1998, pp. 35-60) Students' not learning to their full potential is a tragic loss, for our institutions of higher learning have much to offer a motivated and open mind. (Kohn, 1993. p.142)

This loss of learning translates into poor student performance on exams and a feeling of dissatisfaction because the system has failed them. In many cases, students have failed to achieve and they often do not even know it. Herein lies the real loss – students have not learned the material, but this is not the focus of their dissatisfaction; they are dissatisfied because they did not receive the grade on the exams (Weimer, 1998, p.111) and in the course that they desired. (Kohn, 1993, pp. 199-206)

The bottom line is that students have missed an excellent opportunity to learn and understandably often look to blame something or someone else for their poor performance.[9] The easiest and logical target to blame is the professor, often with the support of administration, for their not receiving the grades students feel they deserve. Therefore, there are two linkages at work here causing this discord: students not personally accepting responsibility for learning and students not understanding that the true goal of a higher education is not grades, but learning. (Robinson, 1998; Kohn, 1993.)

It is important to remember the outstanding students who are highly motivated. If we fall into the trap of pandering to the underachievers and "water down" our courses, what has this done for the learning

8 This discussion does not emphasize that students are to blame for this "shift of the burden of the learning process." Rather, this shift is a result of the dynamic interaction of many phenomena in our educational system.

9 This tendency to complain is not limited to education. Lyall (2004) reports that the younger generation is more likely to speak up for themselves, but part of this speaking up results in complaining and whining. Per Alvarez (2004), complaining is not limited to the younger generation.

process for these outstanding students? They too have lost as these courses do not challenge and stretch them, thereby shortchanging them of their appropriate learning opportunity. If faculty pander to underachievers, then outstanding students are likely to complain, and rightly so, for the lost learning opportunity.

Conclusion – What does it mean?

Higher education is a revered institution that adds value to society and to the individuals who attend it. This work is not intended to portray a negative image of higher education. Rather, this work is intended to help make the current state of higher education even better. Through the previous analysis we hope to enlighten faculty, administration, and students about learning responsibility so that we might all work together to further improve higher education. This work is not intended to identify the learning process as solely the responsibility of students. Responsibility for the learning process should be shouldered jointly by students, faculty, and administration.

Therefore, the purpose of this research is to clarify the dynamic interaction of factors in the higher education system. With such a systemic understanding, we can more clearly explain why certain outcomes occur, explain why some of our solutions don't work and often backfire, and explore fundamental lasting solutions. The authors started this study because of classroom observations and trends that we found troubling. Some of these observations are identified in the CRT outlined in bold as symptoms of the causes. In fact, the final effect "shifting of the burden of the learning process to the instructor" was also one of the classroom observations noted. We must focus on treating causes, not symptoms. For example, if we want students to attend class we can require attendance as a part of the course grade. This will undoubtedly improve classroom attendance, but will it enhance students' lifelong learning aspirations, or even increase their motivation in this class? Probably not. (The Teaching Professor, 1998, p.2) To get the students' attention and motivate them to be lifelong learners requires that we address the causes and not symptoms. The causes identified in this scenario are the students' lack of recognition of their responsibility in the learning process, school funding based on enrollments, higher education receiving a smaller share of state resources, and the many distractions to which students are subject. As faculty we have direct influence over only one cause – students do not recognize their role in the learning process. And our influence over this cause is somewhat limited.

Why does personal loss of responsibility occur? Certainly some of it is our fault as parents and teachers. As children, students are often not held accountable and they quickly learn to take advantage of a system. (Sacks, 1996, p.17) An overemphasis on grades as the sole measure of learning and success both for students, faculty, and institutions magnifies this problem. (Hartocollis, 2002; Khon, 1993; Kruger & Dunning, 1999) Often we forget the ultimate objective of our institutions of higher education is to advance learning.

Why do we care who carries the responsibility for learning in higher education? For those students taking responsibility for the learning process learning has a more personal role in their lives. With this personal role and the added responsibility, student learning is enhanced and society benefits.

Recommendations

In this section we venture beyond the CRT to make some recommendations to help students assume their rightly share of responsibility for the learning process.

What can we do?

- Faculty and administrators must recognize that the cause is systemic and understand that systemic change takes time. Without this recognition we will continue to treat only the symptoms of larger, deeper causes.
- We can recognize that some of the short-term solutions we provide to address the symptoms actually exacerbate the causes. For example, providing printed copies of class notes for students relieves them from taking copious notes in class, but also reinforces the atmosphere of expectation (e.g.."my previous professor gave us class notes, why don't you?) and passive learning. Providing students with copious notes may also discourage them from reading their textbooks.
- Communicate to our students from day one and thereon in our classes the importance of their role in learning. While we can hope that students will understand this concept from kindergarten on, many students have never had their role in the learning process communicated to them. The authors use a "Top Ten" list of practices that lead to student success and go over this list with students at least twice per semester. The list addresses in at least one point students taking responsibility for their learning.
- We cannot "learn the students the material." As the adage states, "You can lead a horse to water, but you cannot make him drink." The same is true of our students. the primary responsibility for learning still ultimately must rest with students. Students learn because they choose to, not because we make them. Faculty must understand that the desire to learn must be come from the students. While we can have some influence over students' desires to learning, if they do not want to learn we cannot force them to learn or to like learning. Our role is to spark interest in the subject matter and to facilitate the learning process.
- Establish clear learning objectives for our courses and stick to these learning objectives throughout the semester. (e.g.. If you let assignment due dates slide, students will come to expect this behavior.) As faculty, you must create the appropriate classroom culture for learning, including holding ourselves and students accountable for stated objectives and requirements.
- Create a common and consistent learning culture across faculty. If one or some faculty accede to student expecta-

tions this creates pressure on other faculty to do likewise and shift the burden for learning responsibility. Make dialogue of teaching and expectations among faculty a common practice.

- Continually reflect on your own teaching effectiveness. We must constantly ask ourselves if our pedagogy truly enhances the learning process (i.e. do our classes engage the students or can they come in to class and set the autopilot for the duration of the class?). There are always different approaches to teaching that may be more effective for different learning styles.

This work was an initial attempt to explore the shift of learning responsibility in higher education. Whether or not you agree with the conclusions and recommendations, we hope that you come away with a deeper understanding of roles in the learning process and some ideas on how you influence students' perceptions of their learning.

Limitations

There are several limitations to this exploratory work. We describe and elucidate a few below.

The work attempts to clarify a very complex issue. With such an approach, there are trade-offs to be made. A diagram and analysis addressing all the issues involved would be too voluminous for a single journal article. On the other hand, oversimplifying the discussion might result in omitting vital components. The authors have attempted to reach a middle ground by providing a relatively simplified diagram and discussion without omitting essential components.

The authors have done their best to present a depiction of learning responsibility in higher education. It is our hope and plan that verifiability of this reality as depicted by this CRT is high. In other words, other researchers with similar experience and exposure to similar literature should generate a similar CRT. There are many factors involved in the learning process in higher education. There is always the possibility that some factors have been missed in the analysis that other readers would identify as essential.

Developing the diagram using the CRT methodology is a rigorous, yet still subjective process. What one researcher views in one light, another researcher might see very differently. While the process is somewhat subjective, the researchers have attempted, to the degree possible, to reduce personal biases. For example, we attempted to take a long-term perspective and not write this work based solely on classroom observations for only one or two years, or only on the literature of just the past one or two years.

The impetus for the work is empirical observations in our classrooms. The work is not based on data collection or statistical analysis, except for the secondary support provided by the works cited. This work is therefore exploratory. Perhaps future researchers will challenge or support the assertions in this work.

Our research is also limited to what we consider to be our sphere of influence (i.e. phenomena that directly affect higher education for which we have direct control or influence). In the end, many factors are outside our sphere of influence, including those factors over which administrators have more direct control. The best we can do as educators is to provide leverage to guide the education system in the desired direction using the factors over which we do have influence.

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How Realistic Are Student Attitudes Toward Selected Careers?

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ABSTRACT

This study compares the importance undergraduate business students place on five career attributes: career position, entry-level salary, length of workweek, time to management, and freedom to make choices at work. Five hypotheses were tested on 220 and 152 student respondents, respectively, at two medium-sized universities, located in the southeastern and northeastern U.S. Based upon the results of conjoint analysis, all five hypotheses were supported at both universities. That is, initial salary was the most heavily weighted factor in selecting a career path and students rated managing their own business and marketing management careers over sales careers. Respondents also preferred positions with high freedom to make choices and shorter total work hours per week. As predicted, students assigned different utilities to the five attributes depending upon their college major. A discussion of how realistic student attitudes are toward intended careers is proffered, followed by suggested sources of information business educators can consult to improve the accuracy of student perceptions.

Introduction

Career management is the establishment of realistic career goals based upon accurate knowledge about one's self, work, and monitoring the progress toward those goals (Greenhaus and Callanan 1994). Undergraduate students are often uncertain about which career path to pursue and how to manage a chosen career. When a student selects an initial career path, they might not understand the positive and negative aspects of their employment choice and would, therefore, be unable to engage in rational career management. Students that fail to comprehend the functional aspects of a job or have employment preferences misaligned with realistic employment opportunities are more likely to make inappropriate career choices and experience dissatisfaction in the workplace.

The purpose of this study is to compare the relative importance that undergraduate students at two universities place on five employment or career attributes: position, initial salary, duration of workweek, time to management, and personal freedom. These five variables were selected because student preference for a career may depend upon the joint influence of such variables (Swenson et al. 1993). An accurate understanding of student preferences toward job attributes will enable professors and university career centers to better advise students whether their preferences are reasonable and what type of employment would best meet those preferences. Since most individuals take a multidimensional view of their job, it is important to examine how potential job seekers evaluate prospective careers (Bagozzi 1980). Investigating these five variables at different geographical locations provides a more comprehensive understanding of student employment preferences. Finally, improving the alignment of student preferences and their career knowledge enables students to make more informed choices about their careers that, hopefully, will lead to a higher level of job satisfaction and a more efficient allocation of job talents and societal labor resources.

Research Expectations

The expectations of this investigation are influenced by earlier studies. Nearly all studies, over the past half-century, document that undergraduate students possess negative attitudes toward personal selling and sales careers even though many business majors initially enter this profession (Swenson et al. 1993; Honeycutt et al. 1999). Conversely, marketing management ranks near the top of career choices offered students in the U.S. (Swinyard 1982) and New Zealand (Ford, Honeycutt, & Joseph 1995). In studies of Philippine students, managing one's own business was the most preferred career path (Honeycutt et al. 1996, 1999, 2003). Similar perceptions of careers were confirmed in the U.S. (Honeycutt, DiRienzo and Pavlik 2003). These research findings dictate the initial hypothesis:

H^{1a}: Student preference for sales careers will rank lower than for non-sales careers.

An important aspect of career is promotion opportunity. All things being equal, a career path with opportunity for rapid advancement will be valued higher than a career with slower advancement (Anderson, Stanley & Parker 1992). However, it may be difficult to acquire the amount of on-the-job knowledge in a short time period to justify promotion. Recognizing this, but not wanting to appear relatively "slow," students are more likely to prefer a "medium" time to promotion. Following Honeycutt, DiRienzo, & Pavlik (2003), respondents were asked to select between three time periods—six months, one-year, or two-years—in which they could be promoted to management. Thus:

H^{1b}: Students will prefer careers with "medium" (one-year) promotion time to management.

The expectation of future financial rewards is an important attribute of career selection and a significant influence on career preference (Hafer & Schank 1982). However, placing excessive importance on salary may motivate students to select a career without fully understanding other salient job attributes. That is, the initial salary offered can override all other job selection factors (Simons and Lowe 1997; Honeycutt, DiRienzo, & Pavlik 2003). When a position offers a salary significantly higher than other job opportunities, it becomes a "clear market leader" (Swenson et al. 1993, p. 61; Honeycutt, Ford, & Stanton 1997). As a result of these findings, the third hypothesis declares:

H^{1c}: Significantly higher starting salary will be the most important factor for selecting an initial career.

While total salary is important, students selecting careers also want to know their implicit hour wage or the total time they must work to earn their salary. Intuitively, one can predict that new entrants into the job marketplace may expect to work greater than 40 hours each week. Conversely, the expectation will likely not exceed the maximum choice of 60 hours per week. The fourth hypothesis affirms:

H^{1d}: Preferred hours worked in the selected career will be lower than the maximum offered.

A final attribute for career selection is the amount of personal freedom one has in making decisions at work. Swenson et al. (1993) reported in a national study of 1203 U.S. students that personal freedom was the second most important characteristic associated with sales careers. Honeycutt, DiRienzo, & Pavlik (2003) also found that undergraduate business majors opted for high personal freedom in their intended careers. In regard to decision-making authority, the fifth hypothesis states:

H^{1e}: High personal freedom is preferred over low personal freedom.

University students differ in their preferences regarding careers. For example, accounting majors, followed by finance majors, are distinctive in placing their highest emphasis on financial rewards (Simons and Lowe 1997). Also, in a later study, Simons, Lowe, and Stout (2004) reported that income is the first or second most important factor that influences the career choice of accounting majors. Career choice may also be driven by the position itself. Marketing majors appear to value excitement in their career more so than accounting and finance majors (Wilhelm, Hall, and Williams 2004). Similarly, entrepreneurial intentions among undergraduate business majors tend to be highest among management (48%), marketing (37%), and general business majors (36%) (Francis and Banning 2001). Thus, students that pursue different academic majors within the business administration discipline are expected to allocate distinct weights to the five career attributes investigated in this study or stated more formally:

H^{2}: Students from distinct majors or concentrations will assign disparate utilities to the five career areas investigated.

Methodology

Students at two medium-sized, private universities, Elon University and Hofstra University, completed an in-class survey that investigated a wide-range of career intentions. A total of 220 students at Elon (52% male and 48% female) and 152 Hofstra students (45% male and 55% female) were randomly selected from business classes across all disciplines to complete the survey. The average grade-point average (GPA) of Elon students was 3.18 and the average of the students surveyed from Hofstra was 3.08.

Fewer seniors and more sophomores were surveyed at Hofstra University in comparison to Elon University. The average age of the respondents at Elon University was 20.75 and 20.54 at Hofstra University. A test of equality of the average age of the two sets of respondents was performed to ensure that the average respondent age at both universities is not statistically different. At the 95% confidence level, no a statistical difference exists in the mean sample age of the Elon and Hofstra University students; so student age should not influence the results.

Respondents were presented with 16 different career scenarios. The career scenarios combined disparate career attribute levels and respondents scored each career scenario on a scale of one (the least desirable) to ten (the most desirable). For example, one career scenario is a financial sales position with management responsibility within one year, a $30,000 a year salary, a 50-hour workweek, and low personal freedom. Respondents scored this career scenario and a variety of other scenarios that had varying levels of salary, duration of work, and personal freedom. Such career scenarios are designed to analyze responses using conjoint analysis (Swenson et al. 1993).

Conjoint analysis, unlike traditional research methods that examine attributes separately, is concerned with the joint impact of two or more attributes on a dependent variable (Hair et al. 1992). In this case, the dependent variable is the score that respondents assign to a particular career scenario composed of the attributes: career position, initial salary, length of workweek, time to management, and personal freedom. In this way, the conjoint analysis allows researchers to understand the trade-offs respondents make among various career combinations—e.g., would a student trade a longer work week or less-desirable position for a higher salary? An important benefit of conjoint analysis is that computed quantitative values approximate the utility or the value students perceive in each attribute (Swenson et al. 1993).

Comparing Individual Student Responses to Conjoint Analysis Results

In the career survey a second approach, referred to as the "student assessment," was employed to determine the relative importance respondents placed on different career attributes. In this case, students assigned a relative importance value between 0 and 100 to each individual career attribute: (career position, initial salary, length of workweek, time to management, and personal freedom), such that the total of all values assigned equaled 100 and an attribute with no importance to the respondent would receive a value of 0. For example, a response could have the following structure: Position, 30; Time Until Management, 15; Salary, 40; Length of Work Week, 10; and Personal freedom, 5. In this example, the respondent placed the greatest importance on salary and the least importance on the personal freedom.

Each of these methods, conjoint and the student assessment analyses, are designed to separate the relative importance that students place on different career attributes. Two analyses designed to address the same research questions are employed since there is no test of significance for conjoint analysis. If similar results are obtained by using these two statistical analyses, this provides support for the conjoint analysis results and yields more robust results.

Findings

Table 1 presents the conjoint analysis results based upon responses at both institutions. Conjoint analysis computes the overall relative importance of each of the five career attributes and the corresponding utilities of each of the attribute levels based upon respondent rankings. The "relative importance" column provides a measure of how important a particular attribute (i.e. salary) is in comparison to other attributes (position, time to management, length of workweek, and freedom). The "utility" column shows the positive or negative utility value associated with a particular attribute level. Using Elon University respondents as an example, the relative importance of salary overall is 33.5662; in contrast to the attributes of position (21.3317), length of workweek (18.5378); high personal freedom (17.9924); and time to a management position (8.5719). Further, in the category of "salary" the attribute levels of $30,000 and $36,000 received negative utility measures of -0.75080 and -0.27646, respectively, while

Table 1
Conjoint Analysis Results: All Majors Combined at Both Universities

Attribute	Attribute Value	Relative Importance Elon	Relative Importance Hofstra	Utility Elon	Utility Hofstra
Position	Financial Sales	21.3317	20.4137	-0.30979	-0.18168
	Sales Management	--	--	-0.41381	-0.42605
	Marketing Management	--	--	0.00744	0.01357
	Manage Own Business	--	--	0.71616	0.59416
Time to Mgmt	Six Months	8.5719	4.1396	0.05484	0.06136
	One Year	--	--	0.19962	0.07276
	Two Years	--	--	-0.25445	-0.13412
Salary	$30,000	33.5662	36.3329	-0.75080	-0.71464
	$36,000	--	--	-0.27646	-0.38651
	$42,000	--	--	1.02726	1.10115
Work Week	45 Hours	18.5378	19.8072	0.36563	0.38857
	50 Hours	--	--	0.14756	0.25535
	55 Hours	--	--	0.10314	-0.04259
	60 Hours	--	--	-0.61634	-0.60133
Freedom	Freedom to make decisions	17.9924	19.3065	0.47654	0.48244
	Low Personal Freedom	--	--	-0.47654	-0.48244

the attribute level of $42,000 received a positive utility measure of 1.02726.

Table 1 confirms that both sets of respondents ranked the five attributes in the same order of relative importance. Students at both universities indicate that salary is the most important attribute when selecting a career, followed respectively by: position, length of workweek, personal freedom, and time to assume a management position. While it is not possible to test for equality of scores across universities (Swenson et al. 1993), the identical importance rankings of the attributes parallels the results of earlier studies (Honeycutt, DiRienzo, & Pavlik 2003).

Table 2 compares the conjoint analysis and the student assessment results. The table shows the relative importance the students placed on the career attributes based upon the conjoint analysis results and the student assessment results at Hofstra and Elon universities. The student assessment values indicate the average relative importance value provided by both universities[1].

As shown in Table 2, conjoint analysis and student assessment results are similar at both universities. That is, time to management exhibits the largest discrepancy at both schools in that Hofstra students allocated an average relative importance of 10.99 out of 100 for this attribute and the results of the conjoint analysis indicated that the students place a smaller relative importance of 4.1396 for this attribute. The time to management attribute provided the largest difference in analysis results at Elon as well -- Elon students allocated an average relative importance of 13.35 out of 100 for this attribute, while conjoint analysis yielded a smaller relative importance of 8.5719 for the attribute. The differences between the relative importance provided by the conjoint analysis and the student assessment at the respective universities are minimal and offer support for the conjoint analysis results.

Table 2
Comparison of Conjoint Analysis and Student Assessment Results

Attribute	Conjoint Analysis Hofstra	Student Assessment Hofstra	Conjoint Analysis Elon	Student Assessment Elon
Position	20.4137	19.40	21.3317	21.99
Time to Mgmt	4.1396	10.99	8.5719	13.35
Salary	36.3329	35.76	33.5662	30.71
Length Work Week	19.8072	16.78	18.5378	15.99
Freedom	19.3065	17.07	17.9924	17.97

* No economics major respondents participated in the survey at Hofstra University.

Table 3
Conjoint Analysis Results
Relative Importance by Major: Elon University/Hofstra University

Student Major	Position	Time to Mgmt	Salary	Work Week	Freedom
Accounting and CIS	13.3420 **10.1473**	11.5317 **10.4746**	45.0923 **42.5532**	15.7517 **23.5670**	14.2824 **13.2570**
Economics* and Finance	18.893 **27.4426**	8.8220 **2.9890**	33.8785 **33.215**	22.1737 **22.5668**	16.2323 **13.7867**
Management and Marketing	36.0206 **18.1357**	6.5946 **2.8833**	23.5045 **37.7855**	14.3840 **20.6306**	19.4963 **20.5648**
Business Administration	15.2994 **27.1491**	7.7110 **9.2982**	37.2725 **23.9474**	24.3274 **15.4386**	15.3897 **24.1667**
Double Majors	23.5367 **35.0691**	14.5571 **12.1826**	25.3544 **16.6506**	18.1628 **17.2935**	18.3891 **18.8042**
Non Business Majors	24.7510 **28.7698**	7.0423 **1.2660**	33.3296 **34.1603**	12.7433 **14.5584**	22.1338 **21.2455**

1 The student assessment figures are based on the 136 respondents from Hofstra University and the 202 respondents from Elon University who successfully completed this portion of the survey. Survey results that provided a total relative importance on all five attributes of less than or more than 100 were discarded.

Table 3 compares the relative importance across individual majors. Although it is not possible to test for significant differences across majors, salary is rated most important by accounting, CIS, finance, and non-business majors at both universities. Position, on the other hand, is of the highest importance for management and marketing majors at Elon and business administration and "double majors" at Hofstra. Further, time to management ranks as least important by all majors at both universities, except for Hofstra accounting and CIS majors who rated this criterion one spot higher. With the exception of non-business majors, individual majors at both universities ranked the importance of the career attributes similarly. Lastly, no significant differences were evident when male and female responses were examined.

Discussion

All five hypotheses were supported by the findings of this study. As predicted, undergraduate students at both Elon and Hofstra universities perceive salary to be the most important factor in career selection and assign a positive weight to only the highest starting salary of $42,000. Certainly students want and expect to receive the highest possible salaries, but as seen in Table 6, few business graduates begin their career at this average compensation level.

Table 4
Average Starting Salary by Curriculum

Job Function	Average Salary Offer
Computer Science	$50,007
Accounting	$42,155
Economics / Finance	$40,718
Business Administration / Management	$38,237
Marketing / Marketing Management	$35,680

The information provided in this table shows the overall average salary offer corresponding to students' major field of study, without consideration of the number, type of position offered to the student, or the type of employer extending the offer (NACE 2004). Accounting and CIS are the only two majors that received an initial starting salary at or above $42,000. Economics/Finance graduates start slightly under, while management and marketing majors receive average initial salary offers that are significantly below the preferred salary level of $42,000 (NACE 2004). It may be that the expectation of lower salaries for management and marketing majors motivates these students to place significantly greater emphasis on "starting position."

Among the career choice-set, students at both universities prefer to "manage their own business." This career preference was followed, respectively, by a near neutral ranking of marketing management and negative perceptual ratings of both listed sales positions. One explanation for this finding is that careers are often ranked based upon a perception of prestige (Anderson, Summey, & Parker 1988). Even so, one must wonder how plausible it is for students to begin their careers managing their own businesses. Another explanation is that students are offering their "perceptions" rather than "preferences," which are two separate responses (Swenson et al. 1993).

Length of workweek and personal freedom received similar importance ratings at both universities. As might be expected, respondents prefer the shortest workweek (45 hours) and negatively rate the longest workweek (60 hours). One must question whether students are being realistic, if they believe they should receive the highest salary, while working the shortest number of hours each week! Similarly, students want high personal freedom, but appear not to understand the high personal freedom found in most sales careers (Swenson et al. 1993).

Finally, time to management was the least important of the five career criteria measured in this study. This may mean that, at least initially, students are focused more short-term on salary, position, workweek, and amount of freedom to conduct their job. Still, students at both universities prefer to move into management at either the six-month or one-year point. Having to wait two-years for a management position was viewed more negatively. One might ask how realistic the respondents are in their ratings of the selected career choice criteria.

Our results suggest that students at both universities prefer to operate their own businesses, work short workweeks with the greatest personal freedom, for the most pay, and receive promotions to management within a year! Most students will find that their preferences and reality are out of alignment. Perhaps if students were provided the information needed to develop more realistic attitudes toward important career attributes, they could make more informed career choices and, hopefully, achieve higher levels of job satisfaction. From a macroeconomic perspective this would result in an efficient allocation of job talents and societal labor resources. Furthermore, a better understanding of student preferences toward job attributes will enable professors and university career centers to provide better advice to students so that they can assess the reasonableness and type of employment to meet those preferences. While career centers provide students with career education, faculty members with specific academic discipline knowledge can enhance student knowledge by providing accurate career information. Listed below are low-cost sources of information faculty can provide to their students.

Suggestions for Faculty

1. **Invite guest speakers to classes and hold special seminars.**

Business faculty can invite guest speakers for classes and/or hold special career seminars. For example, upper-level undergraduate classes should consider inviting local businesspersons to attend class and share information about their respective career. Management and marketing classes could invite retail managers, human resource managers, salespersons, sales managers, and industrial marketers to name just a few. In finance classes, financial consultants, investment

salespersons, insurance experts, and bankers would offer students an understanding of potential careers. In accounting, it would be important to invite CPAs, corporate accountants, and tax specialists. In economics, individuals from academic, banking, and government positions, as well as economists who are working in careers outside of their academic major would benefit undergraduate students.

2. Encourage students to complete internships or service learning projects in selected career areas.

Internships provide undergraduate students with an opportunity to experience a career of their choice from the inside. That is, students may be able to earn college credit by working under the guidance of an academic advisor and job supervisor. Interns also gain an understanding of the pressures of the job and everyday work schedule of a potential career. Not only do internships provide students with solid work experience but they can lead to a full-time position after graduation. Many firms use internships to screen potential employees. The time that the students work for the company may be a "de facto" probation period that is utilized to determine whether the student is worthy of future employment. Service learning projects, although shorter in duration and more focused on community service, involve many of the same competencies and experiences as internships (Sharifi, McCombs, and Cattelus 2003).

3. Promote active participation in business fraternities.

Students should be offered opportunities to participate in business fraternities—Pi Sigma Epsilon, Finance Club, and Society for Advances in Management. Business fraternities offer students myriad opportunities to gain role accuracy by completing volunteer/paid projects and fund-raisers in desired career areas and benefit from interactions with faculty advisors, local business persons, and guest speakers.

4. Distribute career information provided by academic and professional associations.

Current career materials that are available from academic and professional associations, such as the American Marketing Association, American Management Association, AICPA, Financial Management Association, and American Economic Association can be distributed in class during career discussions. This information should be introduced early in the undergraduate experience rather than waiting until students near graduation (Anderson, Stanley & Parker 1992).

5. Direct students to informative web sites.

Students can be directed to the web sites like those listed in Table 7. These web sites offer a myriad of information and may be more current than printed materials.

Table 5
Useful Employment Related Web Sites

Web Site	Comments
http://stats.bls.gov	Vast government site with information on occupations, industries, salaries, and more.
www.monster.com	Large internet employment site with useful job related information.
www.jobsmart.org	General information on jobs and wages.
www.careerjournal.com	*Wall Street Journal's* job-related site.
www.wageweb.com	Site largely devoted to providing wage information.
www.careers-in-business.com	Site dedicated to providing information about positions in business.
www.wetfeet.com	General site designed to help job-seekers make informed career choices.

6. Familiarize students with entry-level salaries in class and at career centers.

Since salary continues to play a dominant role in career selection, it is imperative that students be familiar with entry-level salaries. Most career planning and placement offices on college campuses have access to salary information. Additional salary information is available on the Internet sites listed in Table 5.

7. Remind students that the highest paid positions and careers may not necessarily lead to the greatest job satisfaction or long-term career success

While salary is a major determinant in selecting any career, students need to understand that the highest paid positions may not necessarily lead to the highest job satisfaction or long-term success. One of the authors of this paper has heard finance majors claim to dislike "working with numbers." Clearly, such students will be disenchanted if they pursue a finance-related career. In such cases, business faculty members are in better positions than career counselors to advise students about the specific work conditions in a business profession.

Students appear to value personal freedom and some positions allow workers more personal freedom than others. For example, sales positions bestow a tremendous amount of personal freedom and ability to work in an entrepreneurial fashion (Swenson et al. 1993). Greater levels of personal freedom also exist in many professional services and academic careers. For example, real estate agents, financial planners, consultants, CPAs, lawyers, and university professors experience high levels of personal freedom in most aspects of their jobs and in time allocation. Faculty can expose students to the more practical side of business occupations in their disciplines so that the amount of personal freedom available in specific career paths will be understood.

Summary

This study offers a snapshot of how students at two similar universities view selected business career paths. Salary is the most important attribute for business students as a whole, and even more so for accounting and CIS majors who expect higher average starting salaries (NACE 2004). Position is also important in career selection, especially for management and marketing majors who may receive lower starting salaries. Hours worked, personal freedom, and time to management are less significant factors in career choice and their importance varies depending upon the position selected. To make rational career management decisions students need to clearly understand the positions that are available in their chosen career fields, as well as having an accurate understanding of entry-level salaries and duties for those positions. Armed with this knowledge, students will be better equipped to enter their initial career with reasonable expectations and, they will be more likely to become successful employees and satisfied graduates. As business educators it is our responsibility to not only help our students identify a career, but to select one in which they will be satisfied and successful.

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Intentional Rating Distortion and Peer Evaluation in Management Education: Why and How to Identify "Game-Players"

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ABSTRACT

Although student-based peer assessment systems -- widely adopted in management education programs -- can have many benefits, raters may provide inaccurate ratings in order to maximize their own relative standing, and biased assessment may yield deleterious consequences. We argue that it may be possible to reduce participant intentional distortion by increasing the likelihood that those intentionally distorting their ratings will be identified and sanctioned, and propose a practical mechanism for identifying – on the basis of actual ratings provided – those students likely to be engaging in such behavior.

Introduction

A number of recent studies indicate that teams have become a highly prevalent means by which to organize work in contemporary organizations (Cohen & Bailey, 1997; Sundstrom, De Meuse & Futrell, 1990). Such team-based work systems require managerial competencies that go well beyond the task-related knowledge, skills and abilities demanded in the past (Chen, Donahue & Klimoski, 2004). Although a number of scholars have argued that educational institutions have failed to place sufficient weight on developing such team-oriented competencies (Sinclair, 1997; Chen et al., 2004), there is increasing evidence that management education programs have begun to place increased emphasis on team-related skills (Baldwin, Bedell & Johnson, 1997). Frequently, such an emphasis is manifested in the form of team-based assignments and projects, providing students an opportunity to personally experience the nature of team-based work processes, and to develop required interpersonal, communication and information-sharing, and conflict-management skills (Gatfield, 1999; Lindquist,1995; Mello, 1993; Oddo, 2002). Moreover, a number of studies suggest that the efficacy of such group assignments in management education may be further enhanced by incorporating peer assessment in the student evaluation process (Druskat & Wolff, 1999; Erez, Lepine & Elms, 2002).

Still questions remain as to the conditions under which peer evaluation in management education may yield true benefits (Druskat & Wolff, 1999). Consequently, in the current study, we: (1) examine how these benefits may be attenuated or offset by peer intentional distortion -- defined by Kozlowski, Chao and Morrison (1998: 164), as the willingness of participants to accurately report judgments of their peers' performance regardless of their ability to accurately make such judgments in the first place, and (2) discuss the steps management educators may take to effectively reduce the risk of such intentional distortion. Specifically, we argue that while the risk of such distortion may be reduced on the basis of sanctions, it is often difficult to implement such sanctions since they typically demand a prior ability to identify those attempting to "game" peer evaluation systems. Consequently in the second half of this paper, we propose a behaviorally-based algorithm designed to allow management educators to more effectively and accurately identify intentional distortion on the part of peer raters, suggesting that such a mechanism may be used as one part of an effective distortion deterrence strategy.

Peer Assessment: Eliminating Free-riding or Encouraging Defection?

Peer assessment has been promoted in higher education as a useful means by which to teach students about the benefits and challenges of performance assessment, as well as the basic assessment skills that they will most likely need throughout their future working lives (Oldfield & Macalpine, 1995). However, aside from such important pedagogical benefits (Zariski, 1996), a number of studies have found peer assessment to have a generally positive impact on effectiveness-related team processes. Such positive outcomes are likely to stem from the unique information that peers are able to provide to one another as well as from enhanced team member monitoring and sanctioning capabilities.

One of the primary advantages of peer evaluation is that it provides high quality, supplementary performance-related feedback that is often viewed as more acceptable and meaningful to team members than feedback from those less able to directly observe team processes such as supervisors or course instructors (McEvoy & Buller, 1987; Murphy & Cleveland, 1995). According to Fedor and Bettenhausen (1989: 182), peer evaluation "enhances both the accuracy of performance ratings and the quality of the feedback." Because course instructors, like supervisors, often lack the close and frequent contact with their subordinates that peers have with one another, they tend to be unable to accurately and consistently observe important cooperative behaviors (Murphy & Cleveland, 1995).

Task-sharing, knowledge-sharing, and help-seeking and giving are among the cooperative behaviors often critical to sustainable team effectiveness but often either not monitored by instructors or not consistently visible to them (Erez et al., 2002). Indeed, in most management education programs using team projects, a far greater emphasis is placed on the monitoring of team *outcomes* as opposed to *processes* (Druskat & Wolff, 1999; Erez et al., 2002).

In those contexts in which instructors (as opposed to peers) are responsible for the monitoring of team processes, students may attempt to manipulate supervisor impressions by accentuating certain valued, but largely atypical behaviors, while avoiding other more typical behaviors that they fear instructors might attribute to a lack of competency on their part. For example, while essential for the building of team-based developmental (i.e., mentoring) networks and learning capabilities (Higgins & Kram, 2001), students may avoid open displays of help-seeking fearing that their instructors will interpret such help-seeking as an indication that they are independently incapable of performing the required tasks. In contrast, since peers are often the target of such behaviors, they tend to be in a unique position to observe and evaluate help-seeking behaviors on a regular and continuous basis. The additional performance-related insights provided by one's peers may allow individuals to adopt or develop new strategies for enhancing the long-term value of help-seeking and other cooperation-related behaviors. For example, peer feedback may encourage peers to shift from a dependent mode of help-seeking (requiring the peer help-giver to actually provide the solution to some problem) to a more autonomous mode of help-seeking (requiring the peer help-giver to provide the tools needed for the individual to identify the solution on their own) (Nadler, 1998). Consequently, while course instructors often lack the data to accurately and effectively evaluate team processes, team members may be uniquely positioned to accurately observe, evaluate and provide helpful feedback to one another regarding those behaviors that are often at the core of effective team functioning.

Additionally, the literature on social dilemmas (Kerr & Brunn, 1981; Albanese & Van Fleet, 1985) suggests that the enhanced degree of monitoring and sanctioning inherent in peer evaluation may be associated with positive effectiveness-related team processes. Specifically, peer evaluation may provide an attractive strategy by which to counter social loafing and encourage task and knowledge-sharing as well as peer help-giving in that it effectively changes the individual incentive system, thus making social loafing less worthwhile. Just as recommended by Albanese and Van Fleet (1985: 253), peer evaluation "builds a private good that is contingent on the provision of the group's public good into the group member's incentive system." That is, it better aligns individual interests with those of the collective by making the individual's organizational future more contingents upon his/her contribution to the group.

Furthermore, by increasing the probability that team members will be caught and sanctioned for free-riding, peer evaluation may alter team members' perceptions of the costs versus benefits of social loafing. Rather than relying upon instructor oversight as a means by which to monitor individual effort and enhance task noticability (Kerr & Brunn, 1981), peer evaluation diffuses the monitoring role in an equitable fashion among all group members and insures that this monitoring is as continuous as the group activity itself. As soon as group members recognize that they, like their co-workers, are being continuously monitored by those having the ability to impose sanctions (even if only normative in the form of negative developmental feedback), they are less likely to adopt any form of behavior which might be seen as free-riding. In addition, with the ability to impose sanctions on free-riding coworkers, team-members are less likely to resort to free-riding themselves (thus exposing themselves to others' sanctions) when they perceive themselves as being taken advantage of (i.e., being the "sucker"). In this sense, peer assessment offers a means by which to break the potentially self-reinforcing cycle of non-cooperation and social loafing described above.

Consequently, peer evaluation may have a number of positive consequences with regard to effectiveness-related team processes in student teams. First, when group members are aware of their ability to assess their peers, the incentive to "free-ride", and thus, the incentive of others to adopt similar behavior in order to avoid becoming the "sucker", should be reduced. As a result, relative to teams in which performance is evaluated strictly by instructors, in teams in which members' performance is assessed on the basis of peer evaluations, the overall level of task-sharing should be higher. Second, in teams in which members are aware of others' ability to both reward for cooperation and impose sanctions for the lack of cooperation, we would expect peers to develop norms supportive of mentoring, knowledge-sharing and autonomous (as opposed to dependent) helping-seeking and giving. Recognizing that peer evaluation provides student team members with an inherent interest to help one another in order to achieve positive peer evaluation results, over time, individuals participating in such teams are likely to perceive a greater degree of psychological safety (Edmondson, 1999), and as such, feel more at ease in requesting the assistance of their peers on instrumental and even emotional/psycho-social matters. However, recognizing that their own mode of help-seeking may, if excessive, generate negative peer evaluations, they are likely to limit help-seeking only to those more critical issues, and to seek that kind of help which will allow them to solve similar such problems in the future on a more independent basis, namely autonomous help (Nadler, 1998). Whereas in traditionally evaluated teams, members might be hesitant to sacrifice their own task performance in order to provide others with proprietary knowledge, or teach others skills that may serve as a basis of power (Fisher, Goff, Nadler & Chinsky, 1988), in teams whose members engage in peer evaluation, such incentive frameworks are likely to be counterbalanced by the recognition that individual task performance is but one dimension of total performance – the other dimension being how well the individual helps coworkers develop and achieve their maximum potential.

Taken as a whole, peer assessment may therefore provide valuable feedback to management students regarding their own team-oriented

evaluation and citizenship behaviors. While team-based experiences in management education may provide a strong basis for learning the team-related skills required for effective, contemporary organizational performance upon graduation, direct, peer-based feedback may provide students with important insights into their own critical team-related behaviors and competencies (or lack thereof).

Negative Effects: Downward intentional rater distortion

However studies examining the use of peer assessment in team-based learning suggest that this approach to student evaluation may not always generate the benefits noted above. For example, a number of studies have found a relatively low correlation between student assessments of their peers and instructor evaluations of the same students (Stefani, 1992; Oldfield, & Macalpine, 1995; Falchikov, & Goldfinch, 2000). Other studies suggest that students often fail to provide one another with accurate feedback and that such distortion on the part of peer raters can generate student hostility to the peer evaluation system as a whole (Reilly, 1995). In a recent report, Crawford (2005:42) notes that student peer evaluators voiced concerns about the "lack of objectivity amongst peers," and "fears of favoritism amongst friends."

A recent study of peer evaluation in the work context suggests that such negative effects may be better understood if peer evaluation is examined from a social dilemmas perspective (Bamberger, Erev, Kimmel & Oref-Chen, 2005). Social dilemmas often occur in situations in which individuals rely on others to ensure that performance objectives are met, and in which individuals are torn between a logic of collective rationality (i.e., recognition that all of the independent parties are better off if they all cooperate and do their share than if they all defect and "free ride") versus individual rationality (recognition that cooperation yields a smaller individual payoff than "defection") (Dawes, 1980; Albanese & Van Fleet, 1985). Thus, for example, social dilemmas may be manifest when peer raters must choose between intentionally distorting their assessments of their peers in order, for example, to enhance their own personal relative standing (individual rationality), as opposed to providing unbiased appraisals with the aim, for example, of enhancing the longer-term, performance-related interests of all team members (collective rationality).

Although peer raters may intentionally distort their ratings of their peers either in an upward or downward direction, in the current analysis, we focus specifically on intentionally downward or harsh distortion because the potential for intentional harshness in any peer evaluation system appears to be greater than the potential for intentional leniency (Greguras, Robie, Schleicher & Goff, 2003). While, as noted by Baron & Kreps (1999), the pecuniary costs of *negative* evaluations are often the highest to those providing such feedback, in the case of peer evaluators, these pecuniary costs are likely to be largely offset by the fact that, unlike course instructors or supervisors, peer raters are typically in direct competition with their ratees (Greguras et al., 2003). For peer raters directly competing with their ratees for resources typically allocated on the basis of a zero-sum game (e.g., grades distributed on the basis of some normal or near normal distribution), *positive* feedback is likely to have the highest pecuniary costs. The relatively higher pecuniary costs of positive relative to negative feedback are likely to make intentional harshness a more prevalent problem than intentional leniency. A variety of system characteristics are likely to be associated with an increased prevalence of intentional distortion.

The link between system characteristics and intentional distortion

While as noted above, peer evaluation may shift team member incentive structures such that the utility of social loafing to the individual team member is reduced, particular aspects of peer evaluation as implemented in many management education programs may expose team members to an incentive structure that increases the perceived utility of intentional distorting one's rating of others. For example, in many peer evaluation systems used in higher education, student raters provide their assessments of one another on an anonymous basis, recognizing that their evaluations – once aggregated with those of their peers -- will have a direct impact on the ratees' final grade. Several recent studies suggest that precisely such conditions – low rater accountability and high evaluation saliency with evaluation scores serving as a basis upon which to allocate valued rewards such as grades – may be conducive to intentional, downward distortion on the part of peer raters (Levy & Williams, 2004; Bamberger et al., 2005).

Rater accountability - the extent to which raters believe that others will review their performance ratings (Beckner, Highhouse & Hazer, 1998: 210) - is likely to affect the prevalence of intentional distortion in that with low accountability peer evaluation systems (such as those implemented on the basis of rater anonymity) it is nearly impossible to identify and hence sanction raters engaging in intentional distortion. Consequently, particularly under conditions of rater anonymity, a shared perception is likely to develop among team members that raters will not be held accountable for their ratings and thus, have little to lose by intentionally distorting their evaluations of others. Moreover, any such shared perception of limited rater accountability may in fact increase the incentive to provide intentionally distorted ratings as a means by which to protect oneself from the intentional distortions expected on the part of one's peers. Under conditions of limited perceived rater accountability, raters' fears of strategic, and in particular, downward distortion by their peers, combined with the lack of any reasonable sanctioning mechanism may result in their own adoption of *proactive* downward biasing. That is, lacking any reasonable mechanism by which to respond, and consistent with the notion of "backwards induction," (Luce & Raiffa, 1957), raters may adopt the defensive and essentially "adaptive" strategy of proactively and downwardly distorting their assessments of others (Kozlowski et al., 1998). In doing so, they may reduce the risk that others' intentional rating distortion poses to their own overall relative standing. Consistent with such a notion, Bamberger et al. (2005) found that

workers providing anonymous peer evaluations (i.e., by nature, a low accountability rating context) systematically provided lower ratings than those required to sign off on their ratings. Moreover, their findings suggest that the team performance improvements most likely stemming from peer evaluation were increasingly attenuated over time for those assigned to the anonymous rating condition.

Similarly, when peer evaluations are formally incorporated into students' final grades, or when students simply believe that peer ratings may influence their course grades, the incentive to become intentionally harsh in one's rating of others is increased. Bamberger (in press) suggests that this incentive to intentionally distort one's ratings of others is likely to be particularly salient when peer evaluation data are perceived by team members as likely to influence the allocation of rewards largely distributed on a zero-sum basis such as course grades. Thus, while the probability of intentional distortion may be diminished in the case peer evaluation systems implemented for purposes of providing students with developmental feedback only, in those cases in which students believe that the peer ratings may influence grading or other decisions potentially influencing the allocation of valuable resources (e.g., scholarships, internships, job opportunities), there is likely to be a high probability of downward intentional distortion on the part of student peer raters.

How distortion may attenuate or offset the positive effects of peer evaluation

The fact that most peer evaluation systems used in management education are characterized by both low accountability and high saliency suggests that the prevalence of intentional peer rater distortion may be higher than commonly assumed. As a result, as suggested by the studies cited earlier, the beneficial aspect of peer assessment (e.g., reducing the tendency of team members towards social loafing) may, for a number of reasons frequently be attenuated if not offset by the tendency of peer evaluators to "game" the peer evaluation system for their own relative benefit. First, while peer evaluation is intended to promote such cooperative and team-oriented behaviors, in teams in which there is a pervasive sense that ratings fail to accurately reflect members' true pro-social behaviors, members may not only find little benefit in continuing to behave accordingly, they may also have an incentive to refrain from such behaviors in order to avoid the sense that they are being taken advantage of by their peers or, in other words, avoid becoming "the sucker" (Kerr, 1983). Moreover, members of teams pervaded by a sense that such peer rating distortion is pervasive may be more vulnerable to the adoption of tit-for-tat behavior with respect to their teammates (Axelrod, 1984). That is, in addition to potentially retaliating by intentionally distorting their ratings of others in subsequent rounds of peer evaluation (DeNisi et al., 1983), members of such teams may be more inclined to intentionally use social loafing as a means by which to retaliate against those viewed as having been unfair to them in the rating process (O'Leary-Kelly & Newman, 2003).

Second, a sense that such intentional distortion is pervasive among team members may have a direct negative impact on effectiveness-related team processes in that members of such teams may be less inclined to trust the peer evaluation data received. Having less faith in the validity of such ratings over all, team members may be more inclined to broadly dismiss all of the peer feedback data, including unbiased and accurate feedback critical to effective team performance.

Third, a sense that such intentional distortion is pervasive among team members may induce affective or relationship conflicts as hypotheses regarding the source of such biased ratings are developed and implicit mutual incriminations emerge (DeNisi, et al, 1983). Perceptions of intentional peer rating distortion may also breed suspicion with team members potentially viewing all pro-social or cooperative behavior by their peers as manipulative and intended to "trick" them into becoming a "sucker" (i.e., by providing an alter with a strong evaluation while allowing themselves to be subject to strategic rating by that same alter). The view that such cooperation by others is simply an attempt to "win points" may breed a sense of resentment and ultimately affective conflict particularly if, for example, members begin to suspect one another of passing along high visibility but relatively useless knowledge (for "image" purposes), while keeping less visible but more valuable information to themselves. A number of team-level studies have found that such types of affective or relationship conflicts can be detrimental to helping and knowledge-sharing team processes in that team members engaged in such conflict tend to simply avoid one another (Jehn, 1995; Amason, 1996).

Finally, a sense that such intentional distortion is pervasive among team members may result in reduced participant acceptance of peer evaluation as an accurate and legitimate approach to student performance assessment. Lacking such legitimacy, students may become increasingly hesitant to participate in peer evaluation systems or become increasingly motivated to intentionally distort their ratings of others in future rounds in order to protect their own relative position.

Reducing Intentional Distortion in Student-based Peer Assessment

Certainly, many of the negative effects noted above may be attenuated or exacerbated depending on the wider evaluation context. Specifically, it is likely that the instructor's values and the classroom normative climate that he or she fosters are likely to have a powerful conditioning effect on the degree to which students perceive intentional distortion to be pervasive, and thus demanding of a similar, defensive response. Thus, perhaps the best way to ensure that the positive effects of peer evaluation are not diminished or offset by the potential negative effects noted above is to ensure a learning context in which peer-based feedback and critique is welcomed and valued, and in which honest, unbiased evaluation is viewed as an ethical matter. Unfortunately however, even when instructors strive to establish such normative classroom climates, students' perceptions of the likelihood of intentional distortion may still be influenced by adverse

past personal and vicarious experiences in other courses using such evaluation systems. And regardless of the nature of the current context, these perceptions and experiences may ultimately result in the emergence of intentional distortion as a rational, defensive mode of evaluation behavior.

However, even in such contexts, it should nevertheless still be possible to reduce the tendency of student raters to intentionally distort the ratings of their peers by altering the incentive structure underlying peer rating behavior. This may be done either by changing the nature of the peer evaluation platform itself, or the nature of the rewards and sanctions surrounding it.

In terms of changing the peer evaluation platform itself, the discussion above suggests that the relative incentive to distort one's evaluation of a peer might be reduced by either reducing the overall saliency of the evaluation (thereby reducing the potential benefits associated with intentional distortion) or by increasing the level of rater accountability (thereby increasingly the potential costs of such distortion to the rater). However, a reduction of the overall saliency of peer evaluation (e.g., by emphasizing the strictly developmental nature of the system) may not offer an optimal solution in that such a reduction in saliency is also likely to result in a shift in the incentive structure underlying team behaviors as well, thereby attenuating the positive effects of peer evaluation on team behaviors (e.g., reduced task sharing and cooperation) noted above.

In contrast, increased rater accountability -- often implemented by requiring raters to sign off on their ratings and emphasizing to raters that all ratings will be reviewed, with suspect ratings excluded from consideration and the suspect raters subject to sanctions – while likely to reduce the risk of downward distortion, may result in grade inflation or upward distortion (London, Smither & Adsit 1997). Moreover, its efficacy is likely to be limited by the difficulty program administrators or course instructors are likely to have in identifying suspect ratings and raters. Lacking an accurate means by which to identify suspect ratings and student raters attempting to "game" the system for their own personal benefit, administrators are likely to be unable to effectively impose sanctions. And this inability to effectively impose sanctions is likely to drastically reduce the potential perceived costs of intentional distortion to the peer rater, thus making even "accountable" peer raters essentially unaccountable.

Given that strategies aimed at reducing the risk of intentional distortion by manipulating the nature of the evaluation platform itself may offer limited utility and, more importantly, may dilute some of the core pedagogical and evaluative benefits of peer evaluation, instructors may prefer to adopt strategies aimed at reducing the risk of intentional distortion on the part of student peer evaluators by shifting the nature of the incentive foundation upon which the platform is based. Such strategies are grounded on the assumption that potential system "gamers" can be made to perceive a credible threat of being identified and sanctioned if and when they engage in such behavior.

Identification of "gaming" behavior in peer evaluation

We propose that intentional rating distortion by a given rater may be identified on the basis of a combination of *self*-, as well as intra- and inter-rater *peer*-appraisal data. Identification based solely on comparisons with other raters' peer appraisals at a given point in time is likely to be problematic in that some degree of variance among raters is likely to be expected (Falchikov, & Magin, 1997; Magin, 2001). Identification based on the longitudinal analysis of the degree of shift in one rater's assessments of a given peer relative to that of the aggregate shift in other team members' ratings of that same peer may also be problematic in that *unintentional* biases may also underlie such variance over time (Kozlowski et al., 1998).

Consequently, the approach that we propose focuses on the assessment of the probability of *downward* peer rating distortion based on the comparison of both self- and peer-ratings provided by a given student peer-rater over at least two points in time. Underlying this approach is the assumption that while intentional distortion may occur already in the initial round of peer evaluation, it is likely to become most observable over multiple rounds as peer raters receive typically absolute and normed feedback from their peers regarding their own performance (Bamberger, in press), and as they perceive a greater need or justification for the distortion of their ratings of others. We also assume that certain longitudinal patterns of self- and peer rating are more indicative of intentional peer rating distortion than are others. For example, three of the characteristic patterns listed in Table 1 suggest a low probability of intentional distortion, while the remaining three suggest a relatively high probability of intentional distortion.

We decomposed such characteristic rating patterns into a variety of elements in order to construct a behaviorally-based algorithm designed to estimate the probability that students' appraisals of their peers have been intentionally distorted. The algorithm which we describe below is grounded on a number of assumptions:

First, it assumes that the classroom environment is such that, based on past personal or vicarious experiences with peer evaluation, students may be highly suspicious of peer assessments as an evaluation tool, with some consequently tending to intentionally distort their appraisals of others as a defensive tactic. It also assumes that it may be impossible, in the course of a semester-long course, to establish a climate of trust among student peer evaluators and build a normative context more supportive of bias-free peer evaluation.

Second, it assumes the ability to collect both appraisal data over at least two points in time. While perhaps not feasible in all team-based courses, the nature of many team-based courses is such that evaluation and feedback is provided at multiple points in time throughout the semester (Crawford, 2005). For example, in many MBA programs, team-based activities revolve around the analysis of case studies, with two or more cases typically assigned to a team each semester

Table 1: Typical Patterns of Self- and Peer-Evaluations over Multiple Rounds

Low level of suspicion for intentional distortion	High level of suspicion for intentional distortion
Regardless of ratings given to others and received from others, self-ratings decline from round one to round two.	Self-ratings improve from round one to round two, with round one ratings below the mean rating received from one's peer raters, but round two ratings substantially above the mean rating received from one's peer raters in this round.
Self-ratings improve from round one to round two, but these rating in round two remain below the mean rating received from one's peer raters.	Self-ratings improve from round one to round two, with round one ratings above the mean rating received from one's peer raters in this round, and round two ratings increasing even further.
Self-ratings improve from round one to round two, with round one rating below the mean rating received from one's peer raters, but round two ratings slightly above the mean rating received from one's peer raters in this round.	Raters providing moderate self- and peer-ratings in round one and then increasing their self-rating at round two to the highest level (e.g. 7), while lowering all peers to the lowest levels of performance (e.g., 1).

and each case submission requiring the parallel submission of peer appraisal forms.

Third, it assumes that, as suggested above, self-appraisals may serve as an important reference point for the interpretation of shifts in one's rating of one's peers over parallel periods of time. Specifically, while the correlation between self- and other appraisals is relatively low (Ø.36 according to Harris and Schaubroeck's meta-analysis [1988]), the positive correlation suggests an increased potential for downwardly distorted peer appraisals when a suspicious pattern of ratings of others over time is accompanied by an equally suspicious pattern of self-ratings over a parallel period..

Finally, it assumes that assumes that the probability of downward intentional distortion ranges from Ø (low probability) to 1 (high probability), with a score of Ø.5 suggesting an even chance of intentional distortion. As such, the algorithm incorporates the following elements:

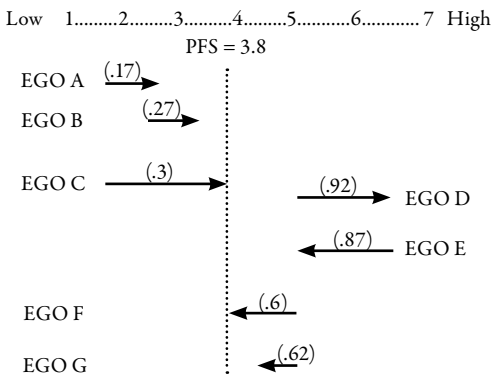
- Magnitude (and sign) of the difference between rater's self evaluation score before and after receiving the feedback.
- Magnitude (and sign) of the difference between rater's self evaluation score (before and after receiving the feedback) and his feedback score (mean rating provided by the individual's peers).
- Magnitude (and sign) of the difference between the mean evaluation score provided by the rater to his/her peers before and after receiving the feedback.
- Number of times that the rater evaluated self at the maximum score (e.g., 7).
- Number of times that the rater evaluated all peers at the minimum score (e.g., 1).

Thinking of the dynamics of self- and peer-evaluation in terms of these five basic elements, as shown in Figure 1, it is possible to graphically depict a student rater's assessment behavior over time. The tail of the arrow is the rater's self evaluation score **before** receiving feedback (**SES1**). The head of the arrow is the rater's self evaluation score **after** receiving feedback (**SES2**).

Figure 1
Visualization of rater's behavior before and after feedback

In Figure 2, we demonstrate how these five rating elements may be used to graphically depict the shifts in rating behaviors over two rounds of evaluation among different raters. For the sake of illustration, we assume a 7-point rating scale and a mean peer appraisal score

Figure 2
Graphical visualization of different rater's behavior before and after feedback assuming a 7-point rating scale



of 3.8. The horizontal axis of the plane depicts the actual evaluation scores. For each rater, the plane is divided into two parts separated by the mean peer feedback score (**PFS**) that a given student, named "EGO" received from his peer evaluators (ALTERS A, B, C, etc.).

In examining Figure 2, a number of important observations may be made:

1. The probability of intentional distortion on the part of Rater EGO D is greater than the probability of intentional distortion on the part of Rater EGO A. While both arrows suggest an inflation of the self ratings from before to after the receipt of peers' ratings of one's self, the arrow (A) representing rater EGO A still remains completely within the domain of the left (low) side of the scoring continuum, whereas, the arrow (D) for rater EGO D falls completely within the domain of the right (high) side. A's upward movement may be interpreted as a correction for an initial self-underestimation, whereas D's upward movement can be viewed as manifesting an interest of maintaining some relative rating advantage.
2. The probability of intentional distortion on the part of Rater EGO B is greater than the probability of intentional distortion on the part of Rater EGO A, although both have a relatively low probability of distortion. While both raters are starting at the same point, with both arrows heading towards the midpoint, the longer arrow associated with EGO B, suggests a greater degree of upward correction in light of relatively positive peer feedback relative to EGO A. While this shift may indeed be objectively justified in light of an underestimated post-feedback self-rating on the part of EGO A, the difference between the end points of arrows A and B may also be suggestive of intentional over-estimation on the part of EGO B.
3. The probability of intentional distortion on the part of Rater EGO G is greater than the probability of intentional distortion on the part of Rater EGO F. Although both raters offered the same initial self-evaluation score, EGO F was more responsive to the relatively lower peer evaluation score (PFS= 3.8).
4. The probability of intentional distortion on the part of Rater EGO D is greater than the probability of intentional distortion on the part of Rater EGO E, although the probability for both is high. Although the length of the two arrows is identical, and although both raters continue, upon receiving feedback to self-evaluate at levels above their mean peer rating score (PFS=3.8), Rater Ego E downwardly adjusts his/her self-rating in light of the low peer feedback score, while Rater Ego D does precisely the opposite.

The following mathematical expression takes into account the length and the direction of the arrows as discussed above assuming two rounds of evaluation:

$$\Delta Y_1 = [(SES1\text{-}PFS) + (SES2\text{-}PFS)]$$

where ΔY_1 equals the first indicator of possible downward distortion, namely the degree and nature of any shift in the difference between self- and peer-ratings before and after peer feedback is presented.

In order to distinguish correctly between two arrows that have the same length and the same location in the plane but are pointing to different direction (as in case 4 above), our algorithm also takes into account the following correction term:

$$\Delta Y_2 = \emptyset.25 * sign[(SES2\text{-}SES1)]$$

where ΔY_2 reflects a second possible indicator of downward distortion, namely the degree to which any such shift is aimed at enhancing a given rater's relative scoring advantage, and where **Sign []** is the sign function: (+1) when the arrow is pointing to the right and (-1) when the arrow pointing to the left. A scale factor of Ø.25 was chosen in order to create a baseline difference score of Ø.5 between two arrows that have the same length and same location on the plane but pointing to different directions.

As mentioned above, the difference in the average peer rating provided by an EGO to his/her peers before and after receiving his/her own evaluation feedback may also serve as an indicator for defection. The mathematical expression taking this element into account is:

$$\Delta Y_3 = [(SES2\text{-}SES1)\text{-}(MRP2\text{-}MRP1)]$$

where ΔY_3 serves as a third indicator of downward distortion focusing strictly on the comparison of EGO's pre- and post-feedback ratings of his/her peers, and where **MRP1** equals the mean rating provided by an Ego to his/her peers **before** receiving his/her own peer feedback, and where **MRP2** equals the mean rating provided by an Ego to his/her peers **after** receiving his/her own peer feedback.

Finally, regardless of relative shifts in Ego's rating of self and others, as noted above, raters that evaluate themselves at the maximum score and/or *all* of their peers at a minimum score may have a higher probability of engaging in defection than those rating themselves and/or others at more moderate levels. Consequently, included in the algorithm that we specify below is a constant (noted as Y_4) representing one of two "penalties": A low penalty of Ø.75 in each round in which the student *either* evaluates ***all* peers** at the minimum score (i.e., 1), or **him/herself** at the maximum score (i.e., 7), and a high penalty of 1.5Ø in each round in which the student *both* evaluates ***all* peers** at the minimum score (i.e., 1), and **him/herself** at the maximum score (i.e., 7). Assuming that Ego's mean rating of peers in both rounds is 1.Ø and his/her self-rating in both rounds is a 7, a constant of 3.Ø results in a maximum probability of defection (i.e., probability = 1.Ø). While constants of 1.5 and Ø.75 per round were selected on the basis of an assumed 7-point rating scale, the constants (i.e., penalties) can obviously vary depending on the nature of the rating scale used.

In our discussion above, we identified each of the elements that need to be considered in estimating the probability that a given peer rater

(i.e., Ego) is engaging in intentional downward distortion in peer rating. Combining these elements, we generate the following algorithm appropriate for two evaluation rounds:

$$\mathbf{Y_T = \Delta Y_1 + \Delta Y_2 + \Delta Y_3 + Y_4}$$

with "total Y" or $\mathbf{Y_T}$ limited to a range of -5 to +5. The probability of intentional downward distortion ($Prob_D$ -- ranging from Ø to 1) may then be estimated as:

$$(1\text{-}1) \qquad Prob_D = (Y_T + 5)/1Ø$$

Illustration

In order to demonstrate that the utility of algorithm (1-1) described above, we next present a number of peer rating scenarios clearly varying in terms of the degree of intentional downward distortion on the part of a given rater. In each illustration, we demonstrate the link between apparent defection and the relative probability of defection ($Prob_D$) estimated according to the proposed algorithm. For each scenario, as shown in Figure 2), we again assume an average peer rating of EGO of just above the midpoint on a 7-point rating scale (i.e., PFS=3.8). We also assume two rounds of peer evaluation, with EGO's evaluation of his/her peers in both rounds being, on average, equivalent to their rating of EGO (i.e., $MRP_1 = SES_1$ and $MRP_2 = SES_2$).

Case 1: The probability for intentional distortion ($Prob_D$) of the two raters represented by arrows (A) and (B) is expected to be less then 5Ø% since their self evaluation (both before and after feedback) were lower than the average score at which they were evaluated by their peers. Although both raters evaluated themselves equally before feedback (SES_1 =1.5), rater-B is expected to have a higher $Prob_D$ since his self evaluation after feedback (SES_2=3.5) is higher then rater-A (SES =2.5). Consistent with these predictions, and based on the equation presented above (1-1), the estimated $Prob_D$ for raters A and B are Ø.17 and Ø.27, respectively.

Case 2: Although rater-C's self-evaluation before feedback was identical to the raters in the previous case (SES_1 =1.5), C's post feedback self-evaluation rose to a level equivalent to the average peer rating of his/her performance (i.e., SES_2 = PFS = 3.8). Since it can be expected that a rational rater might logically adjust his/her post-feedback self-rating toward the feedback score, the expected probability of intentional distortion ($Prob_D$) should still be under Ø.5. Indeed, based on the algorithm presented above, the $Prob_D$ for Rater C is estimate at Ø.3. Although this probability for intentional distortion is greater than that estimated for raters A and B, it is still under Ø.5Ø suggesting a less than even chance of intentional rating distortion.

Case 3: The probability for intentional distortion ($Prob_D$) of the two raters represented by arrows D and E in Figure 2 is expected to be higher then 5Ø% since their self evaluations, both before and after feedback, were higher than the average score for which they were evaluated by their peers (PFS = 3.8). As shown in Figure 2, the arrow representing rater D is pointing to the right (SES_1 = 5.Ø, SES_2 = 6.5), while the arrow representing rater-E is pointing to the left (SES_1 = 6.5, SES_2 = 5.Ø). Although both raters might be suspected of intentional rating distortion, based on the pattern depicted in Figure 2, rater D is more suspect than rater E since his/her post-feedback self-rating rose, while Rater E's post-feedback self-rating declined towards the average feedback score. This prediction is confirmed on the basis of the algorithm described above, with the $Prob_D$ of the two raters (i.e., D and E) estimated at Ø.92 and Ø.87, respectively.

Case 4: The two raters that are represented by arrows F and G are less suspect for intentional distortion then the raters in the Case 3 (i.e., raters D and E). Although the pre-feedback self-ratings for F and G were both greater than the mean rating provided by their peers (i.e., in both cases, SES_1 =5.Ø, whereas their PFS was only 3.8), their post-feedback self-rating behavior indicates an interest in correcting for an initial over-estimation of self-performance. A movement towards the average peer rating (PFS) should bring overall $Prob_D$ to near even levels (i.e., approximately Ø.5Ø). Indeed, this hypothesis is confirmed with the $Prob_D$ for raters F and G estimated to be Ø.6 and Ø.62, respectively.

Case 5: Up until now, we have assumed that all raters, on average, rate their peers as having the same level of performance as they rate themselves as having (i.e., $MRP_1 = SES_1$ and $MRP_2 = SES_2$). However, as mentioned earlier, it is reasonable to assume that, once having received feedback from their peer raters, EGOs inflate their own post-feedback self-evaluation scores SES_2 while at the same time decreasing the ratings of their peers. Such a pattern of rating behavior may be deemed to be more indicative of intentional distortion than the opposite (namely decreased post-feedback self-ratings and increased peer ratings). To take this element of rating behavior into account, we now include the third element of the algorithm developed above, namely the element taking into account post-feedback ratings of others relative to others' ratings of oneself. (i.e., $\mathbf{\Delta Y_3}$). For purposes of illustration, let us assume two raters, M and N with identical peer ratings and pre- and post-feedback self-ratings (PFS = 3.8; SES_1 = 1.5, SES_2 = 3.5). Although both raters, after feedback, increased their self evaluation, rater M's average rating of his/her peers declined (MRP_1 = 5.Ø, MRP_2 = 4.Ø), while rater N's average rating of his/her peers increased (MRP_1 = 5.Ø, MRP_2 = 6.Ø). Such a rating pattern suggests a higher probability of intentional distortion on the part of Rater M relative to Rater N. And indeed, as expected, the $Prob_D$ of the algorithm presented above indicates a higher $Prob_D$ for rater M (Ø.57) than for rater N (Ø.37).

Case 6: Finally, as noted above, an additional pattern of intentional distortion that may be used independently or in combination with the other patterns noted above involves maximum self-ratings (i.e., 7 on a 7-point rating scale with 7 the highest possible score) and minimum peer ratings (i.e., 1 on a 7-point rating scale with 1 the lowest possible score). The algorithm presented above takes this into account by incorporating in its estimate of $Prob_D$ a constant (i.e., $\mathbf{Y_4}$)

that "penalizes" raters for such behaviors by increasing their estimated odds of intentional rating distortion. For purposes of illustration, we assume that Ego's self-rating both before and after feedback is at this maximum level (i.e., $SES_1 = SES_2 = 7.0$), and that Ego's peers give Ego an average rating of PFS =6.0. Logically, the probability of intentional distortion ($Prob_D$) should be greater were Ego to also give his/her peers an average rating of 1 in both rounds (i.e., $MRP_1 = MRP_2 = 1.0$) than were Ego to give his/her peers an average rating in both rounds equivalent to their average rating of him/her (i.e., $MRP_1 = MRP_2 = PFS = 6.0$). Based on our algorithm, this hypothesis is confirmed, with $Prob_D$ being greater when Ego provides peers with the lowest possible score both before and after feedback ($Prob_D = 1.0$), than when Ego rates his/her peers at the same average level they rated him/her ($Prob_D = 0.85$).

Discussion and Conclusion

As one element of the team-based learning framework, peer assessment has been adopted as a core element of student evaluation in numerous management courses and programs and may offer both advantages and disadvantages. Foremost among the advantages is perhaps the ability of a students' peers to provide direct and structured feedback regarding cooperation and other effective and ineffective team-related processes and behaviors. Such feedback is often unavailable from program instructors or administrators as they are far removed from the core work activities of these student teams on a daily basis, and therefore unable to observe critical team member behaviors and interactions.

However, given the nature of peer assessment systems in management education (i.e., high saliency combined with little or no rater accountability), students may confront an incentive structure that implicitly encourages the intentional downward distortion of one's rating of one's peers and the intentional upward distortion of one's own performance. As such, these systems, particularly if they require students to rate one another multiple times in the course of a management program and use peer evaluation scores as a basis for allocating grades or other valued resources, may in effect teach management students more about the *politics* of evaluation and the "art" of gaming organizational performance evaluation systems than anything else.

While structural changes in the nature of the peer evaluation system (for instance, shifting the purpose of peer evaluations such that it is used for developmental purposes only) may reduce the prevalence of such gaming behavior, such shifts may also weaken the pedagogical and evaluative efficacy of peer assessment in developing critical team-based behaviors and competencies. Furthermore, while attempts at transforming the normative context within which peer evaluation is implemented may offer the ultimate means by which to reduce the risk of downward intentional distortion, such culture-change efforts are complex and offer time-dependent. Consequently, we have argued that strategies aimed at reducing the net subjective expected utility of engaging in such gaming behavior may offer the most practical, short-term solution to problems of intentional distortion in student-based peer assessment. Such strategies require the bundling of salient, negative sanctions for those found to be engaging in intentional distortion with a monitoring system able to identify such intentional rating distortion with a high degree of sensitivity and specificity. The algorithm described above is designed to provide such a monitoring capability in those educational contexts in which peers are asked to evaluate their own and one another's performance at least twice during the course of a semester and in which it is possible to collect, self- in addition to peer- appraisal data. In those cases in which there is a high probability of distortion identified, instructors may either dismiss the ratings (i.e., not include them in any calculation of the Altar's final grade), or may even sanction the rater.

Based on the illustrative simulations presented above, our algorithm appears to effectively distinguish between low and high probability patterns of potential intentional rating distortion. Nevertheless, additional research is required to determine the extent to which the algorithm can truly capture the variance in raters' intentional distortion in a real peer rating context. Given the inability to rely on raters' self-disclosure of intentional distortion in actual performance evaluation and the lack of other objective measures of intentional distortion, researchers may be limited in their ability to directly assess the validity and efficacy of this algorithm in identifying highly probable cases of rating distortion. Nevertheless, assuming that student teams having a lower mean probability of intentional distortion are better positioned to benefit from peer assessment, researchers might want to assess the degree of association between team-level $Prob_D$ (i.e., the mean probability of intentional distortion for the members of a given team) and team-level performance. A significant positive association would suggest some degree of validity for our approach and the algorithm upon which it is based.

Additional research is also necessary to determine the extent to which the use of such a mechanism provides any practical advantage over other, more simple mechanisms often put in place by management instructors to reduce any incentive students might have to intentionally distort ratings of their peers. For example, some instructors may require students to be able to maintain records of critical team behaviors (e.g., attendance at team meetings; meeting of milestones) in order to defend their ratings of others if these others question such ratings. Although such mechanisms may indeed have a strong deterrent effect, team-members may have difficulty documenting more qualitative forms of social loafing on the part of their peers (e.g., all meetings were attended and milestones met, but the quality of the contribution was poor), and documented critical incidents may themselves be questioned, leaving the instructor in a situation of "he said, she said."

In contrast, the distortion identification mechanism described above, requires no additional effort on the part of students and provides a relatively objective means by which to assess the likelihood that a student has intentionally distorted his/her team appraisals. Consequently, we believe that, from a practical perspective, the distortion identification mechanism described above, when combined

with meaningful and consistently applied sanctions, should result in a rapid and significant shift in the student-perceived payoff structure underlying student-based evaluation, and – as a result – reduce the incidence of intentional distortion in student-based evaluations.

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