TEACHING SERVICE LEARNING USING A BUSINESS GAME ROLE-PLAY SIMULATION

A. Andrea Licari
St. John's University
licaria@stjohns.edu

Albert C. Ovedovitz
St. John's University
oved6@aol.com

ABSTRACT

In order to give both service learning and management concepts a foundation so that young inexperience college students can better understand how organizations function, we have used the teaching method of a business game project within a service learning setting. The role-play game provided a frame of reference on which the student could better comprehend the abstract management concepts needed, in order to work in organization today. The service learning arena helps bridge the gap between theory and application. The following study compares two educational treatments in order to teach management concepts; one using traditional lecture format and the other role-play simulation in a service learning setting. Key words: service learning, theory and application, role-play simulations, experiential learning.

INTRODUCTION

In the search to make management education more effective, the immediate classroom environment is inevitably part of the equation, however the classroom is not the optimum place in which to convey the subject of management. Much of what we teach is the *process* of management and this may be taught best by demonstration or action learning. Introducing the student to a management experience through business games/simulations may be a more effective method of instruction in dealing with this challenge. Educators must face the problem of integrating management content and norms and conveying within the classroom setting, the realities of rank, specialization, systems integration and global management complexity (Young & Gilson, 1986, 1987; Klein, Fleck & Wolfe, 1993).

When presented with management concepts through traditional lectures in the classroom, students may have difficulty in clearly visualizing the topic due to lack of experience with the new information. Most students lack a frame of reference. They are taught concepts and theories, but do not have a setting in which to practice, apply or evaluate what they are taught. Students do not understand specialization of labor functions as a piece of a system, nor do they comprehend the synergism of the systems approach of specialization. Taking this a step further, when specialization and systems integration become global in nature, students are lost and remain so because they do not understand or visualize the basic concepts on which they are predicated. Consequently, students do not experience the *operational structure* of the managerial concepts presented to them in lecture formats. So what if we could take the student and place them in an organization to experience the *operational structure* of the management concepts, and at the same time the student could see their contribution to that organization and learn from the service experience. What if we could combine a role-play simulation within a service learning setting Would the service learning arena aid the students in their concept acquisition process of the management principles?

SERVICE LEARNING ROLE-PLAY MODEL

This study was derived for a larger research project developed during the mid-1990's, incorporating over 1000 American students. This particular study is part of on going project which is measuring other types of teaching treatments. The role-play/game model used for these studies and the international research, all utilized "The Business Game: Reality What An Interesting Concept" (Licari, '86, 95). The original role-play simulation was written in order to give a foundation to abstract business concepts in a student oriented (controlled and directed) *business structure*. For *this* study the business game provided the structure the students used *for their project within a service learning setting*. Using service learning projects strengthens the educational experience for students by providing a unique opportunity to develop skills as integral elements in the teaching/learning process (Misra and Ballard, 2003). A number of scholars (Gujarathi and McQuade, 2002 Rama, 2000, Vangermeersch, 2001) have indicated that service learning assignments fit the intent of the business program but also promote the goals of management education.

The service experiences can give students a context within which to place the course content, that increases the quality and depth of their understanding. Applying their subject knowledge as soon as possible after learning the business concept, strikes a needed balance in the theory application continuum. Thus we need to develop teaching methods that help students process and make better use of the information outside the context (classroom) in which it was initially learned (Brady and Coulter, 2002). If subjects such as business, have obvious practical applications, the search for this balance is one echoed throughout the wider literature on university-levels of business education. It is encapsulated in the notion that both theory and practice should be the goal of a university education without sacrificing theory when incorporating practical, experiential learning (Bain, 1990).

The students who took part in this study were self-assigned into groups. Embedded in the game process (six sequential steps) are the foundation concepts, (Appendix A). which were measured through a *pre* and *post* measurement instrument (Appendix B). The experience generated by the students' through their role-play game process becomes the active learning tool that aided the students in acquiring the management concepts (Licari, Ovedovitz, 01,02). It is the contention that the active learning technique has a profound effect on performance. (Gordon & Armour-Thomas, 1992). The positive learning environment makes using the role-play simulation within a service learning organization both easy to use and measure the concepts acquired.. The service learning group project can become the conduit that bridges the gap between theory and application. It may permit the learner to see their contribution through application and the instructor to comprehend the power of using the dynamics of a real organizational setting.

SIMULATIONS AND GAMES ADDRESS THE NEEDS OF TODAY'S STUDENTS

Today's students need to know how management concepts function in real settings. It is also important for students to understand the *operational structure* of these concepts. College classes emphasizing lecture leave students at best still thinking about how they would handle the problem if they had to face it tomorrow (Linowes, 1992). The use of a simulated role-play game in a service learning setting permits students to act out what they think they have understood after being given the concept definitions. The role-play addresses the shortcomings accompanying the classroom lecture activity by focusing the lesson on a simulated management experience and reflection on this experience (Schön, 1983, 1987). In most cases, when students employ management concepts through a role-play situation, students have had to reflect on what they are undertaking. The simulation captures the dynamic complexity of the whole (process). It gives students some control over their learning processes by making the complex come alive and thus easier to understand, replicating the sociodrama of Shakespeare's theater.

METHODOLOGY ABSTRACT

The study took place in 2003 within a major northeastern university. This study came from a much larger study. One management professor taught two sections of an Introductory Business course. A quasi-experimental format comparing two different teaching treatments; traditional lecture (L), and service learning project using the business game (SL). Each class had one teaching treatment applied taking up about about 15% of class time. Then measurements were taken to evaluate the amount of knowledge acquired by individual students on sixteen management concepts(taken from the assigned text of the original study, Appendix A). A *pre-measurement* (Appendix B) was taken at the beginning of the learning period and a *post measurement* (same measurement instrument) at the end of the experimental period. The difference between these two measurements was an indication of *concept knowledge* learned. The *concept knowledge* that was measured was part of the material taught in the business course within the different classes.

RESEARCH DESIGN

This study is designed to compare undergraduate students' learning introductory management concepts through exposure to either a traditional lecture method, or a service learning project. The treatment comparison is measuring concept acquisition learning gains from the two teaching methods. The study will answer the question: Do students learn more from exposure to a traditional lecture given in a classroom or to exposure to a service learning project.

It is hypothesized that through the use of a service learning project, students increase learning of basic management concepts more so than if exposed to traditional management lectures. It is further hypothesized regarding gender that there exist no significant differences with regard to improvement between male and female students.

The design used for this study is a quasi-experimental design comparing two different teaching pedagogies, lecture (L) and service learning project (SL). A *pre-test* was given to the students at the beginning of instruction and a *post-test* was administered at the end of instruction of the basic management concepts.

Two Group Pre/Post Design

	Pre	Post	Diff.
L	31.87	35.81	3.94
SL	30.91	37.91	7.00

The score, designated as the *pre score*, becomes the benchmark measure of the students' initial degree of knowledge of the concepts. At the conclusion of the "six-session training period" allocated to the teaching of these concepts, students are measured again using the same

measurement instrument, yielding a designated *post score.* The difference between the two scores - the post score minus the pre score (the "D" score) - represents the incremental knowledge or learning acquired due to the pedagogical procedure by which students had been taught.

The management concepts are part of the foundation material taught in the introductory management course, thus the material on these concepts is taught early in the semester. The six hour training program, the pre-test, and post-test took place within the first half of the semester's forty hours.

ANALYSIS

The individual student was chosen as the unit of analysis for the study. The analysis is undertaken two parts. First, because random assignment of students to classrooms was not possible, initial equivalence tests were performed between teaching treatments. This was undertaken in order to determine if there are any differences between service learning or lecture courses or by gender. This is called Pre-test equivalence .

To test the hypothesis concerning the effect of the instructional treatment, the derived "difference score" ("post" score minus the "pre" score) becomes the critical criterion score. Use of the "difference score," which is also called the *matched pairs difference procedure*, is advisable. We are concerned with a change in score of the student and we would like to control for individual differences between students. This is a more powerful procedure than overall group comparisons because variability between individuals has been controlled. One can concentrate on the change of score on a case-by-case basis .

RESULTS

Using a t-test it was established that the service learning students, and the lecture group both exhibited pre-test equivalence (t = 0.93, p=0.362) (Benson, McClave and Sincich, 2001). The service-learning group had an average pre-test score of 30.91. The lecture group had an average pre-test score of 31.87. The group receiving traditional lectures exhibited an improvement of 3.94 points (a 12.35% increase). In contrast, the service-learning group exhibited an improvement of 7.00 points (a 22.65% increase). Both the groups exhibited statistically significant improvements. Chart one shows the overall improvement for both groups.

A comparison between the improvement in the service learning group and the traditional lecture group proved to exhibit a statistically significant difference (t=2.76, p=0.009). The true improvement is estimated to be between 0.812 and 5.313 points with 95% confidence.

ANALYSIS BY GENDER: MALES

An analysis of males by treatment revealed pre-test equivalence (t = 0.26, p = 0.793). Males averaged a score of 32.20 for the control group and 31.75 in the service-learning group.

A comparison of pre- and post-test performance for males indicated that in both scenarios improvement occurred, but the larger improvement in absolute terms occurred in the service-learning group. The average difference was 5.92 points (p-value = 0.000). It is expected with 95% confidence that the true average difference falls between 3.76 and 8.07 points. In contrast the lecture group only exhibited a 3.94 point improvement, p-value =0.002, (1.92 to 5.88 points with 95% confidence).
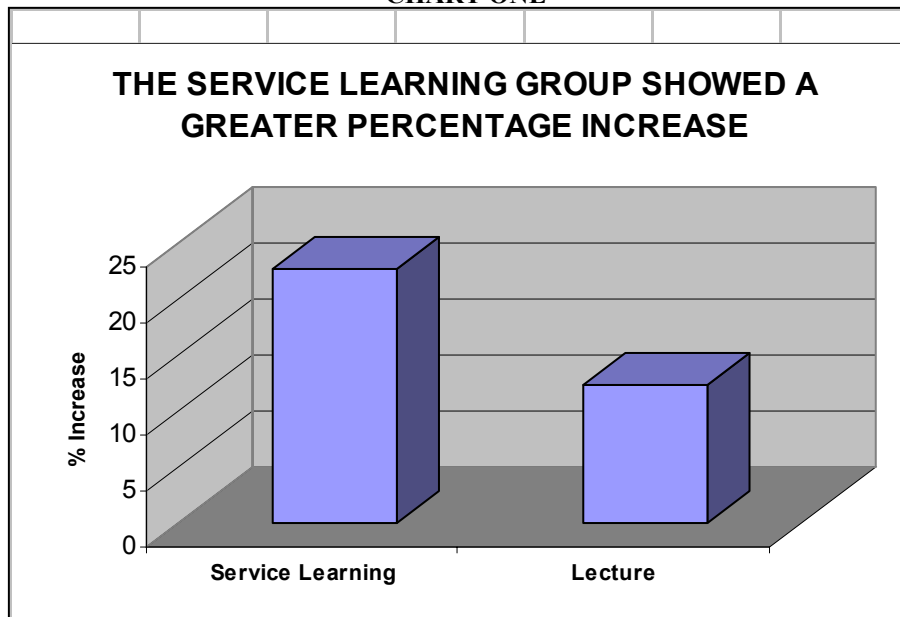
CHART ONE

THE SERVICE LEARNING GROUP SHOWED A GREATER PERCENTAGE INCREASE

CHART TWO

MALES IN SERVICE LEARNING DID BETTER THAN THOSE IN THE LECTURE GROUP

CHART THREE
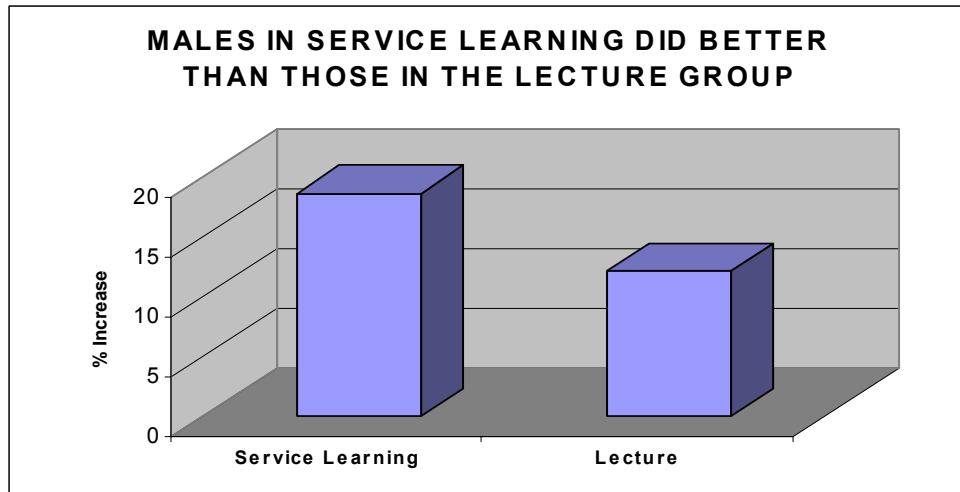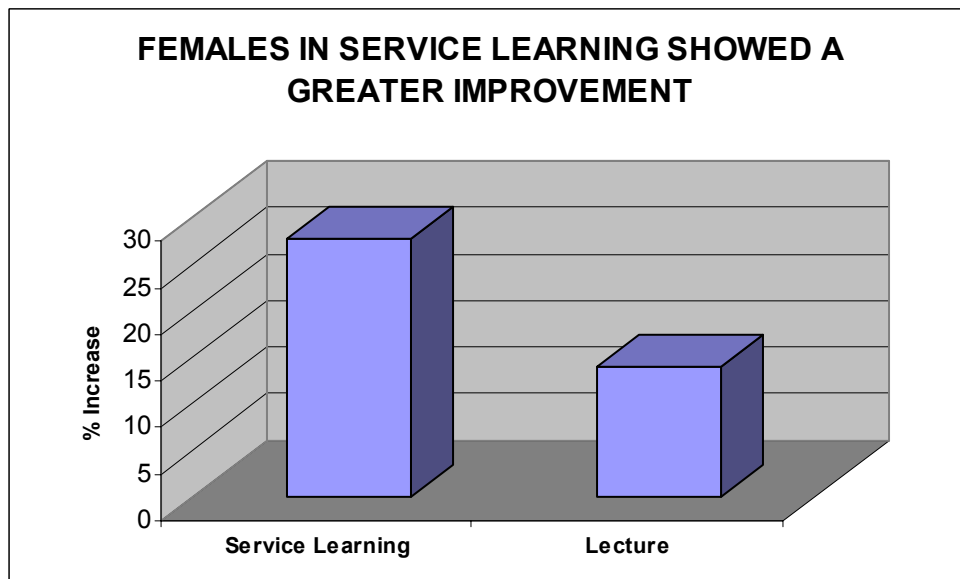

FEMALES IN SERVICE LEARNING SHOWED A GREATER IMPROVEMENT

ANALYSIS BY GENDER: FEMALES

The female groups exhibited pre-test equivalence (t = 0.29, p = 0.776). Females averaged a score of 31.14 in the lecture group and 29.90 in the service-learning group.

A comparison of pre and post test performance for females indicated that in both scenarios improvements occurred, but the larger improvement in absolute terms occurred in the service-learning group. In this group the average performance improved by 8.30 points. The test score rose from 29.9 points to 38.2 points. The improvement was statistically significant. It is estimated that the true improvement was between 4.86 points and 11.74 points with 95% confidence. The lecture group experienced improvement as well, but only 4.33 points. The improvement proved significant (p-value = 0.010).

MALES VS. FEMALES

In the service-learning group a comparison of the improvement in test scores for males and females revealed no statistically significant difference. The findings were similar for the lecture group. There were no significant differences between males and females in any of the cohorts

FINDINGS SUMMARY

This study was to evaluate teaching methods that provide an experience basis for understanding management concepts. We compared two teaching techniques; traditional lecture, and a service learning project using a role-play game, which measured the effectiveness of the techniques in concept acquisition of management principles.

The hypothesis is accepted: management students learn more about management concept through the use of service learning projects than through the lecture method of instruction. Gender played no significant role in the study. On the measurement instrument, both students exposed to service-learning and traditional lecture had an increase of points. This indicated that students exposed to the two techniques learned the management concepts, but the service learning exposed students' scores increased *almost twice* as much as did the lecture-exposed students.

LIMITATIONS: "GENERALIZABILITY"

Service learning projects, simulation and games when introduced into a classroom setting change the basic structure of the environment. The service learning and games, which are considered active learning methods, create new relationship positions and shift the locus of control of the learning process from the teacher to the student. Most active learning outcomes are unpredictable and the ability to make generalized comments from research results is limited. As summarized by Goodman (1992) the activities have an open-ended and unpredictable nature, which makes them difficult for educational researchers to study and for many teachers to use. Active learning projects and games are primarily rule-governed exercises, when the students accept "the rules" they are learning on an "even playing field." For example *The Business Game* used as the active learning project, though it has rules, is still student-governed. Students interpret the rules (the teacher is used only as a sounding board). Students vary in their interpretation of how strictly they obey the rules, which makes the game outcome even more unpredictable.

MEASUREMENT ISSUE

The research objective was to measure acquisition of concept knowledge (including declarative knowledge and operational structure knowledge) due to exposure to instructional technique. However, the measurement tool used was an objective true-and-false instrument that may have assessed more declarative knowledge retained after exposure than concept understanding. The measurement tool used may have decontextualized learning that was being measured. The service learning project which is an active learning processes and a better measurement instrument may have been one that measured the active nature of the project or the game, evaluating learning actually due to that activity. For example, a better measurement may have been to measure the results of the application of a management concept. Thus, a more inclusive study would have been to measure the multi-dimension use of management concepts (concept knowledge plus procedural knowledge) not just an increased understanding and a better recognition of the management concepts that were exercised. In the present study, however, the evaluation that was obtained does measure concept knowledge, including student awareness of the concepts' operational structure. The ability of students to identify the correct definition and correct example of the use of the definition was considered to be indicative of the students' understanding. The students had to "operate the concept" in order to do the service learning project or to play to game.

IMPLICATIONS: PRACTICAL SIGNIFICANCE

Problems in management education today must be addressed if we are to prepare our students for their future careers. Students lack an awareness of a total picture of what is relevant to their education. They go through our educational systems not knowing if the courses they are taking or if the degree they are pursuing will meet their future needs. If students have little exposure to organizations, they do not have any idea what lies ahead for them. They undertake courses of study, and often discard majors and rarely graduate, as prior generations did, in the prescribed four-year period. What students need is a dose of reality. For example, for what does a course in management prepare students? What is it like to be a manager? What are the negatives and the positives of a career in this major?

The active service learning environment solves some of the immediate issue of subject-relevance by permitting students to experience, visualize and reflect on their contribution to the managerial situation. The active learning in the service learning arena is an effective ingredient in learning "realities of management and organizational behavior." The service learning project presents students with some of the competitive realities of the real world. It is difficult to attain the same level of effectiveness with a lecture, since the pressures that are generated by a competitive environment are rarely felt. It is not clear at what point "learning" takes place, during the action of the project or after when the student has had time to reflect on what has happened. The end result is what students take away from the lesson, a deeper understanding of the meaning of what they have just learned.

By "actively" using service learning game techniques, instructors are also introducing the issue of socialization into the learning process. The simulation/game process brings together different people, cultures and genders to work together, which may only take place later in the students' business or organizational careers. The realities of the work place and the positive or negative aspects of working with people from different socio-economic and cultural backgrounds presents itself in the active learning methods (Seidner, 1976; Greenblat & Gagon, 1979). Students are exposed to new subject matter, game/project environment and each other all at the same time. The learning environment should try to reflect what the students should expect in the

work place. The link between experience and reflection is critical to students learning management concepts. Measuring that link is difficult. Continued research into pedagogies that aid students' reflection on their experiences is worthy of further consideration.

REFERENCES

Bain, G. (1990) A Vocational Vortex, *Times Higher Education Supplement*, 23 Feb., p.13

Benson, P. G., McClave, J.T. and Sincich, T. (2001) Statistics for Business & Economics (8th edition). Upper Saddle River, N.J.: Prentice Hall.

Brady, R. G., Coulter, J.M., (2002) Preparing Business School Graduates for the 21st Century Workforce, *College Student Journal*, Jun 2002, Vol.36, Issue 2

Goodman, F.L. (1973). Gaming and simulation. In R.M. Travers (Ed*.), Second handbook of research on teaching*, (pp. 926-939). Chicago: Rand McNally.

_____(1992). Instructional gaming, *Encyclopedia of Educational Research* 6th ed., (pp. 622-626). New York: Macmillan Pub.

Gordon, E.W., & Armour-Thomas E. (1992). Urban education. *Encyclopedia of Educational Research* 6th ed., (pp. 1459-1470). New York: Macmillan Pub.

Greenblat, C.S., & Gagon, J.H. (1979). Further exploration on the multiple reality game. *Simulation and Games 10*, 41-59.

Gujarathi, M. R. and McQuade, R .J.(2002), Service Learning in Business Schools: A Case Study in an Intermediate Accounting Course, *Journal of Education for Business*, Vol. 77, Issue 3:p. 144-151.

Klein, Fleck, and Wolfe, J. (1993), A Role for Management Games in Internationalizing the Business School Curriculum, Journal of Management Education, vol17, (2) p. 159-173.

Lewin, K. (1946), Acton Research and Minority Problems, *Journal of Social Issues*, 2,1, 24-46.

Licari, A.A. (1986) *The business game: "Reality what an interesting concept."* Lexington, MA: Ginn Press, reprint 1995.

Licari, A.A., A. Ovedovitz, (2001) Using Business Games to Teach Management Theory to International Students, *The Proceeding of the Graduate Business and Technology Association*, St. John's University.

(2002), A Comparison Between European and American College Students In Their Concept Acquisition of Management Principles Using a Business Game Simulation Technique, *The Proceedings of the Graduate Business and Technology Association,* St. John's University.

Misra R. and Ballard, D. (2003) Community Needs and Strengths Assessments as an Active Learning Project, *The Journal of School Health*. Vol.73, Issue 7, p. 269.

Ovedovitz, A.C. (2001). *Business Statistics In Brief,* Cincinnati, Ohio, South-Western College Pub.

Rama, D.V., Ravenscroft, S. P., Wolcott, S. K. and Zlotkowski, E. (2000), Service Learning Outcomes: *Guidelines* for Educators and Researcher. Issues in Accounting Education, 15(4), 657-692.

Schein, E.H. (1980). *Organizational psychology* (3rd ed.). Englewood Cliffs, N.J.: Prentice-Hall.

Schön, D. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books. (1987). *Educating the reflective practitioner*. San Francisco: Jossey-Bass Pub.

Seidner, C.J. (1976) Teaching with simulation games. In N.L. Gage, (Ed.), *The Psychology of Teaching Methods*, (pp. 217-251). Chicago: University of Chicago Press.

Vangermeersch, R. (2001). Some Proposed Solutions for the Decline in the Quantity and Quality of Accounting Majors. *The CPA Journal*, Jan. 50-51.

Wolfe, J. (1983). The teaching effectiveness of games in collegiate business courses. A 1973-1983 update, *Simulation and Games Journal*, 16, 251-288.

Wolfe, J., & Roberts, C.R. (1986). The external validity of business management games. *Simulation and Games Journal,* 17(1), 45-59.

Wolfe, J. (1991). The strategic management skill levels possessed by a group of pioneering Hungarian MBA Candidates: A comparative-based study. In H.E. Klein, (Ed.), *Managing change with cases, simulations, games and other interactive methods* (pp. 349-360). Needham, MA: World Association for Case Method Research and Application.

(1993). A history of business teaching games in English-speaking and post-socialist countries: The organization and diffusion of a management education and development technology. *Simulation and Gaming 24*(4), 446-463.

Wolfe, J., & Chanin, M. (1993). The integration of functional and strategic management skills in a business game learning environment. *Simulation and Gaming*, 24, 34-46.

Wolfe, J., & Roberts, C.R. (1993). A further study of the external validity of business games. Five-year peer group indicators. *Simulation & Gaming*, 24, 21-32.

Young, R.K., & Gilson, C.H.J. (1986-1987). The '360' course: A macro/micro foundation for management education. *Organizational Behavior Teaching Review, 11*(3), 104-112.

APPENDIX A
SIXTEEN MANAGEMENT CONCEPTS TO BE MEASURED

1. Delegation -The process of distributing and entrusting work to other persons.
2. Authority - What is delegated by the superior to provide the subordinate with sufficient *rights* of command and action capabilities to carry out the assigned tasks.
3. Responsibility - The obligation to perform that results from accepting assigned tasks, it is a commitment by the subordinate to the supervisor to carry out duties as agreed.
4. Organization - A collection of people working together in a division of structured labor to achieve a common purpose.
5. Formal Structure - The individuals designated to work together as described by the organizational chart.
6. Informal Structure - The undocumented and officially unrecognized structure that coexists within the formal structure.
7. Scaler Principle - There should be a clear and unbroken chain-of-command linking every person in the organization with successively higher levels of authority. This chain of command should be followed when orders are conveyed from higher to lower levels of authority.
8. Unity of Command Principle - Each person in an organization should report to one and only one supervisor.
9. Span of Control Principle - There is a limit to the number of persons one manager can effectively supervise.
10. Parity Principle - Authority should equal responsibility when work is delegated from supervisor to subordinate.
11. Group - A collection of people who regularly interact with one another over time and in respect to the pursuit of one or more common goals.
12. Formal Group - A group created by the formal authority within the organization to help transform resources that input into product or service outputs.
13. Informal Group - A group that emerges within organization without being formally designated by someone in authority for a performance purpose. They are spontaneous subgroups or cliques that develop within formal groups.
14. Individual Role - A set of activities expected of a person in a particular job.
15. Group Norm - The behavior expected of group members, also referred to as "rules and standards."
16. Group Cohesiveness - The degree to which members of a group are attracted to the group and are motivated to remain part of the group.

APPENDIX B
Measurement Instrument
Student Name_____

True/False
._____ 1. The right to command other persons is known as "authority".
_____ 2. The Formal system of an organization is known as its "structure".
_____ 3. A diagram that describes the basic alignment of work positions within an organization is referred to as a job wheel.
_____ 4. Informal structure can benefit an organization by helping over coming gaps in the formal structure.
_____ 5. A fundamental element in vertical coordination is chain of command.
_____ 6. When individuals know to whom they report and know from whom they will receive directions, this is called the scalar principle.
_____ 7. Each person in an organization should report to one and only one boss is called "unity of command".
_____ 8. An organization chart reflects the importance or status of positions.
_____ 9. Spans of control should increase as the number of different types of functions to be. supervised increases.
_____ 10. Authority should be greater than responsibility when work is delegated from supervisor to subordinate.
_____ 11. A formal organization has a social leader.
_____ 12. Task performance and member satisfaction are two key results of group activity.
_____ 13. In the initial integration stage of group development people are concerned with uncovering what is considered acceptable behavior and what the real task of the group is.
_____ 14. In order to increase group cohesion, a manager can increase group size.
_____ 15. The informal group process does not aid in the transformation of resource inputs into product.
_____ 16. Spontaneous subgroups or cliques which develop within formal work group are line groups.
_____ 17. Group performance is superior to individual performance because the group has greater resources.
_____ 18. Formal groups are those that are designated by the organizational chart.
_____ 19. Formal organizations do not tend to expand in size and become more complex.
_____ 20. The expectation of an individuals behavior is defined as their role in an organization.

21. Formal organizations are relatively stable and permanent.
22. The best management span depends upon the manager's personal skill and leadership ability, the workers' skills and motivation, and the nature of the work.
23. Formal organizations do not have formal channels of communication.
24. "Span of Control" means unbroken lines of authority that links all persons in an organization with higher levels of authority.
25. Unity of command principle means that each person in an organization should have only one boss.
26. An organizational chart represents the formal structure of an organization.
27. "Chain of command" is an identification of the total number of employees reporting to one manager.
28. A collection of people who regularly interact with one another over time and pursue common goals is defined as a group.
29. Norms are written codes used by informal groups.
30. Informal groups satisfy the individual needs of members.
31. Key characteristics of work groups are performance norms.
32. Informal groups emerge because they help satisfy social and security needs of an individual.
33. Span of control is not a fundamental element of horizontal coordination.
34. The number of subordinates reporting directly to a manager is known as subordinate control.
35. The process of assigning work to other persons is known as delegation.
36. In delegation, the manager grants authority.
37. Accountability is an element within the "party principle".
38. A manager can delegate responsibility.
39. Responsibility and authority should be of equal weight in relation to "the party
40. Informal structures are always dependent on the formal structure that surrounds them
41. The span of control in an organization is independent of the number of levels in an organization.
42. The degrees of delegation managers adopt is a fairly constant variable.
43. Informal groups are harmful to the organization.
44. Informal role expectation may differ from formal role expectations.
45. The same person can be a member of both a formal and informal group.
46. The role of an individual is a set of activities expected of a person in a particular job or position within the organization.
47. A norm is often referred to as characteristic of behavior that apply to group members.
48. If a member of a group fails to comply with certain rules of the group, they may be.punished with sanctions.
49. One of the most important norms in any group relates to the level of effort and.performance which members are expected to contribute to the group task.
50. Cohesion of groups tends to be high in groups whose members share similar needs and socio-economic backgrounds.