

**Developments in Business Simulations and Experiential Learning, Volume 32, 2005**  
**ACTIVE LEARNING: WHAT IS IT AND WHY SHOULD I USE IT?**

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**ABSTRACT**

*In this panel presentation, we will begin by introducing the arguments for active learning, review the literature's definitions of active learning, and then present specific examples of active learning in four disciplines: accounting, finance, statistics, and organizational behavior. After the panelists speak, there will be audience interaction around several topics: the usefulness of active learning, reasons why active learning has not been more fully integrated into the classroom, and strategies to address the introduction of more active learning in our Business School classrooms.*

**ACTIVE LEARNING: WHAT IS IT AND WHY SHOULD I USE IT?**

In this panel presentation, we will begin by introducing the arguments for active learning, review the literature's definitions of active learning, and then present specific examples of active learning in four different disciplines. After the panelists speak, there will be audience interaction around several topics: the usefulness of active learning,

reasons why active learning has not been more fully integrated into classroom, and strategies to address the introduction of more active learning in our Business School classrooms.

Over the last 30 years, numerous reports on the state of higher education and a growing body of research on learning theory have challenged the way we think about teaching (Astin 1985, Boyer 1987, Chickering and Gamson 1987, Cross 1987, Serva and Fuller 2004, and Study Group 1984). Furthermore, students' and clients' expectations about the value of education have made us question the validity of the lecture method of instruction (Bonwell and Eison 1991, Johnson, Johnson, and Smith 1998, Meyers and Jones 1993, and Senge 1990). The meaning of "knowing" has shifted from being able to repeat and remember information to being able to find and use it. Active learning is a pedagogical modality that can assist our students in meeting the ever-changing demands of the knowledge society.

What is active learning? Though the term "active learning" has never been precisely defined in the literature, the table below presents some commonly used terminology.

TABLE 1  
 Definitions of Active Learning

Definition	Author/Source
Multi-directional learning experience in which learning occurs teacher-to-student, student-to-teacher, and student-to-student.	Active Learning Online, The Abilene Christian University Center for Teaching Excellence <a href="http://www.acu.edu/activelearning/focus.htm">www.acu.edu/activelearning/focus.htm</a>
Anything that "involves students in doing things and thinking about the things they are doing"	C. Bonwell and J. Eison, 1992, p. 2
Is defined in contrast to the worst of traditional teaching in which teachers actively present information and students passively receive it	C. Meyers and T. Jones, 1993, p. 19
Any instructional method that engages students in the learning process	M. Prince, 2004, p. 224
Any teaching style that maximizes student participation in the learning process	M. Johnson and C. Malinowski, 2001, p. 172

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Is active learning effective? The literature on active learning is expansive. Publications can be divided into four types based on their content: articles which provide analytic research on the process of learning, articles which provide descriptive summaries of an active learning project, descriptive summaries with assessment, and meta analysis of assessment studies. Active learning has been shown to be comparable to lecture for content and superior to lecture in promoting development of students' skills in thinking and writing (Bonwell and Eison 1991). Active learning develops independent learning skills and the ability to apply knowledge (Sivan, Wong, Woon, and Kemper 2000). However, a few studies have shown that the effects may be small for some types of activities (Prince 2004, Gosen and Washburn 2004).

Within business schools, the need for change in teaching focus is important for two reasons. First, business schools have been pressured to improve their educational products because of questions raised about the relevance of our current learning focus (Pfeffer and Fong 2002, Porter and McKibben 1988, Senge 1990, and Serva and Fuller 2004). The changing business environment requires that schools prepare students to be lifelong learners, adaptable team players, and critical thinkers. The most prevalent form of instruction, passive learning (lecturing and testing on memorized information), stresses individual achievement and does not prepare students to enter or advance in the workplace. Secondly, the accreditation process for business schools requires that faculty and students be actively involved in the learning process (AACSB standards #13 and #14). "(I)ndividual teaching faculty members" must be responsible for "actively involving students in the learning process."

With these pressing reasons for change, why does "chalk and talk" methodology continue to dominate in the business school classroom (Christoffersen 2002)? Some of the barriers to change are the cost to faculty and the lack of rewards for developing and delivering active learning designs. Maybe prevailing misconceptions play the dominant role. "James Watson, who won a Nobel prize as codiscoverer of the double-helix DNA molecule, recognized this when he stated, 'Nothing new that is really interesting comes without collaboration.' Despite the remarkable achievements of academic teams, the myth of the genius individual still exists; it underlies educational practice that assumes that each student should work separately and apart from classmates." (Johnson, Johnson, Smith 1998, p. 2).

## REFERENCES

- AACSB International (2004). Eligibility Procedures and Accreditation Standards for Business Accreditation. 600 Emerson Road, St. Louis, MO.
- Astin, A. W. (1985) *Achieving Educational Excellence*. San Francisco, Jossey-Bass.
- Bonwell, C. and Eison, J. (1991) *Active Learning: Creating Excitement in the Classroom*. ASHE-ERIC Higher Education Report No. 1. Washington, D.C.: The George Washington University, School of Education and Human Development, p. 2.
- Boyer, E. (1987) *The Undergraduate Experience in America*. New York, Harper & Row.
- Chickering A. W. and Gamson, Z. F. (1987). Seven Principles for Good Practice. *AAHE Bulletin* 39, 3-7.
- Cross, K. P. (1987). Teaching for Learning, *AAHE Bulletin* 39, 3-7.
- Gosen, J. and Washbush, J. (2004). A Review of Scholarship on Assessing Experiential Learning Effectiveness. *Simulation & Gaming*. 35 (20), 270-293.
- Johnson, D. W., Johnson, R. T. and Smith, K. A. (1998). Cooperative Learning Returns to College. *Change*, 30 (4), 26-36.
- Meyers, C. and Jones, T. B. (199). *Promoting Active Learning*. San Francisco, Jossey-Bass.
- Pfeffer, J. and Fong, C. (2002). The End of Business Schools? Less Success than Meets the Eye. *Academy of Management Learning & Education*. 1 (1), 1-24.
- Porter, L. W. and McKibben, L. E. (1988). *Management Education and Development: Drift or Thrust into the 21<sup>st</sup> Century*. New York, McGraw-Hill
- Prince, M. (2004). Does Active Learning Work? A Review of the Research. *Journal of Engineering Education*, 93 (3), 223-232.
- Senge, Peter (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization*. Doubleday.
- Serva, M. and Fuller, M. (2004). Aligning What We Do and What We Measure in Business Schools: Incorporating Active Learning and Effective Media Use in the Assessment of Instruction. *Journal of Management Education*, 28 (1), 19-38.
- Sivan, A., Wong, R., Woon, C. and Kemper, D. (2000). An Implementation of Active Learning and its Effect on the Quality of Student Learning. *Innovations in Education and Training International*, 37 (40), 381-390.
- Study Group on the Conditions for Excellence in American Higher Education (1984). *Involvement in Learning: Realizing the Potential of American Higher Education*. Washington, DC: National Institute of Education/U.S. Dept. of Education.

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### ACTIVE LEARNING IN BUSINESS STATISTICS – A COOPERATIVE GROUP ACTIVITY

#### Learning Objectives

- Understand the difference between interval and nominal data
- Know how to calculate the mean and standard deviation
- Understanding significant difference
- Know how to do a t-test on the differences between means

This project is done in two stages. The first stage is undertaken as we cover basic descriptive statistics such as means and standard deviations. The students are grouped into pairs, usually one male and one female. A small size group reduces the risk of the free rider effect, but with a large class size the amount of time spent on group reporting can be prohibitive. I try to keep the number of groups to ten or less, but I always assure that there is a gender mix within the group.

In class, the student groups are asked to choose a data item of interest to them. The data must be an interval variable and the information must be collectible from at least 20 male and 20 female friends or family members. They are told that the objective is to calculate the mean and standard deviation. I let the groups work together for about ten minutes to come up with ideas. Each group then puts their chosen variable on the board. Invariably some groups select a variable that is nominal. We have a class discussion on the merits of each group's selection and the ability to calculate a mean from the data. After the data is collected, the means and standards deviations are calculated separately for the male and female groups. The students pass in a report as well as briefly summarizing their findings to the class.

The second stage is completed after we have studied hypothesis testing. The students are requested to review the data they collected and are then asked whether there are differences between the females and males. Since I have a copy of their original report, I first call on the groups whose data indicated large gender differences. Then I call on groups that had small differences. The students usually begin by reporting the differences in the mean values, but, through discussion, the idea of a sample data versus population data emerges. After they agree that their collected data consisted of a sample, I ask the same question again about gender differences. At this point the groups realize that hypothesis testing can be used to indicate differences. Each group then calculates t-values and p-values for their data and reports back to the class.

Some examples of data collected that have shown gender differences are number of hours slept per night, number of alcoholic drinks consumed per week, summer earnings, GPA (are women smarter than men?), and number of CD's owned.

### ACTIVE LEARNING IN THE FINANCE CLASSROOM EXAMPLE 1 FINANCIAL STATEMENT ANALYSIS

Students work in groups (or individually) on laptop computers in the classroom for approximately 2-3 weeks when the chapters on Financial Statements, Ratio Analysis, and Financial Planning and Pro Forma Statements are covered.

The students are provided with an alphabetical list of a firm's account titles and end of year balances. They are required to construct an Income Statement, Statement of Retained Earnings, Balance Sheet, and Statement of Cash Flows using Excel. This portion of the exercises allows the students to review basics of financial statements, what they tell the reader and proper accounting format. Using the constructed statements, students then compute several financial ratios. Once these ratios have been computed, students are asked to compare the firm's financial position with the industry based on the averages provided. A discussion of ratio analysis in general and identification of specific problem areas for the firm is held.

After the students have discussed several forecasting techniques, they prepare a financial forecast for the next year using the percentage of sales method. They then repeat their ratio analysis using the projected financial statements. The required output is: Printouts of both years' statements and the ratio analysis.

Students are graded on the correctness of their answers and the design format of their spreadsheet. A well-constructed spreadsheet allows the student to see how changes in some key assumptions impact financial ratios

#### Example 2 Is One Stronger Than The Other? Can You Do Better?

Financial Statements for Caterpillar Inc. and Deere and Co. Inc. are provided. Students are required to do a thorough analysis of the two corporations and compare their strengths and weaknesses. They are encouraged to visit: [www.cat.com](http://www.cat.com) and [www.deere.com](http://www.deere.com) for current financial reports and more.

Students are expected to be able to discuss the following:

- Asset management ratios (inventory, collection, fixed assets), and their trends.
- Inventory management and accounts receivable management.
- The effects of a reduction in inventories by 20%.
- The effects of being able to reduce their receivables by 20%?
- Each firm's capital structure and cost of capital.
- The different operating strategies (such as products, market areas).
- Each firm's strengths and weaknesses.

#### Example 3 Internet Scavenger Hunt (adapted from Leonard & Leonard)

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The first day of class, students are asked to provide the teacher with one or two questions, related to the class, that they would like to have answered by the end of the term. The students are also asked to list one or two organizations about which they want to know more. The teacher then takes their questions and companies and develops a list based on the particular interests of the class.

Students are required to use any Internet source to answer the finance related questions (this could easily be used other classes). Students are told that there might be several sources that correctly answer the question AND there might be more than one correct answer. They then prepare a brief report that indicates the answers to the questions and provides the source as an appendix.

A classroom discussion of the answers reinforces both the strengths and weaknesses of the Internet as a resource. It also introduces students to websites that provide financial information: for many students this is the first time they have explored any finance related resources.

Sample questions include:

- What firms comprised the Dow Jones Industrial Average on January 1, 2004 and how is it computed?
- What is the percentage change in the Dow Jones Industrial Average between December 31, 1988 and December 31, 2003?
- What was the dollar amount that each of these firms invested in fixed assets (i.e. their capital budget) during 2003: General Electric? Daimler Chrysler? Dell Computer?
- What three mutual funds have had the highest rate of return over the past One Year? Five years? Ten years?
- What is the Standard & Poors current bond rating for Verizon? Kraft? Anheuser-Busch?
- What is the SEC? When was it created and what are a few of its functions?
- What is a 401k? Can anyone start one?
- Define and list the **current** value for the: Prime rate, Federal Funds rate, and discount rate? How are these rates tied to the general economy?
- What is the name of a company whose stock price increased in 2002 or 2003 but that reported a net loss the same year? Provide the beginning and ending stock price and the amount of the new loss reported.
- What are the 4 Cs of Credit? How do they impact loan decisions?

### References

- Leonard, Nancy and Thomas Leonard (1996) "Internet Scavenger Hunt," *Developments in Business Simulations and Experiential Learning*, 23, 171-172.

## ACTIVE LEARNING OF OB THROUGH CLASSROOM CONSEQUENCES

My class in organizational behavior is active on a number of levels. It uses exercises. There is active application of theory to relevant learner experience. The learner makes active choices that have important consequences. I use the Cohen-Fink (Gadon and Willits) model which "uses the students' experience in the classroom as a basis of learning about and developing skills in the subject matter of the course" (Instructor's manual pg. 1). This method is active, experiential, easy, and sensible.

Basically the model consists of putting students in ongoing-semester-long groups, groups that are responsible for developing projects (case analyses and class presentations) that have consequences for the students, in the form of grades. Thus the students' on going group experience involves making and implementing decisions that have meaningful consequences for them as individuals. As they go through the semester, they learn theory which is designed to a great degree to be applicable to a long-term team experience, so as they go through the semester experience they are learning theory that applies to the experience that they are undergoing. To top it off, they must write a 10-20 page paper worth 35% of their grade analyzing their ongoing group experience in terms of the theory that they have been studying all semester.

It should be noted that the consequences for these students are not just grades. People in ongoing groups, whether students in the classroom or departments in real world organizations, make friends, organize, and develop cohesion. Decisions and behavior in these groups affect these friendships, the way groups organize, and team cohesion, as well as individual achievement (in the form of pay or other forms of recognition such as grades). So whatever the group or individuals decide and how people behave generates complex consequences. Learning involves following group developments and understanding impact of decisions, including the impact of one's own choices.

So this is active and experiential in a meaningful way. Students get to act and decide about experiences that are meaningful, often very meaningful, and they get to watch and analyze the effects of their decisions and actions, effects that are often emotional. The majority of students are emotionally involved in their experience in this course. They make real friendships; they get honestly angry with each other; they often intensely like or dislike their group experience. Once again to top it off they then write a paper about this experience, and use the theory of the course to analyze the experience. It is easy for many of these students to become involved in using course theory to write an analytic paper, and for any student who wants to, this is a course easy to learn from. Therefore this course is not only active in that the students act and analyze their actions, but students actively apply theory and actively choose which theory is most appropriate to apply to their own experience.

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This course makes sense, in that it is (and should be) helpful for the student's future. It gives students real, meaningful, and active experience in trying to lead and influence when influencing has consequences, in dealing with slackers, in setting up evaluation systems that are fair, in distributing labor, in deciding how to prioritize achievement vs. team spirit, and in deciding how honest to be – all skills and decisions that managers and team members must acquire and make as they live their lives in real organizations.

### AN APPLICATION OF LEGOS IN A MANAGERIAL ACCOUNTING COURSE

This LEGO exercise, developed by Sherry Mills, introduces students to the basic tenets of cost accounting. The exercise includes more complexity than most students are used to. Below, the simpler version of the exercise is explained first, followed by a more sophisticated version.

#### The Basic Exercise

Legos have been used to introduce students to cost accounting terms in a production environment. Professors have students build a product (usually a car, space shuttle, etc.) using the Legos. They are able to define the basic elements of job order costing. These definitions include:

- ☐ Job order costing
- ☐ Process costing
- ☐ Direct Materials
- ☐ Direct Labor
- ☐ Overhead
- ☐ The three types of inventories in manufacturing: raw material, work in process, and finished goods.

#### A More Complex Version

The above exercise provides a basis for introducing more complex material. This version draws in additional concepts and provides more active participation from the class. The main concept is to produce a given number of cars using two methods:

- ☐ The traditional production line where each employee knows only his/her job, and
- ☐ The just in time environment which requires a teamwork approach where everyone helps each other as much as possible.

The methods have the same requirements in terms of people and equipment. The roles include a storekeeper responsible for the raw materials, a runner to get things from the storeroom and bring them to the production team, a three-member production team, a quality control team to check for errors, and a supervisor, who is usually the instructor.

The materials are maybe a little more difficult to collect and assemble than it would appear. These include:

- ☐ Seventeen sets of Legos aimed at three – five year olds. There should be no more than 25 pieces in each box. The order in which the pieces are assembled must also leave room to create

bottlenecks in the middle of the production line. In addition, a spot of nail polish (a garish, bright color is best) is applied to some of the pieces to make them “defective” so that they will have to be replaced.

- ☐ Three sets of fifteen paper cups in different sizes are used to separate the Lego pieces into three groups. The groups represent the parts each of the production people will be using (for the basic product line).
- ☐ Fifteen paper plates that have dividers which separate the plate into three distinct sections (these are used for the just in time application).
- ☐ A small stack of paper to make requisitions.
- ☐ A timer to measure time.
- ☐ A small water pistol gun which is used to apply grease to the wheels.
- ☐ Sets of directions for assembly if pieces are removed from the model.

#### Executing the Exercise

On the first day of the exercise the students are asked to form groups of three to four people. Each group is then given a model to “play” with. While the groups are putting the model together, the teacher can explain the basic cost accounting terms mentioned above as well as other additional terms. The students get practice putting the models together which should improve their dexterity for the second class.

On the second day of the exercise, the classroom is rearranged so that, in the front of the room, there is a table for the storekeeper, a table long enough for three production workers, and a table for the quality control team. The professor asks for volunteers for the above roles plus that of the runner. Another student is given the timer to set a total amount of time for the process. Between the bottlenecks and the requests for missing pieces (which must be on a requisition form signed by the supervisor) the production line goes quite slowly.

After the “production run” is completed, other volunteers do the project based on the just in time approach which requires a teamwork and interactive approach. Although the same rules apply for starting and finishing, production members can look for defective pieces and get them replaced, partially assemble the product which in the earlier version could only be assembled by the person who was creating the bottleneck, and make sure that all the pieces were assembled in the correct order.

The exercise ends with a debriefing period.