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Building Momentum for Business School Curriculum Change: Measurable Lessons from a Pilot Course in Real Business Experience

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Curriculum change requires thoughtful planning and a willingness to experiment with different modes of content delivery. While many business schools are experimenting, few measure student outcomes against the traditional courses they replace. One element of Butler University's College of Business Administration curriculum revision was a pilot course, "Real Business Experience", in which students developed a professional business plan, sought and received funding from a professional level funding panel, and ran their businesses. To determine whether the pilot course was successful in reaching its goal of "teaching students about the messiness of business and developing more adaptable and confident business leaders" assessment instruments were used to identify student development in both the pilot and traditional courses. The analysis presented in this article suggests that the pilot course utilizing the constructivist approach was successful in achieving its goal, but not always in the ways expected.

Key Words: Real Business Experience, Business Strategy, Entrepreneurship, Capstone Course
Disciplines of Interest: Management, Strategy, Entrepreneurship

INTRODUCTION

While anecdotal evidence suggests that adding the creative, transformative and operational activities of running a business to more traditional teaching methodologies has merit, there is little empirical evidence to support this contention. Business schools have innovated through the use of computer simulations, portfolio management challenges, case competitions, and business plan exercises, yet we can do more. In the recent past, more business schools have added real business experiences to their offerings.[1] Articles reviewing these courses indicate high student involvement and acceptance. In fact, students and employers are often depicted as "raving" over the positive outcomes of such experiences. These articles present anecdotal data to support their positive claims.

This paper reviews the literature on management education, specifically work on pedagogical styles and efforts to deliver a real-world experience through a Real Business Experience (RBE) course. In subsequent sections we describe our RBE class in greater detail and describe how and what student/class data was gathered. An assessment plan was developed to assess the RBE's ability to deliver learning and create excitement as compared to a more traditional capstone course.[2] In a later section, we discuss findings from the data. Finally, we present a discussion of RBE classes that includes suggestions for creating an RBE class.

LITERATURE REVIEW

Pedagogical Style

The basic question is how to enhance learning using an applications approach without sacrificing

content mastery. To better understand this task, we offer a brief discussion of a dichotomy of pedagogical styles: traditional vs. constructivist. The traditional style of direct teaching is familiar to many in business education. In essence, this style is synonymous with an instructor-directed setting in which information is conveyed in a highly structured fashion. In this structured setting, instructors typically lead students through a set of specific steps. The nature of these steps may vary depending on the sources utilized, but most place a premium on the instructor as the conveyor of knowledge and controller of the setting. We present here a paraphrased version of these steps as suggested by Gagné, Briggs & Wager (1988):

- Provide information on objectives and expectation levels
- Review previously studied material, re-teach if necessary
- Present new material as clearly as possible
- Structure and direct student learning
- Test for understanding/performance
- Provide feedback
- Encourage students to generalize new knowledge to other areas

The direct style is also referred to as explicit instruction in the work of Rosenshine & Stevens (1986). The list of instructor-led steps from these authors is very similar to that presented above. This popular style of instruction has been shown to be effective and efficient, although not necessarily ideal for knowledge acquisition. Kennedy & Russell (2002) identified a criticism originally offered by Chew et al. (1996). In this statement, the direct style is criticized because information is often memorized but not well understood, and that because of the pace of change, it quickly becomes irrelevant. Since students haven't been given the opportunity to develop tools for self-discovery, they have difficulty coping with change and extrapolating learning to new areas.

The contending instructional style dyad is referred to as a constructivist style. This style originated with the work of Dewey (1933, 1938) and Piaget (1963) and is based on the notion that students construct their own realities of knowledge and are more likely to learn in a less structured environment that fosters self-discovery. In this environment, the instructor acts as a facilitator and not a conveyor of knowledge. Jonassen (2004) describes the elements that comprise a constructivist learning environment as consisting of: active learners, learners that construct increasingly complex understandings by building on prior knowledge, learners working collaboratively, intentional learners, complex concepts, contextual settings, conversational dialog, and reflection. An extension of the constructivist style has been described by Kolb (1984) and Kayes (2002) as experiential learning, of which there is a considerable literature.

Constructivist pedagogy is not without its critics. Mayer (2004) suggests that radical constructivism, or pure discovery methods, do not provide enough guidance to result in useful knowledge, neglects fundamentals, and does not provide generalizable knowledge. These concerns can be summarized into an often voiced, unified concern. The concern is that students engaged in a constructivist style course will lack necessary content knowledge.

The proponents of the constructivist style represent a broad range of disciplines. This style has been aggressively promoted in the instruction of science and math since the late 1970s (Resnick, 1983; Saunders, 1992). However, in its purest form, it has not been broadly incorporated into business school curricula. The advantages suggested for constructivist pedagogy include a better match between student needs and knowledge conveyed, greater student motivation, and better application of theoretical models. Relying heavily on the work of Brophy and Good (1986), Rosenshine and Stevens (1986), and Burns (1995), we created a pedagogical summary grid that is presented in Table 1.

Authentic Learning and Integrated Curriculum

The impetus for RBEs comes from two popular curriculum initiatives. These two concepts have become popular in business education because of perceptions about their effectiveness. The first concept supporting the use of an RBE is the incorporation of authentic learning in university courses. Although not confined to a business education setting, recent work by Stein, Issacs &

Table 1. Pedagogical Style Grid

Variable/Component	Traditional Direct Pedagogy	Constructivist Pedagogy
I. Curriculum		
A. Focus	A. Content and procedures of separate disciplines	A. Real-life skills, issues, concerns and questions
B. Decision-maker	B. Individual teacher	B. Teaching team with student input
C. Deviation from traditional curriculum	C. Resequenced content	C. Discipline boundaries dissolved; essential concept orientation
II. Instruction		
A. Teacher role	A. Specialist	A. Generalist
B. Teaching style	B. Director	B. Facilitator
C. Learning activities	C. Mimetic	C. Constructivist
D. Learning environment	D. School	D. School and community
III. Assessment		
A. Purpose	A. Summative	A. Formative and summative
B. Methods	B. Standard, product-oriented	B. Performance-based and portfolios
C. Evaluator	C. Teacher	C. Peer, self, teacher
IV. Classroom Culture		
A. Climate	A. Competitive	A. Collaborative
B. Student role	B. Passive	B. Active
C. Student-teacher relationship	C. Dependence	C. Self-direction

Andrews (2004) discusses enhanced student understanding by providing what the students perceive to be authentic learning experiences. In their work, the authors describe an authentic learning setting as one in which the value of,

> "classroom practice is often gauged by the degree to which the activities undertaken by students are like those activities undertaken by practicing communities in the "adult" world beyond the learning institution. Learning activities are designed to give students "real-world" experiences but protect them from harmful or irrelevant elements that could impede, rather than support, their learning. (p239-240, Stein et al)"

Using this understanding of a fertile learning setting, it is easy to envision a connection to RBEs. To the extent an RBE is suited to providing authentic learning experiences, it is well-suited to enhancing student learning and development.

A second concept supporting the use of an RBE is curriculum integration. Curriculum integration means that discipline boundaries are dissolved. An authentic learning system could include an integrated approach. In order to accomplish the goal of integration, some business schools have turned to the use of an RBE. Bliss & Potter (2000) describe how delivering a cross-disciplinary curriculum might necessarily include a hands-on component similar to that found in an RBE class. The theme of an integrated curriculum is implied by Muller & Porter (1991) in which they describe how European business

schools excel at the delivery of flexible, outcome based education. Their discussion emphasizes the importance of application using real businesses.

REAL BUSINESS EXPERIENCE

One of the earliest attempts at real world exposure in the business school curriculum dates to the early 1900s when Harvard Business School professor Arch W. Shaw was formulating the design of an early Business Policy course (Arben, 1997). As he grappled with how best to encourage students to think about the functions of a business at its highest levels he introduced a series of executives to his class and had his class formulate solutions to their business problems.

In a more recent examination of business school curricula by Wild (1995), he proposes that most schools are presently in a phase where they are grappling with external demands for relevance, while maintaining an internally driven need for substance and theory. He suggests that innovation in the business school curriculum will be focused on delivery, but that orientations to relevance will not be abandoned as managers continue to struggle with turbulent and highly competitive environments.

Perhaps one of the most interesting features of work documenting RBEs is that very little of it is empirical. A search of numerous business and education journals yielded very little evidence of scholarly work on RBE initiatives. A more fruitful search was an exploration of university promotional materials and popular periodicals. Numerous examples describe RBE and hands-on business activity in glowing terms, but provide little in the way of empirical support for course outcomes. In a newspaper article, four different schools – St Vincent College, Duquesne University, Robert Morris University, and Carnegie Mellon University - and their efforts to provide real-world experience were detailed (Gannon, 2004). The contention offered by the spokespeople for the various schools was that the market was demanding more hands-on learning and their respective schools were responding to these calls. None of the spokespeople addressed the issue of whether the new instruction methods were more effective than more traditional methods.

On its website, the Robert H. Smith School of Business at the University of Maryland describes the six programs available to students that provide exposure to the real world of business. Few programs support online promotional claims with data, but we expect that the Smith School of Business's passion for RBE programs is more likely to be based on educated intuition rather than an empirical test of the program. Similar programs can be found at the College of Business at the University of Illinois, Wharton School of Business at the University of Pennsylvania, Stockholm School of Economics, and Tilburg University.

Instructors documenting their work with RBEs have operationalized the RBE's success by pointing to the student groups' ability to generate a profit in their ventures. While the measure of profitability is common to RBEs and is a measure that for-profit business readily identifies with, it does not address whether an RBE approach is an effective alternative to traditional coursework.[3] Further, measures of profitability are suspect as they treat student hours as an inexhaustible resource, an assumption that violates key aspects of a "real" experience. Our work with the RBE addresses these two deficiencies in that we developed assessment methods to test the efficacy of the course and incorporated the cost of labor in the student accounting process.

THEORETICAL DEVELOPMENT

From the literature on constructivist and traditional pedagogy, we develop two hypotheses about the implementation of an RBE. These hypotheses are relatively simple but have the potential to provide meaningful findings and altered practice regarding pedagogical styles.

Active-Learners: The primary advantage cited in the work on constructivist pedagogy is that it results in active-learners that manifest greater levels of motivation, interest, and a better match between student needs and knowledge. Thus, we suggest that...

> H_1: Students experiencing a constructivist style (as manifested in the RBE) will be more likely to exhibit active-learner traits than students taught in a traditionalist style.

Content Knowledge: As stated previously, proponents of traditionalist pedagogy argue that their approach is richer in theory and content. In essence, they suggest that under a constructivist approach students are less likely to learn the fundamentals. Rather than suggest that constructivist approaches are better able to teach the fundamentals we are content to suggest that constructivist approaches do no worse at providing content knowledge. We believe that a constructivist approach offers a lot of advantages, but providing better exposure to the fundamentals is not usually one of them. However, if a study can show that student content knowledge resulting from a constructivist approach is as good as student content knowledge resulting from a traditionalist approach; this is clearly a meaningful finding as it blunts a primary traditionalist objection. Thus we contend that...

H_2: Students experiencing a constructivist style will evidence content knowledge similar to students taught in a more traditional style.

METHODOLOGY

Background of the RBE Pilot Course

The implementation and measurement of this RBE class was conducted at Butler University (BU), a private mid-western liberal arts school with approximately 3,500 undergraduates and 1,000 graduate students, located in Indianapolis, Indiana. The University's College of Business Administration (CBA), an AACSB accredited organization, is not new to curriculum innovation. For two decades the curriculum has included two required internships. More recently, the CBA created an integrated capstone class for seniors and a co-taught class that integrates law and ethics. Further, the CBA has an established priority on global business education that sees 30% of its students study abroad.

The 2002 curriculum of the Butler University College of Business contains a series of courses designed to expose students to practical aspects of career choices and to provide a topical connection between ideas and experiences associated with each year of the four year program. Freshmen are exposed to general business issues and work on self-assessment. Sophomores are exposed to problem solving techniques, team building and an overview of the functional areas of business management. Juniors are introduced to resume' writing and job interviewing techniques. Juniors and Seniors participate in two internship experiences. This curriculum has evolved over the last 15 years and continues to undergo examination and renewal.

As a result of the renewal process, the College of Business adopted a "Real Life...Real Business" theme in 2003 which will guide future revisions and new course development. After a year of background work, the Real Business Experience pilot course was conducted during the Spring semester of 2004. One of four sections of MG490 Administrative Policy, a senior level integrated capstone class, was used to pilot test the RBE.

The pilot course was designed to emphasize the "real world" and included some unique features as listed below:

1. Students were required to meet several times before the official start of classes
2. Three faculty participated in each class and several non-academic business professionals participated by working directly with the student groups
3. Students selected the types of businesses they wanted to operate, formed their own groups, and assigned duties to themselves
4. Each group developed a complete business plan that presented their ideas and justified the investment of real dollars
5. Each group presented their business plans to a "funding panel" made up of bankers, venture capitalists, not-for-profit managers, and small business owners
6. Each group was funded, began operations, conducted their businesses, completed operations by the end of the semester, reported their results and revised their business plans
7. The design and execution of a business plan involved dealing with personnel problems, operations issues, marketing efforts, pricing issues, financial concepts, and the preparation of traditional accounting statements.

8. Students repaid their funding (loans) to the College of Business and donated a portion of their company profits to Butler University. All of the businesses were profitable.

In addition to these "real-life" elements, it is also important to describe the process that was created to move money and responsibility between the student businesses and the university. Funding for the first pilot came from a donor interested in the new curriculum initiative. Each student business was given the opportunity to receive as much as $3,000. With this money the businesses bought inventory, developed ad campaigns, developed their value chains, set up accounting systems using Quick Books, and established organizational roles. The money the businesses earned through sales and liquidation of assets went into their general fund, usually a checking account maintained by the students. Students kept track of their hours for the purposes of calculating a labor charge. Students were paid in the form of profit sharing. However, the profit sharing payments were not dispersed until the business were valued and discontinued, the loan to the university was repaid with interest, and all non-continuing partners were paid.

Regardless of how the financial process is structured, the basic question being addressed by the Pilot Course is whether senior CBA students can handle a more realistic application of the concepts and tools they studied over the previous few years. Business faculty and professional support staff purposefully approached the Pilot Course following the constructivist approach serving as mentors, facilitators and guides to problem identification and solutions. Interaction occurred through discussions rather than lectures.

In the spring of 2004, four Administrative Policy (MG490) capstone classes were taught at Butler University; sections 01, 03, 04 and 05, (there was no section 02). Sections 01 and 03 were taught by Professor A and sections 04 and 05 were taught by Professor B. Section 05 was the RBE pilot class.

Students and academic advisors were informed that the pilot class would be an experimental exercise emphasizing business planning and the actual operation of a new business venture. Admission to the class was not permitted until this conversation took place. Although there was an established process to place students in the class, student involvement was completely voluntary. The pilot class was designed to allow students to develop their own ideas for businesses, write a business plan, request and receive funding and implement this plan during the spring semester. Course grades were determined by student involvement, regular reports on company progress, the quality of the business proposals (20 page documents complete with pro forma balance sheets, income statements and market forecasts) and the final outcome of the company. The students were assured that profitability did not determine student grades unless the team simply failed to participate. The rest of the sections were taught as traditional capstone classes; predominantly lecture and organized team exercises.

The pilot class of MG 490 was the RBE. It was graded using a 1,000 point system. While there were several faculty members participating in the class and working with each group of students, the lead instructor was primarily responsible for gathering student reports and assigning grades. Four different elements of the course were evaluated and scores were totaled at the end of the semester. In addition to these scores, the non-lead faculty reviewed each student's efforts as to the planning, operation and presentation of results of their businesses. The four components of student performance were equally weighted with a maximum of 250 points and a grading scale of 90% for an A, 80% for a B and 70% for a C.

Component 1: Class Participation

The lead instructor recorded daily each student's class activities. Given the project- centered aspect of this class, those activities often related to how students were working within their groups as well as active participation in group and class discussion.

Component 2: Business Plan

Two preliminary versions of the business plans were read and evaluated by all participating faculty. These plans were returned to the students for corrections, revisions and expansions, as necessary.

The final version was again graded. The presentation to the funding panel was based upon the business plan, but also involved responding to questions and dealing with the details of each proposal. The grades assigned for this component were based upon the evaluation of each business plan, the effectiveness of the panel presentation, and the recommendations of the funding panel.

Component 3: Peer – Team Evaluation

Given the short time available within one semester to identify a viable business idea, form a team, develop a business plan, obtain funding, conduct the business, close the business down and generate financial statements, which helped guide the entire process, it was extremely important that all students participate in the process. Twice during the semester students were asked to provide written comments and score the level and effectiveness of themselves and each member of their business. The end of the semester assessment of student participation was used in the grading process.

Component 4: Performance Measures

Several additional elements were graded over the course the semester. Three interim financial statements were submitted and discussed regarding goals, plan, and actual results in units and dollars. Oral presentations describing operational activities and the allocation of profits were included in the final grade. The Final Business Plans, containing an analysis of why performance differed from the forecasts were submitted for a grade. Finally, the students were asked to submit a portfolio describing the skills and concepts they learned during the experimental course.

Controls

In order to create valid results, we attempted to control for two variables. First, we wanted to minimize any outcome differences due to the professor of record. Professors A and B were intimately familiar with the content of the traditional course and used a similar syllabus. Further, the entire team, including professors and RBE Guides met frequently throughout the semester to discuss the four sections. During these meetings we shared thoughts about the various sections and offered each other advice about the need to include activities that might have been overlooked. In this way, there was a dedicated attempt to make sure that the differences were due to pedagogical approach and not professor.

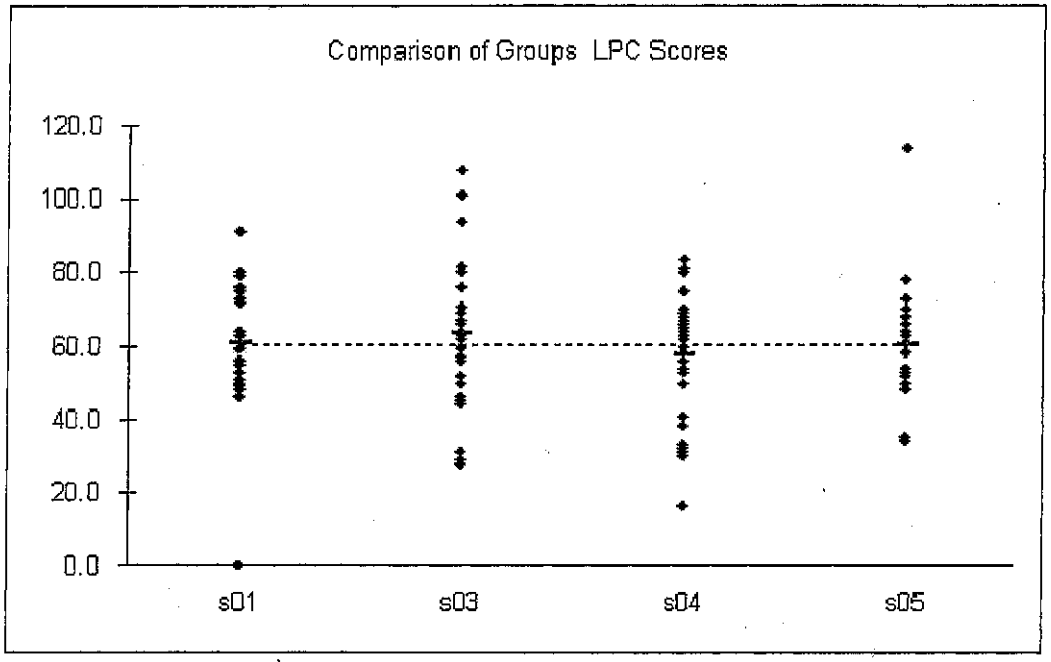
The second variable we attempted to control for was the in-coming student profile. Our goal was to make sure that we hadn't selected only the best and brightest for the RBE section. We attempted to assure that enrolling students were similar with two techniques. First, the GPAs of enrolling students were compared. Using ANOVA, we identified that 3 of the 4 sections were no different with respect to GPA. The remaining section had a slightly higher GPA. However, since this was not the RBE section, we did not deem this difference to be problematic. Second, the students were administered an instrument that attempted to assess their motivational style. Since the RBE section was heavily team oriented, we wanted to assure that one section of students would not be at a disadvantage because they preferred a task based approach to work rather than a people based approach.

The instrument selected for this purpose was the Least Preferred Coworker (LPC). The LPC scale was developed by Fred Fiedler as part of his Contingency Theory of Leadership (Gray & Starke, 1988). The scale measures a leader's motivation: task motivation vs. relationship motivation. A high LPC score suggests that a person has a human relations orientation while a low LPC score suggests a task orientation. Fiedler's logic is that people who rate their least preferred co-worker in relatively positive light get satisfaction out of interpersonal relationships while those who rate a coworker in negative light get satisfaction out of successful task performance.

The LPC scores were evaluated using ANOVA. The means of each class section were compared. The means comparison for the four classes of in-coming students indicated no significant difference. Thus, the in-coming students in each section can be said to be similar with respect to their propensity for success through interpersonal relationships or task performance. Graphical comparisons of groups as well as the ANOVA table for this data are presented in Figure 1.

Figure 1. Comparison of Group LPC Scores

Source	*SS*	*df*	*MS*	*F*	*p-value*
Treatment	504.94	3	168.312	0.47	.7019
Error	36,663.42	103	355.956		
Total	37,168.36	106			



Hypotheses Testing

In order to test H_1, a mid-course opinion questionnaire was administered to all students. This questionnaire was the most pivotal in establishing the behavioral and opinion differences between the four sections. While the ETS exam was necessary to establish that content absorption of the treatment group did not suffer, this questionnaire was critical to establishing that the treatment group got something more out of the RBE than the control students in the traditional course. With this exam we hoped to answer the following question: Were the students different with respect to motivation, engagement, and or activity level?

In order to test H_2, the ETS Field Exam was administered to all the students at the end of the semester. The ETS (Educational Testing Services) is a national standardized exam for business school graduates. The exam purports to assess student understanding of key concepts in the business field. With this exam, we hoped to answer the following questions: Were the students similar in their mastery of business concepts? Were the pilot course student assessments significantly different from the assessments of students in the regular sections?

ANALYSIS AND RESULTS

As part of a recent curriculum change designed to give undergrads an additional "real-world" experience, BU offered an RBE pilot class to senior-level students. The statistical findings suggest that student perceptions of the course's relevance and their satisfaction with the class were significantly higher than sections of the class that used more traditional pedagogical styles. Further, there was no apparent drop in the RBE students' understanding and mastery of relevant business content. These results are discussed in the subsequent passages of this paper.

Mid-semester Opinions and Behavior

The mid-semester survey requested student opinions on a variety of topics: personal reactions, time commitment, relative work load, and other issues. This survey was given to all four sections. Data were tabulated in binomial form in order to preliminarily evaluate whether differences between sections existed.

> H_1: Students taught using a constructivist style (as manifested in the RBE) will be more likely to exhibit active-learner traits than students taught in a traditionalist style.

By mid-semester the pilot class had developed their business plans including pro-forma balance sheets and income statements as well as presented their plans to a funding team and received funding. They had only recently begun to manage their own businesses and were eager to proceed. In the previous Fall semester the RBE class developed business ideas and began the process of forming business teams. Twice during the Fall semester, students met for two hours to discuss their ideas, meet one another, and begin to plan for their teams. By the beginning of the Spring semester, the teams had begun to gel. They frequently used email and informal discussions to facilitate their progress. They were also very ready to loosen any constraints and get busy managing their companies. By contrast, their peers offer few if any sentiments suggesting they were ready to loosen the structure imposed by a more traditional class setting.

The data are tabulated in Table 2. The yes responses to each question by section were totaled and compared using binomial hypothesis tests of independent groups. Questions that had a Likert scale included only four responses (strongly agree, agree, disagree, strongly disagree) to force an opinion, and were totaled binomially. Strongly agree and agree were totaled as "yes" responses while strongly disagree and disagree were totaled as "no" responses. The tallies for these responses are shown in Table 2. Each value in parenthesis by section indicates the p value that results from a comparison between section 05 (the pilot) the yes responses from the section in that column. Bold highlights indicate a significant difference between the section tested and the pilot at $\alpha = .05$.

Student Content Mastery

The ETS Examination for Graduating Senior Business students was administered at the end of the spring semester. The concern with application oriented courses, from the literature and from observation, is that student content knowledge may be sacrificed in a constructivist approach. The opposite theory is that content will be no worse and perhaps even more fully absorbed by students in application oriented classes. The ETS test data were seen as one way to test the competing hypotheses. An ANOVA test was again used to test the total scores of students by section.

> H_2: Students taught in a constructivist style will have content knowledge similar to students taught in a more traditional style.

The results of the ANOVA test and a graphical comparison of means are presented in Figure 2. At the alpha = .10 level, there is no significant difference between the sections.

However, pair wise comparison using t-test, indicates that three sections were different. Section 5 (pilot) was different than sections 01 and 03. On the other hand section 03 and 01 were also different. The pair wise comparisons are shown in Figure 3.

These differences do not indicate a loss of content for the pilot because section 3 taught by a different professor also scored slightly lower. Both

Table 2. Mid-Semester Opinion Survey Results

	S01	S03	S04	S05
1. Has what you have experienced so far in this class				
Taken you by surprise?	09 **(.0007)**	.22 **(.0246)**	.41 (.3974)	.53
Puzzled you?	.18 **(.0290)**	.04 **(.0004)**	.32 (.2778)	.47
Scared you?	0 **(.0042)**	0 **(.0042)**	.05 **(.0316)**	.26
Bored you?	.05 (.2985)	.26 **(.0113)**	.32 **(.0040)**	0
2. What more do you think is needed from this class before the end of the semester?				
More individual responsibility	.23 **(.0016)**	.26 **(.0034)**	.14 **(.0001)**	.68
Less activity and more instruction	.27 (.7031)	.04 **(.0082)**	.09 **(.0372)**	.32
More individual accountability	.41 **(.0078)**	.43 **(.0114)**	.27 **(.0003)**	.79
3. How much out-of-class time do you spend on MG 490 related to study and work?				
More than I've ever spent on any class	0 **(4.92E-5)**	.13 **(.0084)**	0 **(2.9E-5)**	.47
More than my other classes this semester	.45 (.1094)	.57 (.4331)	.09 **(1.08E-5)**	.68
4. Is your participation in this class worthwhile with respect to what you are learning?	.96 **(1.75E-10)**	.87 **(1.19E-8)**	.86 **(1.08E-8)**	1.00
5. Do you feel more confident about your potential in business as a result of the experiences in this class to date?	.86 **(1.81E-8)**	.74 **(1.03E-6)**	.64 **(2.07E-5)**	1.00
6. Knowing yourself as a student in MG490 today, rate your perception of your willingness to engage in this class	.91 **(2.05E-9)**	.91 **(2.05E-9)**	.91 **(1.07E-9)**	1.00

Note: proportion reported indicates percentage of affirmative answers by section.

Figure 2. Comparison of Group ETS Scores

ANOVA table

Source	*SS*	*df*	*MS*	*F*	*p-value*
Treatment	1,123.81	3	374.602	1.83	.1459
Error	20,220.02	99	204.243		
Total	21,343.83	102			

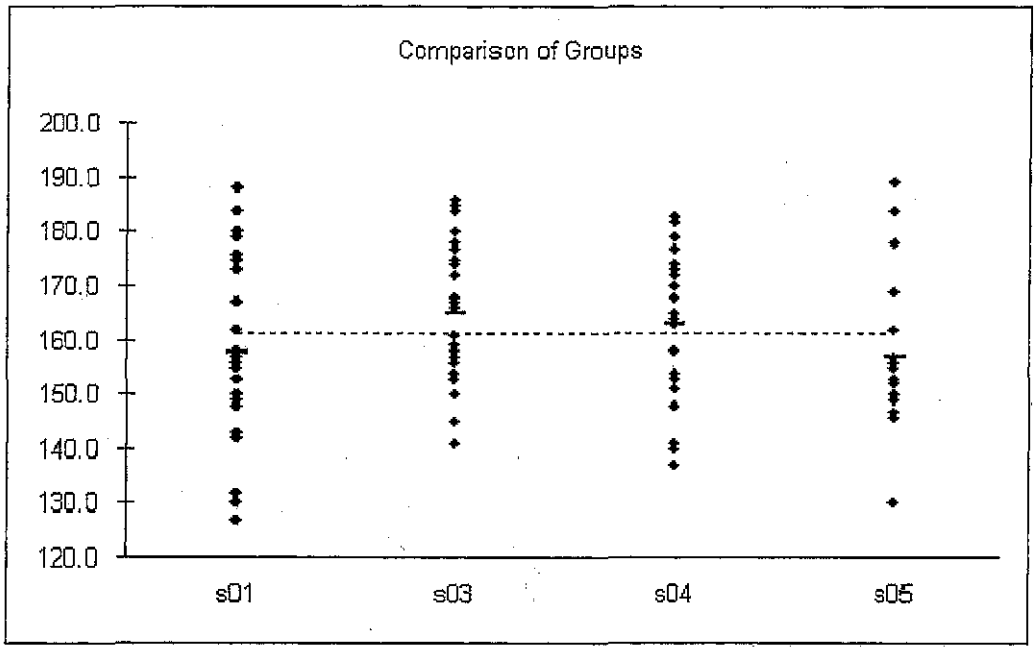


Figure 3. Pairwise Comparison Between Sections

p-values for pairwise t-tests for ETS Scores by section					
		s05	s01	s04	s03
		157.2	157.8	163.1	165.0
S05	157.2				
s01	157.8	.8851			
s04	163.1	.1642	.1693		
s03	165.0	.0691	.0652	.6178	

professors had a higher scoring section and a lower scoring section. This indicates that the treatment due to professor was not significant. It also indicates that the treatment due to the pilot was not a factor in the test results.

Since the exam allows for analysis of student performance on specific functional areas like finance, accounting, operations, management, and marketing, we looked at the data in greater detail. Based on the results of the pair wise comparison above, we wondered if looking at the manipulation and control groups for specific functional performance might yield some differences. Despite adding this additional distinction, no significant differences between classes were identified.

Thus we conclude that loss of content mastery is not a problem with the pilot class. However, the theory that content is more completely absorbed and reinforced was not supported either. Using the ETS test, there does not seem to be any difference between the traditional capstone and the pilot class.

DISCUSSION

The results of the ETS instrument suggest that despite the concerns of constructivist critics, the students in the pilot section performed as well as their peers enrolled in the traditional capstone classes on a popular content oriented test. The basic conclusion is that the students did not lose anything by taking the RBE instead of the standard capstone class. While some may lament the fact that students in the pilot section didn't outperform their traditionally trained counterparts, this finding is significant because it empirically refutes one of the most serious criticisms leveled at experiential pedagogy. The data on the opinion survey indicated the strongest evidence in support of the RBE's learning objectives. These data were extremely significant particularly when considered in the context of the controls indicating no difference in in-coming student profile or attempts to control for differences in professor we conclude that any differences indicated on the student opinion survey are due solely to the process used within the pilot course (section 05) as compared to the other traditionally taught sections. That process; mostly application-oriented, focused on team action and output, and encouraging independent student problem-solving and action steps is a significant change from traditional course methodology. Student recognition of this change and their reaction to it is as important as the concerns for content loss and student capability. Using the ETS instrument, our data suggest that the loss of content and student ability predicted by critics of the constructivist approach, do not seem to be a significant concern. However, more work in this area is required before this issue can be resolved. Therefore we believe that this course is at least as effective for content learning as the traditional classes on the basis of the ETS alone. Learning is not affected negatively as the constructivists predict, but student engagement is positively affected.

Upon consideration of the mid-semester survey data, it was demonstrated that the pilot class was far more effective in developing the students' sense of confidence, their ability to engage and their feeling of excitement about the material and applications they were experiencing. It is obvious that these students had a sense that this class was risky in that they expressed surprise and some fear about the course. By mid-semester, the students in the pilot class were asking for more individual responsibility and accountability than students in the other sections. The students in the pilot class also provided feedback on two significant issues. First they indicated that they spent far more time on this class than other classes in their college career. Second, they indicated that despite the hard work, they found this class well worth the investment and were much more confident in their future potential than students in the traditional sections.

By the end of the semester, the behavior of the pilot class was very different from the other classes. Three professors assisted in the pilot course, partly for personal development, and partly to reduce the amount of work for the professor of record. All three professors noticed (in fact it was hard to ignore) that this group of students was unwilling to accept the professor's statements or direction without question.

They resisted being pressured to do work they found unbeneficial or what they classified as "busy work". No such "anarchy" occurred in the other three sections. Although this was not measured empirically, we believe that the students in the pilot found a sense of empowerment and growth in this resistance. They had developed a strong sense of their personal power or voice. Rather than be upset by this, we celebrated this achievement.

The student's behavior suggested that the approach used in the pilot class created active-learners who used their critical thinking skills and newfound confidence to make personal choices. The sacrifice of traditional classroom control resulted in student ability to develop and execute a well run business plan. The businesses they began – a printing company, an e-bay seller of used video games, and a distributor of "spring break" beach items—were successfully run and closed out. All teams made a profit and repaid their loans with interest to the college.

CONCLUSIONS

The RBE pilot course was a success in several ways. First the students became the adult, active-learners we had hoped to develop. They became more adept at expressing themselves across a range of emotions – anger, frustration, exhilaration. They also thought critically about the use of their time, abilities, and level of risk in developing and selecting alternatives.

Each business created during the semester was successful. However, as a development tool for the professors, we intend to make changes to the delivery of the next course. A few of these include strict reporting requirements, month end closeouts and more extensive accounting for labor use, all topics for future papers.

The pilot RBE course, taught from a constructivist approach rather than traditional directed approaches utilized in the other three sections does not appear to have affected the content knowledge of the students either adversely or positively. We conclude that the effect on content knowledge is neutral between the traditional teaching method and the constructivist method.

The students in the pilot class did not appear to have been especially bright or capable in team situations as evidenced by the LPC and student GPA. We would conclude that students of normal ability should be capable of achieving success in this class. We turned many students away by describing the amount of work we expected them to do. This may have an impact on student behavior and success rates, but at this time we have no evidence to support or refute any role this might have played.

Finally, based upon their responses to the opinion survey, we conclude that the students in the pilot class appreciated and profited by the experience. They indicate a greater willingness to take risk, take responsibility and recognized greater payoff for taking greater risk.

As business schools explore more applied and real world innovations to curriculum, an RBE approach has merit. It demonstrated the value of experimentation, encouraged deeper faculty innovation and collaboration, involved the business community in the funding process, and made a difference for students.

ENDNOTES

[1] We acknowledge that as long as any activity is being conducted within the confines of a university setting, there will always be aspects of the experience that are less than realistic. We offer and use the term 'real' as a descriptor for the specific class offered at our institution and as an indication that we are attempting to introduce more reality based business conditions to the classroom.

[2] Our thanks to an anonymous reviewer for crafting some of the language that appears in this sentence.

[3] The relevance of profitability as a measurement tool for for-profit RBE courses, a metric we question, is even less appropriate for experiential learning with non-profit firms. Although our study does not look at non-profit firms, the measures of student success that we describe later are more conducive to institutions wishing to evaluate student success in the non-profit environment. We do not include non-profit options in this RBE course as our school's desire to have students gain real world experience with non-profit organizations is currently under consideration.

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