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Epiphany: A Story of Improving Teaching Effectiveness in an Executive MBA Economics Course

Anthony J. Mento and John C. Larson

Abstract

This paper discusses the reengineering of an executive MBA economics principles course. Traditional lecture-test structure was changed to a seminar style. Events leading to this change are described. Many years of evaluation results are presented to quantitatively and qualitatively depict the dramatic impacts of the changes. Learning theories that help explain the effects are then discussed, especially as they may help others redesign their teaching methodologies. Non-theoretic learning strategies for students and seven research-based principles for more effective teaching are also presented to help explain the results achieved.

Introduction

This paper tells of a professor's teaching style change, what led up to it, and what happened because of it. The message is how and why better learning can be achieved with a classroom approach that is more seminar-style than lecture-style, even if the lecture-style has proven high quality characteristics. Professor X refers to the first author and Professor Y designates the second author. The focus of the paper is about Professor Y's epiphany in his EMBA economics principles course.

Section II of the paper tells the story of a crisis in the classroom and how the professor reacted. Basically a reengineering story, old ways were set aside and new ways adopted, initially more on faith than on proven principle, in the quest for a dramatic improvement in student learning. The form of the new course structure is provided in detail. This transformation happened more than seven years ago and the time lapse allows presentation of numeric evidence on student satisfaction in about equal portions for before and after the change.

These data are shown in Section III along with a sampling of student written comments about what they view as important about the seminar-style. These are buttressed with the professor's frank assessment of changes made in a wide range of descriptive attributes. Correlated evidence on best practices in teaching is then presented. Independently collected from the same students at the conclusion of their EMBA programs, and more comparative of courses and professors, this evidence strongly supports seminar-style teaching.

At this juncture, the paper presents in Section IV a summary of learning theories that are useful to more generally interpret and extend the reported findings. The alteration of teaching—the reengineering—by Professor Y is in alignment with modern learning theories. In essence, though the case study is tangible human drama, cognitive theories can explain why this scheme worked to improve classroom performances. These theories are a gateway to designing other teaching styles. Section V does,

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however, present other views that are quite pragmatic. The conclusion provides some thoughts on using formal theories of education.

A brief description of our EMBA program follows to help professors anticipate how this paper may apply in their own programs. Established in 1973, our EMBA program was one of the first ten such programs in the U. S. Our program is designed to allow senior and upper-level executives to maintain superiority in an ever-changing business environment without interruption of their careers. Accordingly, the schedule is designed so that an MBA may be earned in two years. Each new year begins with a residential period and continues with three 10-week sessions, alternating on Fridays and Saturdays from 8:00 a.m. to 4:50 p. m. (refer to Appendix 1).

Admissions criteria are established to guarantee a wide range of student backgrounds and experiences as each student brings an established record of achievement and experiences to class. The average age of our student is between 35 and 40 years old. Students are selected on the basis of three criteria: (1) management experience, potential, and achievement with emphasis placed on the individuals' present position; (2) prior academic achievement as reflected by undergraduate and graduate performance; and (3) performance on the Graduate Management Admissions Test (GMAT) which can be waived at the discretion of the Admissions Committee.

Crisis as the Cause for Change

Professor Y on his Day of Crisis

It was not working! Mid-term exams had been returned, and as always in my economic principles courses, I conducted a review of the multiple choice questions and answers, fielded questions, listened to any logical argument about why another answer might have been right, and

allowed additional points if the argumentation was compelling. This approach worked to come to joint agreement on economic principles. This time EMBA students were being petty, abrasive, and complaining about common definitions. Too many were using trivial logic and were wrong. As I pointed out where in the assignments the questions of dispute arose and where the answers were clearly articulated, I became concerned that some had hardly studied, perhaps hoping to guess their way through to an acceptable score. They seemed convinced that the exam was poorly designed because the score distribution showed them that their mean score was low and the variance high. Any concessions to their arguments seemed only to reinforce their dislike of the material, of my approach, perhaps of me. Though a few students admonished their classmates about their strident pursuit of relatively few score points, the adversarial behavior continued until the whole exam had been reviewed. For the first time in my twenty-one years in academe, I felt that a large sub-group of students was acting out of control, a bit mob-like. What were they after? How could I be so wrong in my approach? Time was up, the assignment for next week was clear, and I had to go to another campus for an afternoon section of the same course. At least that group always seemed brighter and more responsive. Their exam grades showed it. The mean was higher, but the variance was still a bit large.

Driving between campuses allowed time to reflect a bit on how the negative mood had entered the test review session. I had not used words or tones that should have elicited angry responses. I was pretty sure that some had simply not studied and that they might have been angry with themselves more than with the exam. This was a new off-campus location for the EMBA program and perhaps the students had been rather hastily recruited. However, I did not think that mattered very much. The test review in

the second section went well. The contrast was striking. Evidently, the crisis was group-specific.

Monday morning, the associate dean stopped by my office. As a long-time friend and occasional consulting partner, he shared what he had learned from the unhappy students when he had spoken to them at their lunch break. From their perspective, as determined by him, nothing of the present course was worth anything. Though my friend had no prescription, he wanted me to be responsive. I decided that use of another pedagogical approach was warranted. But what approach?

I began by asking two close faculty friends what was wrong with what I was doing. One remarked, "Nobody wants to be evaluated! Multiple-choice exams do not satisfy their desires to be graded on the basis of what they know. They may satisfy you, but not them." The other remarked that the better students spoke highly of my courses. The intimation was that lesser students hardly mattered. I was not finding out enough of what I wanted to know, namely, what new approach to use. I was concerned that students were not studying with enough intensity. Moreover, I felt their satisfaction with the subject matter would rise if they made the effort to put the ideas into long-term memory instead of cramming.

I decided to use an economic principle as my North Star to navigate these uncharted waters. I had always used lectures and tests, and was proud of the seeming success. I decided to rely upon guidance from an approach in industrial organization economics involving the simultaneous consideration of an industry's structure, conduct, and performance. A monopolistic structure, in contrast to one that is more competitive, will tend toward a behavior of higher pricing and lower output so that society's welfare is reduced from what it could be. Thus, my aim was to alter the course's structure to improve scholastic conduct (study intensity) and

performance (long-term retention of economic principles). As for structure, it was easy enough to admit that a professor in a lecture-and-test course is a monopolist. Students were the customers. Once admitted into our lock-step program (Appendix One), they were captives and could not go to a competitor. I was the monopolistic problem. More suppliers would improve the course. Obtaining those suppliers was the reengineering challenge.

The next few weeks

When I returned to the unhappy class I explained my perception of what had happened. Surprisingly, nothing new emerged when they were asked if anyone had a different perception or had anything to share to improve the course. Then I proposed the course revision, namely, that for the remainder of the semester we were going to use a new course structure in which they were assuming responsibility for presenting major themes from the assigned readings. They were the new suppliers that would improve the course.

Students are assigned to specific study teams by the EMBA administration for the duration of the program. I used these groups as the new suppliers. Teams were allocated segments of the readings for the remainder of the term and were assured they would have fifteen-minute presentations each remaining class period. From my perspective, I was distributing the remaining assigned text material as if to guest lecturers. I indicated that there were to be no more exams, however they would be graded for the quality of their team presentations, half by their classmates and half by me. Their presentations had to be presented to me in hard copy form (often power point slides and accompanying narrative and graphics). The remainder of that class period was spent discussing how teams might have gone about presenting the assigned readings for that class session. What seemed to emerge was much

improved topical discussion, an easing of tension, and a bit of humor.

In the weeks that followed, every student had occasion to speak to the class as a team member. Everyone experienced the need to learn something well enough to present it and field questions. Questions from the audience indicated that assignments were being read by at least some students even though another team had the presentation task. Their eagerness to listen to peers was evident. I opened and closed each class period with brief remarks. I made positive comments on all the papers and returned them promptly at the next meeting. And at the end of the course, each of the two sections' evaluation comments indicated that they thought highly of the changes and recommended continuation.

My goal was to change the structure of a professor-dominated course in order to better motivate student reading and study behavior such that they could confidently present their findings to their peer group. In stripping away their passivity, and requiring them to act as presenters, I began to think of what was going on as "active learning." I began to sense that their preparations and presentations were causing ideas to enter their longer-term memories. In terms of the economic structure-conduct-performance paradigm that I used as my North Star, the structural change had produced a conduct change that elicited improved performance. Students accomplished more than their cramming behavior had in the lecture-and-test days.

Evolution of the new structure

The course has evolved as a seminar-style since that basic beginning. A standard textbook is the basis for each meeting's reading assignments. In addition, it is expected that students read one or more business news sources. The seminar-style emerges with the

writing assignments that are based upon these readings. Whereas the course originally used team presentations, subsequent offerings have used individual writing assignments and presentations. At the end of the first course some students had expressed concern that not all members of their team worked equally hard on the development of the presentations, something only they could know. I could not identify how to change this without using individual assignments and requiring myself to put in the effort required in grading all those papers. Getting students to work more required that I work more, as well. So the following offering of the course used individual assignments and it worked well enough that team presentations were not re-instituted. The entire class is encouraged to think of themselves as a learning team in which each individual produces for group consumption. Executive students want very much to hear from their peers and have consistently remarked that they value this course feature.

Two forms of written deliverables are assigned. The class is divided into two groups so that each week each student delivers one form or the other so that there are equal numbers of the two forms. One report form is textbook-based, namely, *Discussion Leadership Papers* (DLPs). These are essays about concepts in the assigned readings which the students believe are important from their individual perspectives. Students may select which of the concepts in the textbook are used in their DLPs. The second form is an *In The News* (ITN) paper that is based upon one or more news stories that the student finds and relates to the textbook readings. DLPs serve to highlight formal academic lessons and ITNs highlight academic principles being revealed in the student's world. These assigned forms alternate each week so that in, say, 10 weeks a student will deliver five DLPs and five ITNs. DLP length is 1 ½ pages single spaced in 12 point type and ITN length is 1 page. These lengths are short enough to allow any student with average writing skills time to always be

ready for class, yet long enough to promote serious study of the concept being highlighted.

The seminar-style amplifies considerably during class sessions. Each student is prepared through reading, thinking, and writing. I may begin a session by broadly characterizing the material for the week and may distribute copies of related items that can be quickly read at another time. However, I quickly transition to their material by asking individuals to share their week's work. Because none of us knows what the others may have selected to discuss, there is a continuous sense of variety and anticipation in the room. A common pattern is for students to present the concepts they have written about for several minutes, followed by a spontaneous question-and-answer session. If multiple students have written about similar topics and have reached somewhat different conclusions or selected different areas of emphasis, these students' discussions substantially enliven discussion. Notably, some students like to say that they wrote about this and then they wrote about that, etc. This is soon the signal for others to ask, "Well, what did you write?" In short, listeners want the message and not the outline of it. Nobody hides. Though the papers are far less topical than the reading assignment, broad coverage arises from the discussion.

Students emphasize their personal interests in the subject matter by the way they develop their essays. Retailers simply do not share the same passions as executives in defense contracting. In class discussions it is always the case that people will use their professional differences to add to the group discussion. As the school term ensues, many students will recount past seminar exchanges and anticipate how other executives might interpret a topic, something not usually encountered in the early weeks' writings. The previous structure of lecture, ..., lecture, test seldom, if ever, led to this cross-pollination. At the close of one class period in which students

discussed their interpretations of capital investment decision making, a woman executive came up to me and said boldly, "This is why I'm in graduate school!"

Not every student will present to the class on any given day, but I make sure everyone does so during the course. Students sometimes need to be asked to present, however executive students tend to need little prompting. Nevertheless, despite my intentions, some students' written comments at the end of the term let me know how I failed to get one or more students to speak more (or less). When a student's presentation evokes valuable class discussion, an inevitable tradeoff is that there is less time for other presentations. To cope with this, what students can count on is that I will collect their papers at the end of each session, read them carefully, positively comment upon them, and return them at the start of the next session. I guarantee this in the syllabus. Papers are graded carefully. Conscientious grading provides integrity to the process and assures that students will continue to strive for excellence. Grading with positive commentary is very time consuming, however it serves as a catalyst for any positive reaction that the student is having with the material. I believe it is a core factor in the success of the seminar-style.

ITNs are not letter graded or scored. That I insist that they submit their ITNs on time, that they meet the modest word length requirement, and that I make written comments appears to prevent any enforcement problems. I do keep track of basic quality levels of these papers (when exceptionally good or bad) in my personal records. To a small degree I use this information along with general classroom behavior impressions within a composite class participation grade component at the end of the term. This grade component seldom outweighs DLP grades in my experience and could probably be dropped from the formula stated in the syllabus. In fact, poor ITNs are rare, but well

done reports become common by the end of the term. Students come to enjoy seeking substantial news stories that relate to the assigned textbook readings and sharing these with their classmates. Students continue to amaze me by suggesting that their learning from ITNs is quite substantial. Perhaps the major complaint about this course is that I do not letter grade the ITNs. I insist that this is how students can explore material, as it may be manifesting itself in the world, without substantial grade risk. The students' point appears to be that they learn enough from the ITNs that they surely deserve to be graded. After I have read and commented on them anyway, it would take only a moment to affix a grade. So this can be an area for change.

Grading policy is rather basic: C work indicates substantial shortfalls from what is contained in the readings, B work is the usual grade for acceptable presentations in graduate school, and A work contains material beyond B work that makes the message enticing to the reader. Students are encouraged to improve upon one or two topics from the text, rather than attempting outline coverage of all the text's topics. Presentation of a subject from the text that falls far short of the text's presentation would receive a C, one that paraphrased the text and little more would receive a B, and one that interpreted the text correctly and provided interesting examples from their own lives would be a potential A paper. Papers are to be turned in at the end of each session. The first late paper is graded as if on time, the second and any subsequent late paper receives an F. Hence, if the first late paper is an ITN and the second is a DLP, the DLP receives an F. I discuss this in the beginning of the course. Spelling errors are corrected, but do not affect the grade. Likewise, other grammatical errors are noted, but not graded. Plagiarism is taboo and warned against in the syllabus. They are told that providing references is good form and enhances their paper's quality. ITNs are submitted with the news stories attached. Word length

requirements are stated very precisely in the syllabus. When a paper is too brief I will tell the student how to meaningfully expand the discussion. If a student repeatedly is too brief I will reduce the grade one level. Overly long papers are discouraged and usually do not appear.

Other Aspects of a Typical Class Session

The class operates as a low-key seminar in that students always have a written deliverable. To encourage the low-key aspect in the classroom I arrive a few minutes early and wander among the students in the common area of the executive classrooms, saying hello and watching to see if congregations are discussing issues of some relevant sort. If former students from neighboring classrooms are present I will chat with them, too, and perhaps introduce a few students. Mainly the effort is to maintain hard-earned rapport, encourage students to recognize the long-term aspects of our learning partnership, and promote a shared sense of an academic community. Good seminars require comfortable, confident, bold students and an approachable professor.

Near the appointed starting time I begin distribution of graded papers that were handed in at the close of the previous class. I like to hand it directly to the person to cement name/face/topic connections and in order to say the student's name, smile, make eye contact, and possibly say something nice about their paper. The papers always have something positive written on them by me, even if there may be a negative comment as well. I like to write something of one or two paragraphs length to each student at least once each term so that they learn how they are triggering thinking and response. Once the papers are returned and students are settled in, they have the previous paper and the new paper to use at their discretion during the day's discussions.

Early in the term, almost in the first 15 minutes of the course, I suggest that they might remember as a six or seven year old running into the house after school and excitedly telling their parent what they learned. I suggest to them that I want them to rekindle that joy of learning. I do not tell them that I want them to arrive at graduate school with that excitement and to be eager to share what they have learned during the week, but I attempt to show this by my own behavior. I am an introvert and found this difficult until I realized I really did look forward to learning what fresh minds saw in the material. I like to tell them what one or two of their class mates said in their papers. This promotes continuity from session to session.

I refrain from going along with some students' requests to give a brief overview of what is important in the assigned readings. I tell them that is their purpose of study. The object is not for me to allow them ex post reading opportunities. They have to be well read and prepared, ex ante. And yes, this is a complaint area for some in their end of course written comments.

A Mosaic of Evidence

The Performance Question

Our school's policy is to have students complete anonymous evaluation forms at the conclusion of every course. These one-sheet forms have one side with questions and answers that may be marked with a ubiquitous number two lead pencil for automatic scoring, with the other side providing opportunities for free-form comments. On the first side is the question that department chairs and deans seem to focus upon, namely, whether the professor's performance is Outstanding, Good, Fair, or Poor. Professors are provided the completed forms after grades are submitted and are asked as part of the annual self-evaluation process to discuss them with the department chair. It has seemed

to me that the dozen or so other automatically scored questions correlate to the general performance question. My results for the executive economics principles course are depicted in Appendix 2.

Sections seven and eight were those in which the crisis-motivated changes were made, therefore the first six sections are the "before" block of observations related to lecture-style teaching and the last seven sections are the "after" block pertaining to the seminar-style. In the "before" group, 167 students filled out the evaluation question and in the "after" group there were 220 responses. The totals are not the student populations because some students opt to leave the response blank or not turn in the form at all. The response rates are typically higher than 90 percent, however. To maintain anonymity, the forms are collected by a student representative and submitted to an administrative office. The distributional composite scores are in Appendix 3.

These data visually convey dramatic change to higher mean scores and less variation. Statistical testing also supports this drama. Using the school's category scores (4 for excellent, 3 for good, 2 for fair, and 1 for poor), a standard econometric F-test for structural change was conducted. A computed F value of 412.03 exceeded the theoretic F value of 4.61 with 2 and 387 degrees of freedom. (p. 421, Kmenta, 1986) Therefore, the "before" mean and variance are significantly different from those "after" converting to a seminar style and are very unlikely to have occurred randomly. However, the category scores are strictly arbitrary and influence the F test. Therefore, a test for category proportions was conducted. The "before" proportions were used to state expected frequencies for the "after" group on the null hypothesis that both blocks were from the same population. Therefore, a Chi-square goodness of fit test was applied to the top three categories, the fourth not being independent because the proportions add to

unity. The "after" frequencies differed from the expected frequencies substantially, the computed chi-square value being 221.88 compared to the theoretic value of 9.21 at the 99 percent level of significance. (p. 426, Anderson, Sweeney, and Williams, 2000) The "before" and "after" proportions are markedly different and extremely unlikely to have occurred by chance.

Student Written Comments

Students' free-form comments on the backs of the evaluation forms provide a partial way to interpret why the numbers shifted. Students enjoy hearing how classmates interpret the lessons from their world of work. Students enjoy the news articles. In fact, it is not unusual to learn that most became readers of *The Economist*, *The Wall Street Journal*, or similar sources for the first time. Many remark they can now read a Department of Commerce press release and know what it means. Students do not like my refusal to rank order topics to help them determine what is important. They do appreciate end-of-class summaries, and they do appreciate subsequent follow up on under-developed topics, however that is done. They really appreciate the positive tone of the course, the ability to listen without taking notes or being force-fed Power Point slides. However, they do not like that I do not dampen students that speak too much, nor compel quiet students to speak more. And, as previously mentioned, they often complain that I do not letter grade ITNs. Because it is rather hard to summarize these comments in any comprehensive way, I have always provided copies of all the forms to my department chairs and let them summarize. For the purposes of this paper I have created the following table that attempts to summarize the distinctions between my lecture-style and my seminar-style courses. See Appendix 4.

Best Practices Data

The authors, teaching the same students, became "coffee cup collaborators" on executive teaching practices, especially after Professor X began studying the students' views of best practices. This paper brings this collaboration to academic fruition.

Collecting data pertaining to best teaching practices began in May 1999 and continued through 2001. The purpose was to use the data for the continuous improvement of our EMBA programs. Graduating students were asked to identify the best successfully demonstrated teaching practices or methodologies that they had been exposed to during their time in the program. Executives were requested to list the best practice, to explain why it was a best practice and to identify the deliverer of the best practice. Each was requested to identify up to three or four best practices, one best practice associated with one professor. A best practice might involve how the course content and materials were delivered as well as encompassing the nature of assignments and feedback received from professors.

The results support that Professor Y's accomplished his reengineering objectives as identified in terms of student statements of best teaching practices. In terms of the frequency in which a professor was named as a deliverer of a best practice, out of 18 faculty members, Professor Y was ranked tied for number one in 1999, and in 2000 and 2001 was ranked second. Some of the specific best practices attributed to Professor Y included the Discussion Leadership Paper assignment, the In the News assignment, and the comprehensive and thoughtful feedback received on these assignments.

Through discussion of these findings, we became collaborating students of the student, especially EMBA student, learning process and focused us on the task of identifying specific

relevant management, educational, and learning theories that would inform us with respect to why the new approaches to teaching worked. This paper mostly emphasizes Professor Y's results, though both of us use seminar-style designs. Professor Y has used the same basic seminar style with two sections of undergraduate, largely freshmen, economics principles students. The results, though hardly as tangible in terms of work experience manifested in the papers, were as assuring as they were in the EMBA programs. From this limited evidence, we believe all the learning theories studied, and reported next, apply at all collegiate levels.

A Summary of Learning Theories

This paper hopefully provides inspiration, as well as guidance. Theories and ideas from the education, cognitive psychology and management literatures helped us understand what was done. We believe this cited body of knowledge can assist anyone wishing to thoughtfully revamp their teaching approach.

Deming's Influence

As collaborating students of learning, we became familiar with how the work of Dr. Deming (1993) might be applied in higher education (Gartner, 1993). Dr. Deming taught that there are two types of variation. *Common cause* variation is built into the system and is the net result of multiple influences, many of which may never be known. Most variation that exists in any system is attributable to common cause variation (Deming, 1993; Scholtes, 1998). The other type is *special cause* variation, which is attributable to some knowable influence. Scholtes notes that it is a common management error to treat anything that goes wrong in a system as a special cause attributable to a person.

For example, teaching is a process within a system. In any system some observations will always be above average and

some below average, and individual skill and effort are not necessarily primary determinants of this performance variation. In our executive classes, due to range restrictions on levels of ability at entrance, very little variation due to special causes exists to be manifested in test score performance. Because most perceived problems in the classroom are caused by common cause variation and thus are not attributable to students, eliminating the problem involves changing the system, process, or method of teaching. With such a view of the situation, only professors and administrators can change the teaching system. This logic led us to do away with traditional exams involving multiple choice, short answer, and essays, and to adopt an approach that samples student behavior in a much broader and relatively unconstrained fashion.

Deming is clear about how his thinking applies to an educational context. Forced grade distributions should be abolished and different methods and techniques should be developed to help students learn, since everyone learns differently. Multiple choice tests should not be used; rather, students should learn under what conditions each alternative answer is correct.

The following theories, beginning with constructivism and ending with schema theory, are all concerned with explaining how the student learns.

Constructivism

Constructivism posits that knowledge is constructed, not discovered. Discovery may play a role in production of new knowledge, but it is never more than one of the activities involved in creating new knowledge. The construction of new knowledge begins with our observation of events or objects through the concepts we already possess (Novak and Gowin, 1984).

Constructivist learning is based on students' active participation in problem-solving and critical thinking regarding a learning activity which they find relevant and engaging. They are "constructing" their own knowledge by testing ideas and approaches based on their prior knowledge and experience, applying these to a new situation, and integrating the new knowledge gained with their pre-existing intellectual constructs.

Learning is assessed through performance-based projects rather than through traditional paper and pencil testing. The teacher is a facilitator or coach in the constructivist learning approach, guiding, stimulating, and provoking critical thinking, analysis, and synthesis throughout the learning process. The teacher is also a co-learner.

Yager (1997) provides a helpful list of strategies developed from a constructivist perspective that are designed to facilitate new learning:

1. Encourage student autonomy, initiative, and leadership. Professor Y encourages students to be thought leaders in their private lives.
2. Let students drive the lesson. The content and process of a class are based on student responses rather than being regimented and overly structured.
3. Allow students time to think before responding to questions.
4. Encourage students, overtly and continually, to interact with their peers.
5. Ask students to elaborate. Yes, no, and terse responses are not acceptable.
6. Use thoughtful open-ended questions to trigger thoughtful discussions.
7. Require students to actively reflect on their experiences and apply these to different contexts. In Professor X's classes this is facilitated by the use of DeBono's (1999) Six Thinking Hats

structured approach as well as his Directed Attention Thinking Tools (DATT) such as the Other People's Views (OPV) and Plus, Minuses, and Interesting Points (PMI) (De Bono, 1992). Professor Y's students are asked to interpret the text in their DLPs in terms of applications in their lives. Students are asked to express their understanding in their own words.

8. Emphasize lateral thinking and the generation of alternatives. Professor X's students are encouraged to search out and make connections between the new material and their particular work or life context. Professor Y's students indicate the importance of hearing other students present personalized DLPs. Some students have arranged site visits to their operations for their classmates.

Ausubel's Assimilation Theory

Ausubel's assimilation theory (1968) is a constructivist theory which emphasizes that the learner plays the central interpretative role; the learner makes the knowledge. For Ausubel, meaningful learning occurs when an individual assimilates a new piece of information into an existing knowledge domain within the individual's broader cognitive structure. Assimilation results in an integrated, hierarchically organized, cognitive structure (Ausubel, Novak, & Hanesian, 1978). Ausubel refers to elements in a knowledge structure as subsuming and subsumed concepts (Ausubel, 1963). Within this type of hierarchical structure, subsuming concepts are broader and more inclusive than others, and more specific concepts are subsumed under concepts located above them in the hierarchy. An important dynamic is that the role of subsuming concepts in meaningful learning is an *interactive* one. Linkages are formed between the newly perceived information and the previous base of knowledge while allowing modification and differentiation.

Meaningful learning occurs when a learner retains an idea by relating it to what is already known, thereby "making sense" of it (Ausubel, 1968, p. 44). We deliberately strive to elicit meaningful learning in our students by our carefully developed instructions for formulating their DLP and ITN deliverables. Students can explain their personal takes on ideas and through peer discussion a richer set of linkages is developed in seminar.

Generative Learning

Another educational theory that has helped us conceptualize our teaching approach is generative learning, in which learners construct their own lessons by generating and solving their own problems instead of being forced to solve pre-defined problems (Wittrock, 1974). Generating problems is instructive. For instance, distinguishing between solving pre-defined word problems (If an electric train is traveling east at 60 mph ...) and planning a trip (How much food will we need? What time are we likely to get there?) emphasizes the broader perspectives of generative learning. Closely related to constructivism, generative learning environments can use a variety of instructional strategies often employed in cooperative learning formats. These include Socratic dialogue, mechanisms for exploring multiple and differing perspectives (6 hats, PMI), techniques for building upon prior knowledge, brain storming and categorizing, general and content-specific problem solving processes, team teaching and techniques for constructing mental models and graphic representations (e.g., mind mapping, Buzan (1996); Mento, Martinelli, and Jones (1999), and concept mapping (Novak, 1999)). Our approach is robust with respect to these, although we do not focus on cooperative learning contexts other than between the teacher and the class as a whole.

Schema Theory

Another, related view is schema theory. A schema is a knowledge structure in the brain that is a network of ideas, associations, and relationships (Crawford and Chaffin, 1986). Schema allow for the generation of inferences, while serving as "velcro" to allow the integration and bonding of new information with existing information (Hirsch, 1987). Invariably, however, "lint" exists to prevent new information from bonding perfectly with the velcro of the schema. Lint exists in the form of misconceptions and misinformation which need to be clarified by oneself, teachers or peers. Filters or paradigms are intrinsic to schema and serve to idiosyncratically shape the type of information allowed into one's knowledge structure. The learning process involves new information being transported from short term memory into and adhering to one's schema (McKeachie, Pintrich, Lin, and Smith, 1986).

The role of the teacher in schema theory is to help students declare their schema (conceptualize via a background knowledge probe, for example) (Angelo and Cross, 1993) so that new information can be contextualized. The directions for writing followed by students as they prepare their personalized ITN and DLP deliverables play this role. Professor X's students may be asked to develop mind maps around specific issues. Concept maps are also a very powerful technique (Novak, 1999) in which information is hierarchically structured, with the most general concept at the top, and with all of the concepts in the map linked by words. These are but a few examples.

Other Views

Emphasis in this paper is upon a successful transformation in teaching style and upon supporting rationale. Beyond our investigation of learning theories we have also been attracted to non-theoretic methods for

improved study and teaching. We present these to complete our story.

Meta Cognition and Learning Strategies

From the outset, we have maintained concern for study techniques that assist students' absorption of course material. A major premise underlying meta cognition and learning strategies is that students can study smarter (Brown, 1987). There are two aspects to meta cognition: knowledge awareness and control. A student must be aware of different aspects of the assigned task, as well as being aware of oneself as a learner. Specific awareness strategies include asking questions of oneself *while* reading, making overt connections of the new material to existing knowledge, organizing knowledge in some way as to focus on the main points, and asking oneself questions *after* reading (Flavell, 1976; 1987). These strategies deal with taking charge of the material to be learned, making connections in such a way as to own the material, and internalizing it and making the material come alive so that it is more than just words on a page. This is explicitly required in our economics course when students are asked to develop Discussion Leadership Papers and to select and do analysis of In the News articles.

The control component of meta cognition stresses planning, monitoring, and regulating learning (Brown, 1987). Planning involves goal setting, pre-questioning, and analyzing the learning task. Monitoring involves tracking attention to and understanding of the material. Control emanates from the learning strategies that facilitate recall and the use of new information.

There are four popular learning strategies (Weinstein, 1988; Weinstein and Meyer, 1991). *Rehearsal* is the first and includes memorization techniques. *Elaboration* is useful in helping to make meaningful connections. It

includes paraphrasing, relating the lecture to the text, and comparing real experiences to book learning. *Organization* deals with diagramming, sketching figures and models, developing conceptual frameworks, using mode-switch activities (Cohen, 1994) and mind maps to condense large amounts of information. *Comprehension monitoring* emphasizes being explicitly aware of when and for how long the mind wanders and involves frequent internal checks of understanding.

Thoughtful selection and application of these approaches would offer significant potential for enhancing executive learning.

Seven Research Based Principles of Improving Teaching Effectiveness

Just as the previous section focused on basic student productivity, this section symmetrically considers teaching. Chickering and Gamson (1987) have identified seven research-based principles (Locke, 2002; Peikoff, 1999) for improving teaching effectiveness, but without attempting to associate them to specific theories. The first advocates high faculty contact, both within and outside of the classroom. This was discussed in Section II.

A second principle involves encouraging students to teach each other. This principle serves as a foundation of the economics course. The context of the course is carefully and deliberately shaped to allow this to occur. There is considerable dialogue between students via the development of DLP and ITN reports.

Active learning is the third research-based principle. Self-initiated inquiry serves to encourage active learning. The careful crafting of DLPs requires discovering and creating deliberate and detailed connections between key economic principles and ideas in the text to pertinent and significant work and life issues. This is a very active learning approach.

The fourth principle involves the delivery of prompt feedback after assignments are turned in. A key feature of our process, and which is frequently cited as a best practice by students, pertains to the nature of feedback received. The feedback is provided always by the next class, distributed with a smile and maximum eye contact, and is written with a positive focus offering lots of encouragement.

Principle number five identified by the researchers concerns the fact that the more time spent on task actively engaged with the material the more effectively the student is likely to learn. We do this by requiring a deliverable every week and by creating the context which allows students to be actively engaged in their work. They essentially tell us a story based on their frame of reference. It is relevant to them because it is from their unique points of view, focusing on relevant work and life experiences. In a sense, this is a turn on the familiar executive comment that they want something from each class day that they can immediately apply in their work.

Setting high expectations is the sixth research-based principle. Students are given lots of encouragement at every opportunity. Expectations are realistically and honestly conveyed. Students are told that it is expected that everyone will do well, but that "A" work is reserved for truly outstanding performers and is not to be considered the average grade for the class.

The seventh and final principle encourages and allows for diverse ways of learning. There is truly not a lot of diversity in our approach in the sense that students express lessons learned in writing as opposed to other potential ways such as in mind map format, in a collage, using a mode switch approach, developing concept maps, or developing metaphors both visually and in writing which encourages the use of both sides of the brain.

In summary, there is fairly strong congruence between our efforts, learning theories, and the recommendations of Chickering and Gamson (1987).

Metaphors for Teachers

Finally, metaphors have helped us think about executive education. A powerful metaphor is that of a gardener as opposed to a mechanic (Ackoff, 1999; Webber, 1999; von Oech, 1998). As gardeners of students, we need to provide the right soil and appropriate amounts of sunlight to facilitate their growth. Curious students might be thought of as spreading their roots. On the other hand, some are pot-bound, while others flower and reach fruition. In thinking about individual differences, some students need a hothouse to develop, while others could prosper in a desert. With respect to a given pedagogical approach, say, lecture-and-test styles, the repertoire for student responses is quite limited in terms of potential creativity. However, in a more creative situation such as a seminar-style, students will tend to spread their roots in their own unique ways.

Concluding Thoughts on Using Formal Theories

Svinicki (1991a) has thoughtfully written about the advantages and dilemmas of using formal theories of education to enhance teaching effectiveness. The instructional methods that most teachers use were not developed out of research and theory; they arose out of tradition, familiarity, or administrative necessity. This does not make them good or bad, but when informed by theory, such teaching can usually be improved. She notes that there are a number of distinct advantages of formal theories of education over implicit theories. Formal theories tend to be more organized, internally consistent, and more thoughtfully researched than most implicit theories of instruction. When instructors have the occasion to examine and compare their

implicit theories of education to formal theories, as one might expect, they find support but also areas of disagreement. Areas of disagreement can be productively examined as an opportunity for growth and reflection.

Surely, no instructor is required to choose among theories at all; however, he or she may use theories as a different way of viewing a situation in order to arrive at new and improved alternatives.

In discussing the theories and metaphors which guide practice, Svinicki (1991b) and Clawson (1997) note that how and what we teach depends on our beliefs about how learning takes place, what motivates students to learn, and what our roles are as teachers. Our beliefs sometimes take the shape of theories (implying cause-effect relationships) or metaphors. Svinicki (1991b) contends that we can develop as teachers if we critically examine the assumptions underlying our theories and metaphors by testing them.

Recent research and theory, as well as Professor Y's evidence, support the key notion that the student is the dominant actor in the learning process (Ackoff, 1999). For the learner to become more effective it is clear that actions must be taken by students to connect new information to their established knowledge. To continue our metaphor, we can help plants to grow by providing nutrients and favorable growing conditions, but ultimately they must grow themselves. In order for students to succeed they must choose to use their ability and motivation when provided with the appropriate opportunity for learning to occur.

This paper reports on the success of a seminar-based discussion class that was drastically improved by developing principles consistent with current learning theories. The lecture approach while being extremely effective for conveying important information, from our perspective, had some definite limitations. In

particular, students were not active enough in receiving and storing the information; they did not capture key pieces of information. Professor X, using a case-based discussion approach has developed courses fully integrating and applying theories and principles described in this paper with similarly successful results. In fact, his courses were identified as best in the best practices studies from 1999-2001 reported here. One might conclude that seminar and case-based courses are more amenable than lecture-test approaches to openly engaging students and providing the learning environment and context necessary for the manifestation of learning principles underlying different aspects of learning theories.

In the broader scheme of things, we have presented a mosaic of cognitive and learning theories as well as specific approaches designed to enhance teaching effectiveness while simultaneously enhancing student learning. We recommend a passionate spirit of inquiry with the information presented: read about and try a different approach, collect data, analyze the data, reflect deeply and unhurriedly on the newly created knowledge (Daudelin, 1996), and learn from it. In our situation, we follow a more formal procedure of continuous learning known as an After Action Review or AAR (Garvin, 2000; Sullivan and Harper, 1996). We answer four questions: What were we trying to do? What happened? Why did it happen? What did we learn? After this fourth question we identify what should be changed and what should be sustained. We take action on this new learning and the cycle of experimentation and reflection, similar to the Deming- Shewhart model (Scholtes, 1998) of Plan, Do, Study, Act begins again.

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Appendix 1

EMBA Program Overview

EMBA First Year Curriculum: The Skills Year

Residency -- Executive Development

Session 1	Session 2	Session 3
Organizational Behavior	Managerial Economics	Macroeconomics
Financial Reporting and Analysis	Managerial Accounting	International Business
Statistical Methods for Executives	Executive Decision-Making/Marketing Strategy	Research for Marketing Decision-making

EMBA Second Year Curriculum: The Applications Year

International Residency -- Executive Development

Session 1	Session 2	Session 3
Financial Management	Financial Applications	Issues in Law and Corporate Social Responsibility
Marketing Management	Operations Management	Managing Organizational Change
Management of Information Technology	Conflict Resolution and Negotiation/Corporate Policy and Strategy	Corporate Policy and Strategy

Appendix 2

Score Distribution by Year on Teaching Effectiveness Question

<u>Year</u>	<u>Section</u>	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>
1993	1	9	13	1	0
1993	2	1	8	9	8
1993	3	8	24	4	0
1994	4	22	9	2	0
1994	5	10	15	8	2
1995	6	8	8	3	0
1995	7	5	12	3	0
1995	8	1	7	3	3
1996	9	19	6	0	0
1996	10	30	6	2	0
1997	11	27	1	0	0
1997	12	23	7	1	0
1998	13	26	1	0	0
1998	14	24	6	2	0
1999	15	33	6	0	0

Appendix 3

Distributional Composite Scores for Lecture-Style vs. Seminar Style Teaching Approaches

	<u>Sections</u>	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>
Lecture-style	1-6	58/167 34.7%	72/167 43.1%	27/167 16.2%	10/167 6.0%
Seminar-style	9-15	182/220 82.7%	33/220 15.0%	5/220 2.3%	0/220 0.0%

Appendix 4

Professor's Summary of Before (Lecture-Style) and After (Seminar-Style) Descriptors

BEFORE

LECTURES
TESTS
TELLS OF WORLD ECONOMY
SELECTS KEY IDEAS
SELECTS HANDOUT MATERIALS
STUDENTS DO LITTLE HOME WORK
PROFESSOR SELDOM GRADES WORK
GIVES LITTLE NARRATIVE FEEDBACK
FOCUSES ON PROBLEM STUDENTS
ALOOF
MOSTLY ONE DIRECTION CONVERSATIONS
EXPECTS TO SEE NOTE TAKING
DOMINATES CONVERSATIONS
LEARNED FEW NAMES (+- 3 SIGMAS)
USED NO NAME PLATES, PHOTOS, ID AIDS
HUMOR
MUCH MATH
INSISTS ON BEING HEARD
SOME INTERPRETATION OF DERIVATIONS
WEAK INTEREST IN OTHER BUSINESS AREAS
NOT AWARE OF STUDENTS' LIVES
LITTLE EYE CONTACT
NO INTENDED USE OF BODY ENGLISH
ALWAYS AT THE BLACK BOARD
IN FRONT OF STUDENTS
PRESIDING--THE EXPERT
IN CONTROL/LITTLE PERSONAL RISK
LECTURE,, LECTURE, TEST, REPEAT
SEVERAL TESTS/SEMESTER
FEW PEER CONVERSATIONS
CLASSROOM WITH ROWS OF DESKS
VERY LITTLE PROJECTOR USE
MANY GEOMETRIC CHALK PRESENTATIONS
CHALKING/TALKING SIMULTANEOUSLY
LECTURES TO AUGMENT TEXT
ASKED MANY "WHAT IS THE ANSWER?"
SELDOM ASKED "WHY?"
MULTIPLE CHOICE EXAMS
NONE OR ONE BIG PAPER
DIFFICULT EXAMS WITH BIG VARIANCE
VARIANCE NEVER DIMINISHES
MEAN NEVER RISES OR FALLS VERY MUCH
MANY WORDING-OF-QUESTION DISPUTES
ESSAY EXAMS EXPECTED REGURGITATION
PROFESSOR REQUESTS STUDENTS TO CALL
EXPECTS WEAK STUDENTS TO FAIL
UPSET WITH NO IDEA RETENTION
PROFESSOR LOVES SOUND OF OWN VOICE
PROFESSOR ASSERTS BROAD APPLICABILITY
STUDENT ABSENTEEISM NOT AN ISSUE
FEARS AGING HUMAN CAPITAL
SEES WIDENING AGE GAP WITH STUDENTS
INSULARITY INDUCES DISCONNECTS

AFTER

LISTENS
GRADES PAPERS
HEARS OF WORLD ECONOMY
STUDENTS SELECT KEY IDEAS
HANDS OUT GOOD STUDENT PAPERS
STUDENTS SUBMIT ESSAYS EVERY MEETING
PROFESSOR ALWAYS GRADES WORK IMMEDIATELY
GIVES MUCH POSITIVE FEEDBACK
FOCUSES ON ALL STUDENTS
PARTNER
MOSTLY SEVERAL- PERSON CONVERSATIONS
EXPECTS TO SEE LISTENING AND DISCUSSION
ENCOURAGES STUDENT CONVERSATIONS
LEARNS ALL NAMES BY THIRD WEEK
USES ALL AIDS, MOSTLY HANDING BACK PAPERS
HUMOR
LITTLE MATH
WAITS TO BE ASKED TO LECTURE IN DEPTH
SEVERAL INTERPRETATIONS OF ALL DERIVATIONS
CONSTANT APPEAL TO INTERACTION OF BUSINESS AREAS
EXPECTS STUDENTS TO REVEAL INTERACTION WITH MATERIAL
MUCH EYE CONTACT
PRACTICED BODY ENGLISH
OCCASIONALLY AT THE BLACKBOARD
AMONG THE STUDENTS
SOMETIMES ON SIDELINES/SITTING--PARTICIPANT
FACILITATION/RISK OF UNFAMILIAR STUDENT INTERESTS
HEAR, DISCUSS, READ, WRITE COMMENTS, GRADE, REPEAT
EVALUATED WORK RETURNED EACH MEETING
MANY CONVERSATIONS
CLASSROOM WITH TWO U-SHAPED TABLES
VERY LITTLE PROJECTOR USE
FEW CHALKED UP DIAGRAMS
USE OF VERBALLY DESCRIBED IMAGES
LISTENS TO STUDENTS PRESENT TEXT SELECTIONS
NEVER ASKS "WHAT IS THE ANSWER?"
OFTEN ASKS "WHY?" OR "WHAT DO YOU MEAN?"
NO EXAMS
BRIEF PAPERS DUE EVERY SESSION
GRADED PAPERS THAT CONVERGE TOWARDS THEIR BEST WORK
VARIANCE ALWAYS DIMINISHES
MEAN RISES TO "A" WORK
NO WORDING DISPUTES
ESSAYS ARE WEAKLY BOUNDED AND NO REGURGITATION
STUDENTS HAVE CONSTANT ACCESS
REFUSES TO LET STUDENTS GET INTO FAILURE MODE
EXPECTS LONG TERM RETENTION OF SOME IDEAS
STUDENTS LOVE SOUND OF THEIR OWN VOICES
STUDENTS SHOW BROAD APPLICABILITY
STUDENTS MUST SHOW UP/DRESS TO PLAY/PLAY TO WIN
USES EXPERIENCE AS AN ASSET
SEES WIDENING AGE GAP WITH STUDENTS
STUDENTS REVEAL INTERESTS VIA THEIR PAPERS