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## A Comparative Study of Tutoring as an Alternate Adult Teaching Methodology Within a Business Environment

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LOYOLA UNIVERSITY

A COMPARATIVE STUDY OF  
TUTORING AS AN ALTERNATE  
ADULT TEACHING METHODOLOGY  
WITHIN A BUSINESS ENVIRONMENT

A DISSERTATION SUBMITTED TO  
THE FACULTY OF THE GRADUATE SCHOOL  
IN CANDIDACY FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

BY

ROGER M. DORE

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## CHAPTER I

### INTRODUCTION

As the third millennium approaches, American business is faced with a number of challenging elements that effect its survival. Three critical factors, among the many, are:

1. Global Competition
2. Downsized Organizational Structures
3. Diminished Pool of Skilled Workers

Global competition has intensively increased throughout the 70's and 80's, causing many organizations to search for ways to produce their products and services as cheaply as possible. One of the quickest methods of reducing cost has been to simply shift the product or service to lower wage workers in other countries. Gordon(1991) has stated that American businesses are continuously finding the workers they need elsewhere on the globe, and often at a fraction of the wage costs of their American workers. Today, a business can transfer data, information, and money anywhere in the world. This more easily enables companies to move jobs to countries such as Mexico and Thailand, where employees will work for less income than Americans . This tendency, according to O'Reilly(1992), although not new, has impacted the American worker in such a way that millions within our labor force



worry not merely about staying employed, but about being retained in jobs that will continue to support their current standard of living.

It has long been observed that the manufacturing base in the United States has continuously declined. Barlett & Steele (1992) have pointed out that in just the ten year span between 1981 and 1991, 1.8 million manufacturing positions disappeared. This represents a decline of 9 percent. In that same time span, although the potential labor force grew by 19.4 million workers, the number of manufacturing jobs declined by 1.8 million. This elimination of jobs was due, in part, to the continuing disappearance of some industries and the transfer of others to foreign nations. These authors have reported that for one of our global neighbors (Mexico) there has been a dramatic increase in jobs. Between 1965 and 1990 a total of 1850 factories employing 530,000 workers have been built there, mostly by American corporations. This work that was once performed by American workers is now being performed by foreign workers at a much lower labor cost. For example, the Zenith Corporation shifted all manufacturing from a plant in Springfield, Missouri to their plant in Mexico. This factory was the last U.S. Television manufacturing facility in the United States. According to Zenith, the main reason for closing the plant was Mexico's low wage rate. Pay rates in Springfield ranged from \$5 to \$11 an hour. In Mexico the rates

were \$1.60 an hour. The global competition threat for American business exists not only in imported goods and services but also in cheaper labor. Barlett and Steele point out that:

American companies and companies world-wide are now conducting a replay on a global scale of a business practice that became common in the 1960s. That was the decade when United States companies began playing off one region of the United States against another, one state against another, one city against another. The objective was to locate a new plant or relocate an existing one in whatever area would offer the greatest tax incentives-so the company would have to pay the smallest amount of local and state taxes-and where employee wages and fringe benefits could be held down the most...Now that practice has gone global, as corporations and financiers play off one country against another, one national tax system against another, one country against its possessions. (p.89)

In the pharmaceutical industry alone, tens of thousands of jobs have been exported to Puerto Rico which now boasts that it has the world's largest concentration of drug companies. This situation was caused by the 1976 tax act that, for the first time, allowed Puerto Rican U.S. plants to generate profits having no tax liability whatsoever. That is to say that this tax consideration became then, and is still now, a significant incentive to move jobs to Puerto Rico to the disadvantage of stateside employees.

During the 1980s, one U.S. industry after another gave in to more aggressive foreign competitors. Gordon, et.al.(1991) have written that the camera industry, television industry, the tape recorder industry, stereo equipment industry, and the

semiconductor industry, to name but a few, all went to foreign soil. Our businesses can automate to accommodate a low-skilled labor force and thus avoid upgrading the skills of their workers, but there is a trade off. If most new jobs become low end skill jobs, our national business community will also have chosen the corresponding low wages. It is expected that this choice will lead to lower productivity and a lower standard of living for much of the American workforce in the years to come.

The second challenge facing American business in the 90's is the current state of downsized and restructured organizations. The 80's, as a decade, brought with it terms that have left a bitter taste in the mouths of many. Terms such as merger, acquisition, layoff, leveraged buy out, junk bonds, corporate raiders, arbitrage, have often been in our press and on our airwaves and in our movie theaters. A list of the companies that have reduced the numbers of their employees has seemed endless. Fisher(1992) reported that General Motors will eliminate 10,000 more managers in addition to the 10,000 already severed since January of 1992. Pratt & Whitney terminated 4,800; American Airlines 1,000. IBM 40,000; Digital Equipment 15,000. In a survey of 2400 American companies that was conducted in 1992, 29 percent laid workers off in 1991, and 27 percent planned layoffs for '92. American Express in New York plans to eliminate 300 managers. In the first year of

a new CEO's term at Tenneco, 6 full layers of management were eliminated. A total of 9,000 jobs were effected. In another survey, of 1005 companies surveyed, 86 percent had done one major restructuring, and some more than one, in the past five years. In 1992, 228,000 jobs have vanished from the State of California alone. The Amoco Corporation, between 1992 and 1993, sacked 8,500 people. In yet another news release it was reported that Sears fired 50,000 employees forcing a domino effect at R.R. Donnelley which then laid off 600. United Technologies, as reported by Longworth(1993), plans to terminate 10,500 employees; McDonnell Douglas will end the employment of 8,700 workers; Boeing, 7,600; and IBM has listed 131,000 workers who will lose their jobs. In the Insurance industry alone, 33,000 jobs have disappeared in 1992. In just one twelve month period, from December 1991 to December 1992, the defense related industries lost 150,000 jobs, wholesale trade lost 50,000, insurance and commercial banks lost 40,000, and the computer equipment and semiconductor industries, according to Mandel(1993), lost 30,000 positions. In a survey conducted by the American Management Association, Fisher(1992) related that 1100 member companies responded by stating that while managers accounted for only 5 to 8 percent of their employees, this group accounted for 17 percent of all terminations over the past three years. Thousands of firms have downsized more than once since 1988. Just from the

payrolls of the FORTUNE 500 companies over the ten year period of 1981 to 1991, 3.4 million jobs have been eliminated. What can be said of those remaining in the workforce after all of this restructuring? This question leads directly to the third business challenge.

The third concern of the American business community deals with the diminished pools of skilled workers. This concern impacts two areas (workers now in the labor force and workers who will enter the labor force in this decade).

Henkoff(1993) reported that nearly 40 percent of the members of the American Association of Manufacturers have stated that deficiencies in reading, math, and technical skills within their employee ranks are causing serious problems in upgrading plants and increasing productivity. Those employers who do train workers use the same antiquated, passive instructional techniques that haven't worked very well in the past. In addition, many organizations spend most of their training and education dollars on managers and executives, short-changing the 75 percent of American workers who are not college degreed. Some managers have decried steps they took to empower people in their organizations. The desired outcomes, according to Gordon(1991), were reportedly not obtained due to the fact that the employees were not properly prepared. Honest, positive change may come to many organizations as they realize that a skilled work force, not

an unskilled one, is critical to succeeding in a global marketplace. As Henkoff has pointed out, the U.S. government estimates that as many as 50 million workers will have to be trained in basic writing and reading in this decade. The experts advise that the way to compete in the global economy is not to design low skilled jobs but ones that are filled with appropriately educated, highly trained and flexible workers. As the Japanese became famous for just-in-time manufacturing, U.S. businesses need to provide the right education( i.e., just in time education) for the right person at the right time. Petrini(1991), in writing about this subject, claimed that almost 17 million workers who need basic skills training are not receiving it. That is 14 percent of the current labor force. The 17 million figure includes people who are currently employed and who , if current trends continue, will not get the needed training. A surprising 90 percent of U.S. workers receive no formal training from their employers.

According to Petrini(1991), the literacy skills of young people are surprisingly low. A study entitled the National Assessment of Educational Progress, looked at the basic skill levels of 21 to 25 year-olds. Sixty percent of Caucasians, 40 percent of Hispanics, and 25 percent of African Americans could read well enough to find information in a typical newspaper article. The remainder could not.

The second part of the diminished pool of workers speaks to the potential employees not yet employed. Those students who graduate from high school, with high-level reading and writing skills will probably go on to college and will take their pick of companies in which to be employed. The companies they avoid will be forced to select their workers from a pool of low-skilled candidates. Fierman(1991) reported that organizations facing new competition and more demanding customers want workers with better skills. In addition, more than 9 million of the 18 million jobs expected to be created in this decade, will require at least some training beyond high school.

It appears that American companies are quicker than German and Japanese companies to reduce complex operations into simple tasks that the low-skilled worker can handle. Performing these simplified tasks requires little education. The National Center on Education and the Economy found that 98 percent of employers do not bother to systematically review the transcripts of high school graduates because they believe the educational curriculum to be of very little utility with regard to selecting workers. However, per O'Reilly(1992), more companies are beginning to realize that rather than reducing job complexity, they would perhaps benefit more from hiring and training a better prepared workforce.

Richman(1992) warns that the strong drive for productivity and quality will also shape the service industries, as was true in the 1980s. It is anticipated that the service sector will continue to account for most new jobs. Companies that beefed-up in the past with hordes of low-level employees will replace them with fewer employees but with workers who are more skilled and better educated. Brownstein(1992) pointed this out by reminding us that during the 1980s, demand for workers to handle computers and solve increasingly complex problems grew faster than the supply, and faster than the requirement for less educated employees. Cohen-Mason(1991) repeated this point by stating that companies, faced with a less qualified pool of employees, will need to quickly help those employees to reach competency levels sooner. That is to say that what will be available from the labor pool in the years ahead is a large number of unskilled and undereducated people. This leads to the unavoidable conclusion that there will be too few trained and educated workers to satisfy our nation's economic needs. The future population will fall far short in reading, writing, and computing skills, especially in the higher level cognitive areas of expertise. Thus, our need for smarter workers conflicts with an ill-prepared supply of labor.

As stated in Gordon's work(1991), most new jobs in this decade will require some post secondary education for the



first time in history. Just 27 percent of all new positions will fall into low-skill categories. Jobs in the service, information and manufacturing areas continue to become more complex while most of our schools are still structured to support the basic-skills jobs of the pre-1960s. The general educational objectives of our school systems still focus on industry oriented skills(reading, writing, counting, subtracting, adding, dividing, multiplying, spelling, punctuating, comprehending and communicating). Gordon makes a convincing case for the notion that the information technologies and service area positions depend on a different set of competencies in the 90s( diagnosing, determining, estimating, soliciting information, organizing data, identifying alternatives, analyzing, planning, coordinating, partnering, implementing and monitoring).

Many government, business, and educational leaders have established a twelfth-grade reading level as the modern standard of literacy. This requires that an employee be able to think critically and solve problems found in high-tech environments. However, national assessments for both school-age students and young adults not currently in school(ages 21-25) point out that only 40 percent of these individuals achieve this literacy standard. Before the end of this decade, the U.S. Department of Labor estimates that 75 percent of job classifications will need some post secondary training for

entry-level jobs. This is a 25 percent increase which our workforce is ill-prepared to handle.

According to the above author, Americans are not less literate today than they were in 1900. The overall population, in many ways, is actually more literate. But the old yardsticks do not apply to today's world. There is definitely a demand for a higher level of education and the acquisition of technical skills. A crisis may exist because the needs of a larger group for higher literacy levels have outpaced the public school system's ability to educate and/or train students for the workplace.

When Gordon(1991) reviewed the arena of educational spending nationwide, he revealed that from all funding sources, federal, state, and local, our nation spent \$353 billion in 1990. Historically, federal spending has been limited mostly to higher education. When that number is removed from the total, what remains is \$137 billion allocated to elementary and high school education and this ranks the U.S. at the bottom of the list of the 16 major industrial countries. The pool of academically and technically proficient workers is shrinking, while the number of positions requiring broad intellectual abilities is continuing to expand.

Hopefully, as Calonius(1991) has observed, with fewer young people entering the job market in the 1990s, American companies will do more to make the workforce they already

count within their ranks, as productive as possible. Yet American companies budget far less for training than overseas competitors, and 68 percent of what they do disburse goes to further schooling for college graduates( managers, technicians, professionals, and supervisors). The problems, as well as the opportunities, lie in training craftsmen and production workers( i.e., training the already employed workers).

Because of these three challenges (global competition, downsized organizational structures, and the diminished pool of skilled workers), businesses are exploring ways to retrain their human resources to handle jobs in this decade and beyond. The study to be described in what follows, was designed to examine and evaluate what some consider to be a novel, yet ancient, way of raising the competencies of employees (i.e., individual, one-on-one tutoring within a business environment). This research project was conducted in a 6000 employee financial institution and spanned a two year time period. Three groups of adult employees (N=171 workers) were trained in communication skills. The first two groups, consisting of 30 and 27 people respectively, participated in a one-on-one training program. The third group of 114 employees was divided in the following way: some participated in one-on-one tutoring; others participated in small group (one-on-two to four) tutoring; others participated in classroom training;

some participated in a computer based training procedure; and others were part of a no-treatment control group. Comparisons of the outcome scores of the employees were made across groups. That is to say that the study was designed to address the following research questions:

1. Will there be significant differences between the pre-test scores and the posttest scores for all subjects across treatment conditions?
2. Will there be any significant differences between the pre-test scores and the posttest scores across the time blocks?
3. Will there be any interaction effects regarding questions one and two above?
4. Will there be any differences in the supervisor rating scores across treatment conditions?
5. Will there be any differences in the supervisor rating scores across the time blocks?
6. Will there be any interaction effects regarding questions four and five above?
7. Will there be any differences in the employee self-rating scores across treatment conditions?
8. Will there be any differences in the employee self-rating scores across time blocks?
9. Will there be any interaction effects regarding questions seven and eight above?

10. Will there be any relationships among the pre-test scores and the posttest scores for sex, age, race, job grade, educational level, tenure, and chosen goal?

## CHAPTER II

### REVIEW OF THE RELATED LITERATURE

In this chapter, a selected review of literature is presented. The first section consists of a discussion of changes that training and development professionals face as they look at the closely approaching year 2000 A.D. The history of tutoring is explored in an effort to provide a perspective of the prior use and reasons for the development of the methodology to be used in the investigation at hand. The impact of tutoring is traced from Europe to the United States; from the middle of the Nineteenth century to the Twentieth century; from the domestic arena to the academic arena and on into the industrial setting of the modern era. The final section consists of a discussion of current research regarding tutoring in the workplace.

#### The Near Future for Training and Development

Of the three elements that impact American business, mentioned in chapter one, the downsized organizational structures and the diminished pool of skilled workers are of special concern to training and development professionals.

Connected to the issue of downsized companies is the fact, as stated by Kiechel(1993), that most companies will be smaller. The pendulum of centralized and decentralized

structures will swing strongly to the decentralized side of the continuum. The vertical organizational structure will, in many instances, have been collapsed to a more horizontal structure. Layers of management will continue to be eliminated. The Matrix style (an ad hoc assemblage of specialists convened for a specific project, then disassembled upon project completion) will grow. A new ad hoc horizontal structure, called the spider web, will be utilized by some companies. This structure groups specialized experts, networked and connected lightly, yet completely, in their connection to each other and to the project at hand.

Perry(1991) estimates that the Quality Circle concepts of the 70's will continue to evolve into the boss-free, self-directed work team practices within the new and smaller organizations. This will continue the trend of necessary productivity training, and team skills training, for all but the highest employee levels of companies. Stoker(1987) pointed out that the continuing involvement of the lowest members of the organizations is one of the most significant realities of American business today and in the future. This approach calls forth employees to work together in new ways, utilizing problem solving and communication skills.

Linked to the diminished pool of skilled workers will be the systematized employment and inclusion into the workforce of today those who were considered unemployable in the past.

That is to say that even though downsizing un-employs some workers, they will be absorbed into other smaller businesses and those from the ranks of the formerly unemployable will be needed. The future advancement of current employees will occur only when tied to the acquisition of new skills and knowledge by those employees. The need for lifelong learning on the job will pervade more and more organizations. As Cohen(1991) stated, the company of tomorrow will continue to train employees in the basic skills as well as the higher level cognitive skills because of the need for the progression of knowledge in the future.

As market forces, price competition, and other factors continue to ripple through companies into the next century, training and development professionals will be needed to lend their expertise in helping companies run efficiently and profitably. As hinted by Gordon(1991), the management skills of planning, organizing, actuating, and controlling are changing to the skills of leading, team building, assessing, and partnering. The manufacturing base of our nation, although continuing to erode, will be replaced with the growth of the service sector. This service sector growth has seen, and will continue to see, a category called the nurturant service worker. Kiechel(1993) estimates a dramatic expansion of this category composed of specialists in the care of the elderly and in the services provided by the values of fitness and



well-being in our modern society. These lifestyle professions are created by the educated baby boomer group as it continues to age and care for its aged parents who will live into the first decade of the 21st century. These events are viewed as products of a continual macro-social shift from a society of an electric motor/telephone/internal combustion engine infrastructure to a society of a computational/informational infrastructure. These trends underscore the prediction of the continuation of basic skills training as the foundation for higher level cognitive skills training. In sum, the workplace is becoming the place of lifelong learning.

Superimposed over each of the above two trends is the demographic reality, according to Coates, et.al. (1990), of an ever aging workforce population. Perry (1991) predicted that the recruitment activities needed to replace retiring baby boomers will continue to bring more Black, Hispanic, and Asian employees into the workforce. This will deepen the concentration of the issues of diversity that training and development professionals have been dealing with in their companies for the last fifteen years or so.

Sterns and Doverspike (1989) stated that the baby boomer workforce will continue to stay employed as it ages, delaying their retirement plans. These older workers will require retraining periodically as long as they are in the workforce. Coates, et.al. (1990), stated that trends are beginning to

reveal that even though people retire, they re-enter the workforce as part-time employees who are highly welcomed by employers because of their excellent attendance, work ethic, commitment to quality, and overall good job performance. In turn, the retraining of the aging workforce will stimulate and expand research into the questions concerning how older people learn. On the issue of current research on the aging, Sterns and Doverspike(1989) claim that many developmental changes that occur in the older worker may be irrelevant to work situations. That is to say that the mental, physical, and emotional realities of the older worker may in no way impact their overall job performance. It has been shown that there are minimal job performance declines as people age and some older workers, as they age, show gains in performance instead of losses. It should be noted that these authors stated that it is clear that older adults may require an extended training time to learn jobs and they may make more training errors than their younger counterparts. However, once the job is learned they are able to perform at the same level as younger employees.

The final area expected to impact training and development professionals involves the future trends in the specific area of instructional technology. Puskurich(1993) indicated that the continued expansion of hardware and software involved in teaching and training will entail a

heightened ability to entertain as well as teach. The use of high-tech equipment, televised teaching systems, and instructional gaming will be the norm in classrooms. These new technologies will evidence a return to OJT (on the job training), mentoring, and apprenticeship systems. A learning culture will emerge that expects to gain new knowledge and skills through instructional technology rather than through reading a book or attending a class. This new culture will require the human support of learning facilitators and coaches. Teachers in schools and trainers in businesses will change from being information givers to being individual information managers for their students, be they young or old.

These broad training and development trends lead us to the specific exploration and investigation of the methodology of individual one-to-one tutoring in its historical context

### **The History of Tutoring**

The word tutor stems from the Latin word for guardian (Webster's Dictionary, 1991). Yet, according to Gordon (1990), the activity of tutoring, as a conduit of knowledge, originates even before the written word, for the family was the school of 7000 B.C. In those ancient times, oral tradition, through the methodology of individual teaching, was the main way lessons were passed from one generation to another. Only when the Egyptian aristocracy of 200 B.C. began to require specialists in their society, were

some schools created to serve those needs. In ancient Greece, the upper classes of society utilized tutoring and into this tradition emerged three of the most renowned tutors that have shaped our Western culture: Socrates, Plato, and Aristotle. Alexander the Great was tutored by Aristotle. The Roman emperor Nero was instructed by Seneca. The tutorial model, preserved by the Roman Empire, was used by the Christian church from the end of the Roman times on into the Middle Ages. If not for the Monastic copyists, tutored in their skill from one generation to another, we may not have learned of the Greek and Roman civilizations.

With the coming of the Renaissance in Europe, the tutorial model expanded to much of that continent along with the other methodologies utilized in the universities of that era. Exponentially, more citizens were being educated in the many nations of Europe, and tutoring continued to be an active method of teaching and learning. By the second half of the Seventeenth century, in England and France, a tutor was commonly a household member among the aristocratic and mercantile families of that time. Often the tutors in the households were recent male graduates of a local university.

The tutorial methodology was encased in what became known as the Domestic Education Philosophy of the Nineteenth century. It wasn't until 1914 that England brought forth a national tax supported system of public education. Yet still

the one-to-one method of teaching continued to be solidly utilized by many individual families of that time. As the United States began to be populated, this protocol traveled with the settlers to our shores. Gordon contends that the Tutorial education methods contributed to the birth of the American public school- child centered-educational movement.

Another important aspect of the tutorial tradition that was imported from England was the British Lancasterian system of education. The English educator Joseph Lancaster developed the system of using student tutors to teach other students within the schools in his time. This system was primarily confined to cities where large numbers of students would attend a type of classroom school that we would recognize today. The Lancasterian tutor-driven systems, in fact, became the precursors of the later urban public school systems. And still, the tutorial methodology continued to be utilized by individual families for the education of their children.

By 1870, the public school attendance of our country was 6,250,000. And as late as 1916, one-room schoolhouses numbered over 200,000. As the school systems improved, the main place of education shifted from the home, teaching performed by the parents, to the tax-supported schoolhouse, performed by teachers. In 1920, single-room schools still numbered over 190,000 and from then on, those numbers continued to dwindle. Yet even in 1985 there were still 800 in use in the United

States. Continuously utilized in these single-room schools were the one-to-one individual and peer tutoring methodologies. Thus, in this century, domestic tutoring continued to be an active arena for the training of our population. What has come to be known as formal schooling continued to expand, with a gradual decline of tutoring in the home and in the single-room schoolhouse, replaced by the edifices of public compulsory education known today. Yet the one-to-one protocol, which was used in the schoolhouses, later became a part of the public schools, although a significantly lesser used methodology than the lecture and classroom methodologies.

Because of this rich and extensive history of the tutorial tradition that became synonymous with the education of children, much of the current research of this methodology deals with the instruction of school age children. In many cases today, the tutorial methods have been primarily thought of as the method of choice for problemed learners, contrary to the history of the methodology.

### **The Current Literature on Tutoring**

Many of the recent publications regarding the tutoring methodology are anecdotal in nature, when dealing with an adult population. Existing journalistic literature mostly reports on the educational methodologies utilized in the

teaching of school age children-primary and secondary grades. Even when reviewing either the adult anecdotal literature or the school age child journalistic literature, one notes the overwhelming presence of the troubled learner; or the description of the learning disabled learner as the subject of the literature.

Baker(1989) has written of the growing evidence of partnerships between schools and businesses to rectify the gap that exists between what is needed in job candidate qualifications and what qualifications are produced by school systems. In her investigation, a west coast franchise organization picked skilled high school students, trained them as tutors of troubled elementary school students and paid them from a fund established by the business group. Though one step removed from the businesses involved, this exemplifies the intent and importance of the support businesses are willing to fund in regard to the tutoring of potential future employees within their local communities. Machan(1991) reports that when basic skill deficiencies are detected, some employers create a classroom environment and provide teaching for such subjects as basic math, English, writing, algebra, and trigonometry. This reflects the traditional methodology of the classroom used as the learning atmosphere within the subject of the deficiency. This classroom protocol, as related by Polychron(1989), was used by an organization to teach basic

level skills in classes lasting for four hours per week for thirty-six weeks (144 hours of class time) to a group of 150 employees. Thirty of those 150 subjects raised their proficiency to the eighth grade level. The report failed to state the pre-training level, yet gains were reported.

In a review of various workplace literacy programs currently in practice, Dunn-Rankin and Beil(1990) reported that among the criteria used by employers in setting up such programs, the small group methodology should be used because it gives employees an opportunity to work together and learn from each other. This resembles the Lancasterian system mentioned above.

Other programs, reported by McGee(1989), were ongoing at four different organizations. In one, the basic skills of reading, math, and pre-GED related subjects were offered to 1,350 employees in twenty-five different locations. The classroom methodology was utilized, exclusively. Although the report revealed that seventeen employees successfully passed the GED exam, no other quantitative data was offered. Another employer, described by the author, recruited unemployed candidates assessed to be underskilled and paid them while putting them through an eighteen week skills training course. This has been an active program training twenty to twenty five candidates during an eighteen-week session, originally begun in 1973. The sole methodology, again, was the classroom.



Tutoring was the methodology in yet another of the reported skills projects. An East coast organization trained employee volunteer tutors to individually tutor workplace skills. Even though only fifteen employees had taken advantage of the program, and no quantitative data was offered, the ongoing program was stated to be a success.

Cohen-Mason(1991) described a number of programs partnered between a few large organizations and schools within their areas. The Chrysler Corp. weekly sends a group of employees into local schools to tutor students on business related topics using the one-to-one or small group protocols. The Federal National Mortgage Association (Fannie Mae), since 1988, has mentored/tutored approximately 130 students in business related topics. The mentors are allowed up to ten hours of mentoring activity per month in their program. Each year the number of all-minority students has increased, since the start of the program. In a similar activity, the Procter & Gamble organization had over 150 employees and community volunteers who tutored Cincinnati high school students in a variety of topics in a program that has been ongoing since 1987. Overall, the study reported that more than 100 organizations participated in programs that served 2,000 students yearly.

May (1990) documented a computer based training solution to the literacy problem within an organization with facilities

in Ohio and Virginia. An examination of company records revealed that of the 1,750 employees, approximately 290 had not finished elementary school. In their Ohio facility tutors were utilized to work individually with the targeted group. Specifics of subjects, length of tutoring, or results were not offered. In the other production location, computer based training of workplace skills was implemented and 46 employees took advantage of the voluntary training. Unfortunately, no data were reported regarding test scores or grade equivalency gains.

Sherman(1989), in another anecdotal report on workplace literacy, related that one service oriented company created a writing and verbal skills course that was tutored by company supervisors. The one-to-one atmosphere was used by the supervisor with his/her direct line subordinate. The claim, although lacking statistically supportive data, was that the program was highly effective for that firm. In yet another report, Dreyfuss(1990) explored the types of workplace skills programs offered by the Motorola Corporation. At any given moment in time during 1990, 700 to 1,000 of Motorola's 25,000 domestic production employees were involved in basic skills training, mainly, it was inferred, using the classroom methodology.

In support of the use of the tutoring methodology in a modern adult learner context, Verduin, et.al.(1977), contend

that this protocol can be used as a remedial method to provide more directed learning, and as an enrichment tool for adults who wish to progress at an accelerated learning pace. They propose that tutoring adjusts the teaching method directly to the needs of the learner. It also encourages and motivates the individual adult; provides the learners with immediate corrective feedback, for, with most adults, according to these authors, learning is not a one-time experience; they often need to go over the material several times before they have mastered it. The methodology, due to its aspect of individuation, focuses on verbal questions, explanations, and responses within the tutoring sessions enriching the adult need of individual progression.

Strong proponents of the tutoring methodology as the method of choice in an adult learning environment are Gordon, Ponticell, and Morgan(1992). Their research and publications offer a rich addition to the subject area. Their investigations, over the years, have revealed that a multi-layered approach may well be the best answer to the workforce skills dilemma. In rating alternative training methodologies in a descending order of effectiveness they place tutorials, either one-to-one or one-to three or four, as the most effective with an adult population. Listed as second on their list is the peer tutoring environment, followed by Computer-based training, programmed learning materials and the

traditional classroom instructional methodology, in that order. We will revisit the work of these three educators, later in this literature review.

As mentioned earlier, much of the journalistic research on the tutoring methodology has been offered by investigators of the education of children. One such researcher, Putnam(1987), studied the effects of six experienced teachers who each tutored one live elementary school age child and four computer simulated students, in the subject of mathematics. The focus of the study centered on the different steps taken during tutoring sessions when a teacher would be guided by the diagnostic/remedial perspective as opposed to the curriculum script perspective. The diagnostic/remedial approach causes the tutor to constantly alter the delivery of the material due to the responses of the student and detected student error or confusion. The curriculum script perspective keeps the tutor more focused on the content and curriculum requirements of a session and less focused on the alteration of content due to the student responses. Although statistics of student error frequency are given in the study, the researcher concluded that within tutoring, as a methodology, sticking to the curriculum will prove to be more effective to the learning of the student, than constantly adjusting to the errors and perceived confusion of the students. In one sense, Putnam's study goes against the grain of other researchers (Gordon, for

example) who maintain that one of the overall benefits of the tutoring methodology lies in the instant adjustment to the adult student, as well as the customization of the content to the individual student's level of understanding.

Perhaps the above dilemma ceases to be a problem when considering the content to be tutored. In Putman's study the content was the mathematical skill of addition. Regardless of what difficulty a particular student has with that content, two plus two continues to equal four. The content of writing, however, may offer a clearer need for customization, as evidenced by the work of Harris(1986) in this subject matter. In her work, she has specialized in the tutorial methodology with college students faced with learning and practicing the skill of writing. In working individually with students, a view of the skill can be obtained, thus adjusting tutorial dialogue directly to the strengths and weaknesses of each student. Connections are made by the tutor to instruction of the student on the specific writing assignment given in whatever course the student has been assigned to prepare the written product. Harris points out that the experienced writer-tutor is able to offer his/her experience to the student much like the master, in a master-apprentice relationship, offers experience to the apprentice. The techniques offered by Harris, outline step by step procedures for the writing tutor to follow with the student, as though

the tutor is a fellow traveler with the student, on the road to the finished written goal.

Dinges(1974), in cooperation with an Illinois State Penitentiary, conducted a research project to measure the reading gain of inmates through the use of the tutorial methodology. The research measured pre-test and post-test grade equivalence and the subjects were adult prison inmates whose reading level was below the third grade level. Although the number of subjects was small(ten), the data revealed a median net grade level gain of 1.2 on a vocabulary instrument and a 1.8 grade level increase on an oral reading measurement. The tutoring time measurement was tracked, as well. The ten subjects were exposed to a total of fifty hours of tutoring. After the tutoring ended, the researchers presented the subjects with twenty-five more hours of individual training by way of flash card techniques. A further gain, beyond the initial gain, of .7 grade level increase on vocabulary, and .9 grade level increase on the oral reading measurement, was reported. The conclusion of this study resulted in a grade level gain of 1.9 for vocabulary and 2.7 for the oral reading, accomplished after seventy-five hours of individual study by the tutors and the adult students. The study failed to include a control group for comparison.

One of the most revealing studies involving school age children was reported by Cohen, et.al.(1982). These

researchers performed a meta-analysis of findings from sixty-five independent evaluations of tutoring programs conducted on school age populations. Their criteria for choosing one study over another, among the 500 studies they reviewed, was the inclusion within the chosen study, of quantitative measured outcomes in both the tutored group and a non-tutored control group. Their sixty-five selected studies described the effects of tutoring programs on both tutors and tutees. All of the cited studies had student tutors. The authors reported that fifty-two of the sixty-five studies reported results on academic achievement of the tutored students. In forty-five of the fifty-two achievement studies, the examination performance of subjects who were tutored was better than the examination performance of students in a conventional class. Thus, the majority of studies favored tutees. The authors point out that tutoring, as a methodology, raised the performance of tutored students by approximately two-fifths of a standard deviation unit. They further translated that statistic to mean that the average tutored child scored at the sixty-sixth percentile of the untutored or classroom child.

Additional results of their meta-analysis revealed that a number of features consistently produced strong effects. Among them was the factor of the duration of the tutoring. The effects were larger in tutoring programs of shorter duration. The three duration categories were 0-4 weeks, 5-18 weeks, and

19-36 weeks. The first category, involving six studies, showed the greatest effect scores. The second category (five to eighteen weeks), involving thirty studies, showed the second highest effect scores. The category of longest duration, though still revealing significantly higher scores than untutored and classroom children, showed the lowest gain scores of the three categories. The researchers do not provide any further duration statistics to indicate the number of hours of tutoring per week that subjects received. Their study, however, offers strong evidence indicating the comparatively positive effects that the tutoring methodology has on school age children.

The final published report deals with the significant contributions of Gordon, et.al. (1989,1991) to the body of knowledge directly related to the tutoring of adult learners within a workplace skills context. In their study, the authors relied upon historical data and test results to (post hoc) construct two pilot groups of adult learners who appeared to have received the tutorial methodology in their places of residence as opposed to their work site. The content taught was in the skill of reading. The actual(post hoc) dates of the training were not indicated. Their first pilot isolated records of nineteen students. The normed measuring instrument, used for the pre-test and post-test(alternate form), produced a vocabulary score and a reading comprehension score. Grade



equivalency data was not reported. The nineteen subjects were classified into three categories of tutoring hours. One category was a duration of between ten and nineteen hours. The second category was a duration of twenty to twenty-nine hours of tutoring. The third, and longest, duration was between thirty and forty-five hours of training. Their study did not mention how many subjects were in each duration category. In this first pilot, the statistical analysis revealed that no two group means-pre-test compared to post-test-resulted in any significant differences. However, group performance showed gains at the second duration category (twenty to twenty-nine hours). Their third duration category showed a drop in gain. Their second pilot study of subjects offered a sample size of twenty-four, with all else being equal to pilot one. Again their statistical evaluation proved to be identical to that of the first pilot. The number of hours of tutoring did not appear to make a significant difference in the post-test performance of the subjects. Again, however, means and standard deviations for post-test scores by group did show gains at the second category of tutoring duration. Again, after thirty hours of tutoring, the authors reported that the gains appeared to diminish. The authors concluded that the pre-test measure seemed to be a good predictor of reading achievement at the second duration category (twenty to twenty-nine hours) and not at either of the other two categories.

Later on in their report, and outside of the results of the two pilots, they concluded that their findings have repeatedly shown performance gains over time. The maximum gain was stated to be at the thirtieth hour of tutoring. Their 1989 study concluded with a summary of qualitative findings that specified the positive effects that the tutoring methodology had on the adult learners.

Gordon, et.al.(1991), in their longer treatment of the tutorial methodology as the basis for an efficient and high quality workforce education program, comment that tutoring more efficiently answers the important question of exactly what must be learned by the individual employee. The effort of answering that query is a difficult task that other methodologies appear to not handle as well. They state that the technology offered by the computer based training methodology stumbles when customizing the content to the individual employee. Their Individualized Instructional Program (IIP) is their specific tutorial creation that establishes a one-to-five or one-to-one training format. Their small group (one-to-five) IIP module consists of forty hours of work. The classes meet for two hours twice weekly for ten weeks. Their one-to-one instruction meets for one hour twice per week for ten weeks, for a total of twenty hours of instruction. They state that the above structure is used to extend the learning over time rather than staging short-term

massed instruction in order to constantly assess the individualized learning needs of the employee. These authors report that with their IIP system, a significant breakthrough usually occurs at approximately the fifteenth hour of instruction. Although this breakthrough is neither quantified nor defined in their work, they relate that a maximum grade-level improvement happens at about the thirtieth hour of tutoring. The statement is made that most of the individuals enrolled in twenty to forty hour modules attain six months to one year of skill improvement inferred to be in their grade equivalency scores. At the end of the modules, the authors relate that those employees requiring more training are regrouped into new groups for that training. The inference is that some employees need more than forty hours of instruction. Exactly how many, is not quantified.

The above review of the current literature leads to the questions that this study set out to answer. In a business learning environment, will the tutorial methodology make a significant difference in the pre-test scores compared to the post-test scores of adult learners? When compared to a small group methodology, a computer based training methodology, and a classroom methodology, will the tutorial model reveal significantly higher results over the other methodologies? Will the independent measures of gender, race, age, job grade, tenure, or educational level reflect any significant

differences in test scores among the subjects and across the methodologies? As with Cohen, et.al.(1982), if gains in test scores and grade equivalencies are found, will they differ based on the duration of training? Regarding the work of Gordon, et.al.(1989,1991), will gains be shown at less than thirty hours of tutorial instruction? And finally, will the different learning goals of subjects reflect any score differences within the study? We turn now to chapter III which specifies the methods employed in the current study.

## CHAPTER III

### METHOD

#### Hypotheses:

The following null hypotheses will be tested:

1. There will be no differences between the pre-test scores and the posttest scores across treatment conditions.
2. There will be no differences between the pre-test scores and the post test scores across time blocks(i.e., the duration of training conditions).
3. There will be no interaction effects among the pre-test scores and posttest scores for the treatment conditions of one-to-one, small group, classroom, computer based group, and the control group across time blocks.
4. There will be no differences in the supervisor rating scores across treatment conditions.
5. There will be no differences in the supervisor rating scores across time blocks.
6. There will be no interaction effects among the supervisor rating scores, the treatment conditions, and the time blocks.
7. There will be no differences in the employee self-rating scores across treatment conditions.

8. There will be no differences in the employee self-rating scores across time blocks.

9. There will be no interaction effects among the employee self-rating scores, treatment conditions, and time blocks.

10. There will be no relationships among the pre-test scores, posttest scores, sex, age, race, job grade, educational level, tenure, and chosen goal.

**Design.**

**Treatment Conditions**

<b>Time</b>	X-1a	X-2a	X-3a	X-4a	X-5a
X-1b	Y-1-2-3	Y-1-2-3	Y-1-2-3	Y-1-2-3	Y-1-2-3
X-2b	Y-1-2-3	Y-1-2-3	Y-1-2-3	Y-1-2-3	Y-1-2-3

Where the independent variables=treatment conditions (X1a to X5a) and time blocks (X1b and X2b). Where the dependent variables=pre-test and posttest scores (Y1), supervisor ratings (Y2), and employee self-ratings (Y3).

**The Company**

The employer is a large Chicago based trust and financial services bank that employs 6,000 people primarily in the Chicago metropolitan area. There is a downtown central office with three other center city locations. Subsidiaries of the bank are in forty other U.S. cities including areas such as southern California, southern Texas, and southern Florida.

There are also European satellites in the cities of London, England; Geneva, Switzerland; and Paris, France.

The primary business of the institution provides trust financial services to worldwide Corporations and Trusts-both private and public-and the financial services associated with the sale and movement of stocks and bonds for its customers. It is a full service trust business that has existed for 103 years. It ranks second in the Chicago trust marketplace and sixth nationally, as measured by total assets managed. Of all of the nationwide money management firms, it is among the top two percent. In that industry, the size of an organization is determined by the dollar size of the trust assets. This Trust Bank has trust assets of \$411 billion. The sum total of the assets that were managed in the year 1992 was \$69.6 billion. For that same year their net income was \$149.5 million. This Trust bank is, and has been profitable for most of its years in business.

The bank formed a Diversity Committee to explore the issues surrounding the management of a diverse workforce. This committee administered questionnaires to minority employees and to department managers requesting data on the issues of diversity, minority promotions, and training needs. One of the findings from the analysis of the questionnaire responses was that the oral and written communication skills of the minority employees were less than desirable for their future

advancement within the bank. Given these findings, a the Diversity Communication Program was established. Three pilot study programs were designed to address the needs of the Diversity Committee. The Pilot one program was limited to minority employees. The Pilot two and three programs were open to all employees.

### Discription of the Pilot Study Groups

For the first pilot group, the department managers were asked to rank and list their top minority employees, using three criteria. First, the employee had to be in a position in which they could be promoted by two grade levels within an eighteen month period of time. Secondly, the employee had to be highly rated with respect to their job proficiency. The third criterion, used for selection, was that the primary deficiency of the employee had to be in the areas of written and/or oral communication skills. The first employee listed within each department was then placed into the communication study program. A comparative summary of the demographic data, related to the thirty pilot one study group subjects is presented in Table 1 along with the data from pilot two and pilot three.

Once the first pilot study group completed their training and were assessed on the pretest and post-test instruments, a second pilot study group was chosen. These subjects, although



not ranked to be among the highest performing employees, were considered to be key individuals in each department who also had the communication skill needs itemized for the first group. As noted above, the second pilot study group was opened to majority employees as well as minority workers. Thus, the second group was chosen from the ranks of all division employees and not limited to a racial or national origin minority.

After the second pilot group ended their training, a decision was made to expand the communication training program for a third pilot study group. The individual(one-to-one) tutorial delivery system of the first two study groups was expanded to include a classroom delivery system, a small group delivery system, a computer based delivery system, and a control group for that third group. The purpose of this expansion was to permit comparisons across delivery systems and time durations. The demographic characteristics of all three pilot group subjects are presented in Table One.

Table 1. Demographic Characteristics of the Three Pilot Study Groups

Category	Pilot-One	Pilot-Two	Pilot-3	Total
<b>Gender</b>	Female 24	22	81	127
	Male 6	5	33	44
<b>Race</b>	Af. Amer. 26	16	57	99
	White 0	6	51	57
	Other 4	5	6	15
<b>Age</b>	<30:14	15	67	96
	>30:16	12	47	75
<b>Tenure</b>	<5yrs:11	13	61	85
	>5yrs:19	14	53	86
<b>Job Grade</b>	15-19:19	20	77	117
	Over 20:11	7	37	55
<b>Education</b>	H.S. 6	8	23	37
	JrCol:18	10	42	70
	Degree:6	9	49	64

### Instrumentation

Three instruments were used in the pre- and post-test assessment process. Two of the instruments were normed referenced, paper and pencil tests (Nelson-Denny Reading Test and the Business English Test). The third test was an auditory

instrument that consisted of a series of audio-taped conversations between the subject and the investigator.

The Nelson-Denny Reading Test, in its current forms E and F, is the latest in a series of revisions of the test that was first administered more than 50 years ago. The primary purpose of the Nelson-Denny is to provide a ranking of ability in the areas of vocabulary, reading comprehension, and reading rate. It consists of two subtests (vocabulary and comprehension). The vocabulary section consists of 100 items, each with five answer choices. The time limit is fifteen minutes. The comprehension section consists of eight reading passages and a total of thirty-six questions, each with five answer choices. The time limit for this section is twenty minutes; the first minute is used to determine the reading rate. Forms E and F have been statistically equated and in this study were used as the pretest (Form E) and as the posttest measures (Form F). The descriptive information yielded by the test includes the following:

- Vocabulary raw score
- Vocabulary percentile
- Vocabulary grade equivalency
- Comprehension raw score
- Comprehension percentile
- Comprehension grade equivalency
- Total raw score

- Total percentile
- Total grade equivalency
- Reading rate raw score
- Reading rate percentile

The test has been extensively normed using thousands of students at various levels of education. Administration of the alternate forms of the test produced correlations that ranged from .62 for the reading rate measurement, to .95 for the vocabulary scores.

With respect to content validity, the authors calculated two indices titled "Context Dependence Index" and "Context Independence Index" (CI and CDI). In essence, these measures quantify the dependence an examinee has on the reading passages in order to correctly answer the reading comprehension portion of the test. In this study, because of the extensive norms available, the norm used for each subject was the norm that most closely matched that subject's achieved level of formal education. That is to say that the scores of subjects who had completed high school, were compared to the high school norm. The scores of subjects who had completed college were compared to the college graduate norm, etc.

The Business English Test (BET) is one of three tests taken from a series of tests entitled the Dailey Vocational Tests. These tests were developed during the Second World War and were used to measure aptitude within the armed forces. The

copyright date is 1965. The other two tests in the series are the Spatial Visualization Test and the Technical and Scholastic Test. The Business English Test contains 111 items. It was designed to measure the knowledge of spelling, punctuation, capitalization, and grammar. Each item of the test consists of a sentence in which there is only one type of error, or no error. The examinee reads each sentence and marks the answer sheet to indicate either the type of error or to indicate that there is no error in the sentence.

The normative data developed for the BET is similar to the data developed for the Nelson-Denny Test. Thousands of students were used in the normative development of the instrument. The test results yield a raw score and a percentile score. The BET norm that was used in this study was the norm for Business School majors specializing in Business Administration.

The authors of the Dailey tests reported concurrent validity estimates in support of their instruments. The multiple correlations between test scores and instructors' ratings for Specialty oriented schools produced a median R of .54 for all schools. The comparable-half reliability estimate was reported to be .91.

#### Audio Taped Conversation.

The third assessment instrument was the use of an audio taped conversation that was conducted between each subject and

the investigator during the assessment meetings. The tape produced a subjective oral evaluation of the employee's oral communication skill deficiencies and/or strengths in the areas of oral grammatical correctness and standard pronunciation. It should be noted that the scoring of the tape was subjective and involved an approximation of the number of oral errors committed by the subject in a five minute period of time.

These three assessment measurements (Nelson-Denny Reading Test, Business English Test, and Audio tape) constituted the instruments used within the overall assessment process. They were used to facilitate goal setting for each subject during the course of the pilot study programs.

#### **The Personal Profile System.**

In addition to the instruments described above, a fourth measurement device was used. The Personal Profile System (PPS) is a behavioral style index published by the Performax Systems International, Inc. The copyright date is 1979. The instrument was revised in 1986. It was structured from the work of the behavioral theorist William M. Marston whose publications date back to the middle 1920's. The Personal Profile System was created by John G. Geier. The instrument is self-scored and self-interpreted. It is directed at understanding the behavioral work style of the examinee as that style relates to the three other styles within a job setting. The examinee is required to choose from four adjectives (the one that most

describes him/her and the word that least describes him/her). There are twenty-four sets of the four adjectives presented in this forced-choice format. A work behavior profile is derived that reveals, by way of a graph, the plotting of the combination of four work behavior styles within the instrument. The four styles are: Dominance, Influence, Steadiness, and Compliance. A person with the highest plotted point on the Dominance scale is one who is driven by goals, risk-taking, and leadership behaviors. A person with the highest plotted point on the Influence scale is one who is relationship driven, social, positive, optimistic, and amiable. The Steadiness style is displayed by one who is concerned about maintaining the stability of a work situation. These persons carefully plan activities and express a high comfort with data. The Compliant person is one who is driven to comply with their own standards as well as the organization's standards.

Unfortunately, the authors of the PPS only reported anecdotal reliability information without statistical support. They did report some validity statistics with respect to comparisons of the instrument with the Tennessee Self-Concept Scale. The average multiple R for the four PPS scales (DISC) was reported to be .73

In this study, the PPS was used as the foundational content for subjects who worked toward achieving the

interpersonal goal. It was used in the one-on-one delivery system group, the small group delivery system, and the classroom delivery system group.

### **The Assessment Process**

Prior to any training, there were two or three assessment meetings conducted with each subject. These sessions consisted of the presentation of a series of questions that were answered by the subject. Demographic information was obtained and data regarding employment history and current job responsibilities were systematically recorded. It is important to note that for the subjects in the first two pilot study projects, individual pretesting was a part of these groups initial assessment sessions. For the third pilot study group subjects, testing sessions were conducted. The final assessment session, prior to the onset of the training program, in all groups except the control group and the Computer delivery system group, was divided into three components. First, the investigator revealed and interpreted the test scores with each subject. Second, the investigator and the subject discussed the precise deficiencies discovered. They then agreed on the exact goals that would be attempted to be reached in the training sessions. Part three of the final assessment session involved the subject's manager, who, at that point, joined the subject and the investigator. The subject led a discussion in which he or she informed the



manager what the assessment process had revealed and the goal that was expected to be achieved in the training. It should be noted that the exact test scores were not revealed to the manager. All questions and concerns of the manager were handled in this final assessment meeting. The importance of the manager's involvement in the training process was pointed out by McGee('89). The McGee report reflected the opinion of managers that their involvement gave the employee the encouragement, counseling and support needed in the educational effort. This importance was a part of the final assessment meeting and once all agreed on the goal, the training was then scheduled to begin. An effect of the third meeting was to clarify in the minds of all three individuals that the primary learning relationship was between the subject and the investigator and that the primary organizational relationship was, as always, between the subject and the manager

### The Goals of the Training

The goals of the subjects in the study were broken down into three areas (oral/written, interpersonal, and both). The oral goal involved a desire to speak correct grammatical English and to speak clearly in terms of diction and pronunciation. The written goal was defined as the ability to write grammatically correct English within a business environment. The interpersonal goal was defined as the desire

to work smoothly and conflict-free with other employees whose work styles differed from those of the subjects.

Table two lists the goal distributions and percentages for each pilot group. The numbers for the pilot three group do not include the subjects of the computer based training nor the subjects of the control group.

Table 2. A Comparative Summary of the Goals for the Three Pilot Study Groups

Goals	Pilot One		Pilot Two		Pilot 3		Total	
	N	%	N	%	N	%	N	%
Oral/Write	25	83	10	37	16	20	51	37
Interpsl	2	7	12	44	39	48	53	38
Both	3	10	5	19	26	32	34	25
Total	30	100	27	100	81	100	138	100

It should be pointed out that the oral/written goal was selected by eighty-three percent of the pilot one subjects. At the time of pilot three, twenty percent chose that goal. From pilot one to pilot two and then to pilot three, the goal selection and the percentage of subjects per goal shifted away from the oral/written focus to the interpersonal and "both" categories. This may have been due to the fact that the subject selection process and the goal selection process appeared to be more exact and specific in pilot study group three compared to pilot study groups one and two.

### The Duration of Training

The duration of training dimension was defined as the total number of sessions (hours) each subject needed to achieve the learning goal. The two or three preassessment sessions did not count toward the training time. Time duration was dependent on the following factors:

1. The assessment scores upon entrance into the program.
2. The number of goals chosen to be achieved.
3. The session-by-session progress made by each subject toward the goal.

These three factors were used to determine the training duration for all subjects except the control group subjects and the Computer based training (CBT) subjects. The subjects were assigned to two time conditions (time blocks). One set of subjects received ten hours of training and a second set of subjects received more than ten, and up to twenty hours of training.

### The Training Methodologies

#### Individual (One-to-One) Tutorial Delivery System.

The the individual (one-to-one) tutorial delivery system sessions included a review of session assignments, a new content lesson, and a homework assignment. Whatever the goal, whatever the assignment from the previous session, the

beginning of each session was spent correcting the completed work. When errors were found, the lesson, or the correct rule, or the correct phonetic sounds, in the case of an oral goal, were given to the subject and explained until clearly understood. In the case of a goal of oral correctness, some sessions were devoted to listening and analyzing the original assessment audio tape. This tape was replayed for an error analysis by both the subject and the investigator. The tape was listened to more than once in search of the unique oral error specific to that employee. The subject self-corrected when hearing the error on the replay. At that point, a customized lesson occurred which involved both the tutor and the subject employee in a learning dialogue regarding the errors discovered. Assignments often involved written drill exercises that included a reading comprehension drill, a grammar lesson, and drill on that lesson. In the case of a writing goal, the subjects were given two traditional methods of business writing, available from standard texts, and the session work involved a content lesson and an analysis/edit of the written homework.

The sessions lasted for one hour, scheduled during the employees' normal business day. Sessions were scheduled approximately one week apart to allow time for the practice, homework, and content absorption that was involved in the training process. Finally, it should be noted that

considerable attention was directed to building a unique learning relationship between the subject and the investigator(tutor). Marx(1991)has raised the issue of the similarities and differences between the tutoring relationship and the counseling relationship. He points out that the counseling termination process is very similar to the tutoring termination process in that there is an assessment by both the tutor and the tutee of the goal completion. Both individuals in the learning relationship also deal with the closure of affective issues as well as relationship issues when the tutoring ends. Gallop(1988)has also framed the activity of tutoring within the context of a necessary trusting relationship between the tutor and the tutee. She maintains that the trust can supply an ideal atmosphere for learning. In this study, the similarities and overlap between counseling and the tutoring of skills were evidenced within the dynamics of the training sessions. The tutor concentrated on three items in each session: the desired goal, discussing any inhibitors-cognitive or affective-that arose in the session, and customizing the content to that specific employee.

The one-to-one environment provided an atmosphere, devoid of embarrassment or other negative factors, that might have been detrimental to an employer sponsored adult learning training program. The relationship between the subject and the

tutor/investigator was collaborative. There were occasions when work issues arose that directly or indirectly impacted the goals. These issues were systematically addressed by the tutor as an adviser to the employee. Such issues were looped back to the points of the learning for the subject. As was stated above, all subjects of pilot one and two were exposed to this individual one-to-one protocol. In pilot three, ten employees worked in this protocol. The total number of subjects who were exposed to the individual tutoring methodology was sixty-seven.

#### The Small Group Delivery System.

The small group delivery system method involved the investigator and three to four subjects per group. The primary criteria for the grouping was the common goal shared by all of the group members. These groups met within the same time frequency and duration of training as did the individual one-to-one members. The instructional content was also identical. The difference lied in the group interaction that occurred as a planned part of each group session. There were seventeen small groups totaling forty-four employees who were exposed to this methodology in 1993.

Of the pilot study group three subjects, fourteen of the seventeen small groups worked on interpersonal skill goals, and completed their training in ten hours. Approximately half of these subjects desired to learn workplace behavioral

strategies to act more assertively in certain situations rather than passively, which was their more natural style of work behavior. The other half of these fourteen small group subjects desired to learn workplace behavioral strategies to also act more assertively in certain situations rather than aggressively, which was their more natural style of work behavior. The groups were structured to have a mixture of employees within each group who were labeled, by their management, as aggressive and employees who were labeled, by their management, as passive. One group consisted of two employees who had an interpersonal goal as well as the written goal. They were thus exposed to the dual content of the written skill training and the interpersonal content. This goal mixture was also true for the subjects who were members of two classes and received the classroom methodology. It should be noted that those subjects who had the interpersonal goal, completed a separate instrument to facilitate their training. This instrument was the Personal Profile System described in the previous section on instrumentation. It is a self-scoring subjective instrument that reveals an employee's natural work style as it fits into the four workplace behavioral styles of the instrument. These four styles are titled Dominant, Influential, Steady, and Compliant. This instrument, as stated in the above noted section on measurement instruments, was used as the interpersonal

content. It facilitated group discussions that enabled the subjects to maintain their natural style strengths, while becoming aware of their own style's inherent weaknesses and, thus, to learn behavioral strategies to compensate for the weaknesses and to achieve their goals. The instructional methodology was structured to aid the group members to understand and manage conflicts between styles.

### Pilot Study Three Delivery Systems.

Placement of pilot three subjects into the various protocols was done based on the goals of the subjects. Most employees who worked on the oral/written goal were placed in one class. Most employees, who worked on the interpersonal goal, were placed into the small group delivery system program. Employees who worked on both the oral/written and the interpersonal goals were placed into the classroom delivery system program. It should be noted that a small group protocol consisted of four subjects or less. A classroom methodology consisted of five subjects or more.

The total number of subjects who experienced the classroom methodology was twenty-nine. The instructional content, duration of training, weekly scheduling, and length of each classroom training session were identical to the other delivery systems (the one-to-one tutorial delivery system and the small group delivery system) but not the CBT delivery system group nor the control group. The main difference



between the classroom delivery system program and the individual (one-to-one) tutorial delivery system program and the small group delivery system program was that in the classroom program the instructor lectured more and the subjects were more passive as adult learners because of the sizes of the classes.

#### The Computer Based Delivery System.

The computer based delivery system program consisted of three main subject categories (Math in the workplace, Workplace Communication, and Reading and Reasoning). The computer modules were created by an educational software corporation that marketed the workplace skills products to businesses nationwide. The Workplace Communication module covers the topics of spelling, punctuation, capitalization, and grammar in written communication. It also teaches the student the fundamentals of different types of business writing. The Reading and Reasoning module teaches skills for reading and for interpreting written material. The CBT modules contain content from grade six through eleven. This content was similar to the content all subjects-except the control group-received, who worked toward achieving the oral/written goal in the other methodologies. The CBT methodology was created to facilitate self-teaching. The students worked on their own with no facilitator, teacher, or regular monitor and they worked on their own time. Although subjects did not

choose all modules, if they had done so, it would have taken forty-five to seventy-five hours of training. The training facility was available to be used around the clock, seven days per week. The total number of employees who experienced the CBT methodology was eleven. These employees received the same pre-test and post-test measures as did all of the subjects in the study. All of the CBT subjects completed some training prior to the posttest. Because these subjects had to plan their training on their own time and not on company time, some of these employees had not completed all of their planned training modules at the time their posttest session

The twenty control group subjects were recruited as volunteers for this study. They received the same pre-test and post-test measures as the rest of the subjects. They were posttested two to three weeks after their pre-test session.

When the training was completed for all methodologies except the CBT group and the control group, a final individual completion meeting was held between each subject, the respective manager, and the investigator. The purpose of this meeting was to allow the employee to discuss the training experience and to ask if the goal of the training was achieved. The manager was asked if he/she noticed any differences regarding the employee's work performance involved with the goal of the training. Both the employee and the manager were asked to complete a subjective evaluation form

and return it to the investigator. This form listed the goal desired to be accomplished and asked the subject to rate him/herself-and the manager to rate the employee-on a scale of one to ten (low being one; ten being high). On that scale, what they would rate themselves before the training had begun and what they would rate themselves at the completion of the training. The form ended with a question seeking narrative information from both, regarding the reasons justifying the "after training" rating. This completed form became the measure coded "supervisor rating" and "employee self rating" that was tracked in the statistical analysis of each subject except the CBT subjects and the control group subjects. At the end of this meeting the employee was awarded a personalized completion certificate which recognized their efforts in the training program.

## CHAPTER IV

### RESULTS

This chapter presents the results of various statistical procedures that were applied to the data set. First of all, a delimiting of the dependent variables is explained, as well as the inclusion and exclusion of the statistics derived from the subjects who chose the interpersonal goal.

Because of the small number of subjects in both the first and the second pilot study groups, these subjects were grouped together. This produced a total combined number of subjects for pilot study group one( $n=30$ ) and pilot study group two( $n=27$ ) of fifty-seven. This combination was possible since the subjects of both of the pilot study groups received the one-to-one individual tutoring treatment. No other treatment was applied to them. The subjects of pilot study group three( $n=114$ ) were assigned to a variety of treatment conditions(see chapter three for details). Thus, the first statistical tests were applied to the data of the fifty-seven employees of pilot study groups one and two.

The Nelson-Denny test instrument yielded the first eleven scores, listed below. The Dailey Business English Test yielded the last two measures, listed below. These were:

- Vocabulary raw score

- Vocabulary percentile
- Vocabulary grade equivalency
- Comprehension raw score
- Comprehension percentile
- Comprehension grade equivalency
- Total raw score
- Total percentile
- Total grade equivalency
- Reading rate raw score
- Reading rate percentile
- Business English raw score
- Business English percentile

It should be noted that for statistical clarity, the extraneous scores were dropped from the analysis because they are already represented in the scores retained in the study. That is to say that one vocabulary score produced three scores(raw, percentile, and grade equivalency). The same was true of the comprehension score. These two raw scores were added together to form the total raw score, the total percentile score, and the total grade equivalency score. Thus, removing these extraneous measures from the analysis eliminated the statistical redundancy of the measures. Likewise, the Business English test yielded a raw score and a percentile score. In an effort to more clearly analyze the data, only the following scores were retained in the data set:

- Vocabulary raw score (VR).
- Vocabulary grade equivalence (VG).
- Comprehension raw score (CR).
- Comprehension grade equivalence (CG).
- Reading rate raw score (RR).
- Business English raw score (BR).
- Supervisor rating (SR).
- Employee self-rating (ER).

The last two scores (Supervisor rating and Employee self-rating) were obtained (see chapter three for details) after each subject (except the CBT subjects and the control subjects) completed his/her training program.

The dependent variables that were eliminated from the analysis were:

- Vocabulary percentile score
- Comprehension percentile score
- Total raw score
- Total percentile score
- Total grade equivalence
- Reading rate percentile
- Business English percentile

Finally, it should be noted that one of the treatment independent variables (goal) involved subjects whose only goal was to declare an interpersonal goal. These subjects were

assessed, pretest and posttest, on the Nelson-Denny and the Dailey Business English test. Yet their training and their treatment was believed to have no relationship to the skills measured by the Nelson-Denny test nor the Dailey Business English test. However, the supervisor rating score and the employee self-rating score did include a pre-test rating and a posttest rating. For these reasons, the statistical procedures were performed, first including, then excluding, the interpersonal goal subjects to preserve the consistency and the continuity of the analysis.

**Results: Pilot Study Group One and Two Combined.**

A Manova procedure was utilized to test for differences in the eight dependent posttest variable scores across groups with the pretest scores serving as a covariate. This operation first included the interpersonal goal group, then excluded that group. The chosen alpha level was .01, to accommodate a more robust analysis. These results are summarized in table 3.

Table 3. Pilot Group One and Two. Manova Posttest with Pretest. Multivariate, Univariate.

Multivar.	F:		F		Sig.	
	Intrpr.In		Intrpr.Out		Intrpr.In	Intrpr.Out
Pillais	4.444		4.053		.000	.000
Hotellings	8.689		7.698		.000	.000
Wilks	6.747		6.392		.000	.000
			Univar			
<u>Score</u>	<u>MS</u>	<u>F</u>	<u>Sig:lin</u>	<u>Sig:out</u>	<u>Power</u>	<u>Pow:out</u>
VR	1404.29	27.740	.000	.000	.399	.682
VG	47.038	32.148	.000	.000	.999	.946
CR	504.345	8.886	.000	.000	.196	.358
CG	36.510	9.231	.000	.000	.054	.291
RR	12081.2	6.113	.000	.006	.998	.974
BR	608.776	15.067	.000	.000	1.000	1.000
SR	4.969	4.198	.001	.000	.994	1.000
ER	1.521	1.669	.131	.478	.708	.281

As can be seen from the results appearing in the table, the Multivariate tests were significant. The Univariate test indicated that all of the dependent measures were significant at the .01 level, except for the Employee Self-Rating score. That is to say that the individual One-to-One treatment resulted in higher scores of subjects in the posttests than in



their pre-tests, with the exception of the Employee Self-Rating score.

Table 4. Pretest and Posttest Means and Standard Deviations, plus % Gain.

<u>Score</u>	<u>Pretest</u>	<u>Pretest</u>	<u>Post</u>	<u>Post</u>	<u>%Gain</u>
	$\mu$	$\sigma$	$\mu$	$\sigma$	
<b>VR</b>	45.772	15.908	47.456	15.621	3.68
<b>VG</b>	12.504	2.593	12.818	2.824	2.51
<b>CR</b>	36.281	10.753	42.140	10.986	16.15
<b>CG</b>	10.539	3.118	12.053	2.934	14.37
<b>RR</b>	214.982	66.165	230.456	58.478	7.20
<b>BR</b>	73.193	11.650	75.719	11.027	3.45
<b>SR</b>	4.281	1.532	7.246	1.313	69.26

As can be seen from an examination of table 4, in each score represented, an increase resulted. The percent gain figures revealed the range of the significantly different scores. This range varied from a low of 2.51 percent for the Vocabulary Grade equivalence scores to a high of 69.26 percent for the Supervisor Rating scores.

The Manova procedure was once again applied to the posttest scores across the eight independent variables with the pretest scores serving as the covariate. First the Interpersonal group data was included in the analysis, then

excluded from the analysis. These combined results are presented in tables 5, 6, and 7.

Table 5. Manova Posttest with Pretest  
Multivariate and Univariate Tests  
by Tenure, Age, and Grade

Test	F	Sig.
Multivar-Wilks	.467	.870
Univariate	-	-
VR	.655	.423
VG	.143	.707
CR	.004	.945
CG	.001	.971
RR	.031	.860
BR	.028	.866
SR	.167	.684
ER	.966	.331

As can be seen from the results appearing in table 5, the Multivariate and Univariate tests of significance were not found to be significant across the tenure, age, and job grade groupings. That is to say that no significant difference was found in the dependent measures across tenure, age, or job grade groupings. Although the Employee Self-Rating score was significant for the Univariate F test by tenure by age, the Multivariate F test was not found to be significant. Again,

these results occurred whether the Interpersonal goal subjects were included or excluded from the data set.

Table 6. Manova Post Test with Pretest  
Multivariate and Univariate Tests  
by Sex, Race, and Sessions(Time).

Test	F	Sig.
<b>Multivar-Wilks</b>	1.303	.277
<b>Univariate</b>	-	-
<b>VR</b>	3.865	.056
<b>VG</b>	1.604	.213
<b>CR</b>	2.065	.159
<b>CG</b>	2.464	.125
<b>RR</b>	.164	.687
<b>BR</b>	.028	.866
<b>SR</b>	.023	.878
<b>ER</b>	.325	.572

The results summarized in table 6 are similar to those reported in Table 5. The Multivariate tests of significance for the posttest scores compared to the pretest scores of the combined Pilot Group one and two were not found to be significantly different across sex, race, and sessions (time) groupings. That is to say that non-significant results were found for all scores across races, sexes, and sessions (time blocks). Although the Univariate F test for the Employee Self-Rating score was found to be significant for race, the

Multivariate F test was not significant. For the independent variable sex, the Univariate F test for the Comprehension Raw score and the Comprehension Grade Equivalence score was found to be significant. The Multivariate F tests were not significant.

Table 7. Manova Post Test with Pretest  
Multivariate and Univariate Tests  
by Education Level and Goal.

Test	F	Sig.
<b>Multivar. -Wilks</b>	.806	.755
<b>Univariate</b>	-	-
VR	.764	.555
VG	.481	.749
CR	.234	.917
CG	.355	.839
RR	.369	.829
BR	1.432	.241
SR	.440	.779
ER	.993	.422

The scores by education level and goal showed no significance as well(see table 7). An examination of the results appearing in table 3 through 7 indicate that the gain scores themselves (except for the Employee Self-Rating score) were significantly higher(posttest to pretest) for the combined pilot study group one and two subjects. However, when

the independent variables were systematically factored into the analysis, no statistically significant differences were found. These results were true whether the Interpersonal goal data were included or excluded from the analysis.

An effort was made to determine if there were significant differences in the pretest scores prior to the one-to-one tutorial methodology being applied to the subjects of the combined Pilot Study Group one and two. An Anova procedure was performed on the pretest scores across the independent variables(except for the treatment variable) for the subjects in the One-to-One Tutoring treatment condition. Again, the Interpersonal goal data was included, then excluded, from the analysis. These results are summarized in tables 8, 9, and 10.

Table 8. Anova Pretest by Sessions(Time) with Means.  
Interpersonal Goal included.

Score	SS	MS	F	Sig.
VR	1459.154	1459.154	6.671	.013
Score	Mean:10 hrs.		Mean:20 hrs.	
VR	50.14		38.29	

As can be seen in table eight, those subjects who ended their training after only ten hours, scored significantly higher on their pretest Vocabulary Raw scores than the twenty hour subjects. Post-hoc tests confirmed these results.

Table 9. Anova Pretest by Goal with Means  
Interpersonal Goal Included.

Score	SS	MS	F	Sig.
VR	2160.968	1080.484	4.732	.013
CR	1275.904	637.952	6.836	.002
CG	107.289	53.644	6.928	.002

  

Score	Mean: O/W Goal	Interpersonal	Both
VR	41.66	57.43	43.38
CR	33.60	45.00	32.75
CG	9.72	13.09	9.65

Subjects (see table 9) who chose the Interpersonal goal scored significantly higher than the two other goal groups on the Comprehension Raw score and the Comprehension Grade Equivalence pretest score and significantly higher than the Oral/Written goal group on the Vocabulary Raw score. Post-hoc tests confirmed these results.

Table 10. Anova Pretest by Sex with Means  
Interpersonal Goal included

Score	SS	MS	F	Sig.
VR	1453.269	1453.269	6.644	.013

  

Score	Mean: Female	Mean: Male
VR	43.02	57.27

As noted in table 10, the male subjects scored significantly higher in their Vocabulary Raw pretest scores

than the females. Post-hoc tests confirmed these results. There were no other pretest significant differences found for the combined Pilot Study Groups one and two.

Finally, the posttest data set was analyzed using an Anova procedure to test for differences across the independent variables. The Interpersonal goal variable was factored into the analysis where appropriate. These results are reported in table 11.

Table 11. Anova Posttest by Age, with Means Interpersonal Goal Included.

Score	SS	MS	F	Sig.
BR	1019.714	1019.714	10.386	.002
Score	Mean: <30		Mean: >30	
BR	80.31		70.96	

As can be observed from table eleven, the only significance in posttest scores for the combined study group subjects of pilot one and two, was the Business English Raw score by age. That is to say, that the BR posttest scores of the younger age group (less than thirty years old) were found to be significantly higher than the BR posttest scores of the older subjects (age thirty and older). Post-hoc tests confirmed these results. There were no differences found in the posttest scores across the other independent variables.

### Discussion for Pilot Study Groups One and Two Combined.

The results reported in table three revealed that all of the posttest scores were significantly higher than the pretest scores. The Univariate F test was significant for all scores except the Employee Self-Rating score. These results occurred whether the Interpersonal goal data were included or excluded from the analysis. The means and percentages of gain, contained in table 4, reflect the increases that were produced for each score. All other Manova procedures of the posttest scores with the pretest scores as covariate by all independent variables proved not to be significant. These results are presented in tables 5, 6, and 7.

The Anovas for the pretest scores across the eight independent variables showed a small mixture of significances, as depicted in tables 8, 9, and 10. The Vocabulary Raw score (VR) was found to be significant across sessions (time blocks) with the Interpersonal goal included. The results appearing in table 9 show that the VR, CR, and CG pretest scores were significant with respect to the Interpersonal goal. The VR pretest was also found to be significant across sexes. No other pre-test scores were found to be significant for the combined Pilot Study Groups one and two.

The posttest Anova data for the combined pilot groups are presented in table 11. The BR scores were found to be significant across age levels.



**Results: Pilot Study Group Three.**

A Manova procedure was utilized with the eight dependent measures. Once again the pretest scores were used as covariates. Table 12 contains these results for Pilot Study Group Three.

Table 12. Pilot Group Three. Manova Pretest with Posttest. Multivariate, Univariate. N=112

Multivar.		F:	Sig.	
Pillais		16.992	.000	
Hotellings		59.096	.000	
Wilks		34.211	.000	
		Univar.		
Score	MS	F	Sig.	Power
VR	10567.3	232.29	.000	1.000
VG	181.980	169.97	.000	1.000
CR	3770.53	66.015	.000	.033
CG	228.141	60.514	.000	.864
RR	71962.8	23.585	.000	1.000
BR	3089.60	80.907	.000	1.000
SR	81.541	59.735	.000	1.000
ER	5.604	5.652	.005	.892

As can be seen in the table, the Multivariate tests were found to be significant. In addition, all scores were found to be significant using the Univariate test. The Employee Rating

Score was also significant for the pilot three subjects, unlike the non-significant ER score of Pilot Study Group one and two combined. The means for this data set are presented in table 13.

Table 13. Pilot Three: Pretest and Posttest Means and Standard Deviations.

Score	Pretest	Pretest	Posttest	Posttest
	$\mu$	$\sigma$	$\mu$	$\sigma$
VR	53.277	25.155	57.670	24.784
VG	12.950	3.535	13.595	3.294
CR	41.875	15.888	47.321	16.057
CG	11.795	4.056	12.951	3.987
RR	243.964	71.325	245.500	82.317
BR	76.429	13.427	77.295	14.252
SR	3.679	1.263	6.741	1.836
ER	4.716	1.334	7.765	1.052

An examination of table 13 reveals an increase in the mean scores of each of the eight dependent variables across the pretest and posttest conditions .

To determine if any of the scores differed across the independent variables, a Manova procedure was utilized. Because of the arrangement in which Study Group one and two were combined, the scores and analysis that follow include only those scores for the pilot three subjects. Because of

the manner in which the Pilot Three Study Group was established, and the subjects were separated into the various five treatment groups as explained in Chapter Three, two of the eight scores required a further inclusion and exclusion operation. Specifically, the Computer Based Training group subjects(n=11) were unable to be measured on the Supervisor Rating scale or the Employee Self-Rating scale. This was due to the fact that their participation in their training methodology was confidential and unknown to their immediate managers. The Control group subjects(n=20) were also unable to produce the SR and ER scores because they didn't experience any training. They simply subjected themselves to the pretest and posttest measures which produced the six pre/post scores of the Nelson-Denny and the Dailey Business English test. Thus the analysis had to be performed including and excluding these groups throughout the Pilot Study Group Three analysis as well as the All Pilot Study Group analysis.

A Manova procedure was performed on pretest and posttest scores across the Tenure, Age, and Job Grade groupings. Table 14 contains these results.

Table 14. Manova Posttest with Pretest. Multivariate and Univariate by Tenure, Age, and Grade.

TEST	F	Sig.
<b>Multivar-Wilks</b>	6.00	.261
-	Univariate	-
VR	5.468	.021
VG	1.346	.249
CR	.228	.633
CG	.288	.592
RR	.045	.832
BR	.032	.857
SR	.110	.740
ER	1.162	.285

Although there were no scores that were found to be significant across the Tenure, Age, and Grade groupings, there were two scores (CR and CG) that were significant with respect to age and grade (see table 15).

Table 15. Manova Posttest with Pretest. Multivariate and Univariate, Age and Grade.

Test	F	Sig.	Power
Multivar-Wilks	3.213	.007	1.00
-	<b>Univariate</b>		-
VR	3.87	.052	.494
VG	3.322	.071	.437
CR	7.455	.008	.769
CG	11.077	.001	.908
RR	2.001	.160	.287
BR	.265	.608	.043
SR	1.353	.249	1.00
ER	.270	.605	.048

Isolating the CR and CG scores with the Manova procedure (age and grade) did not yield significant differences. Post hoc T-tests for these two scores by age were not found to be significant. However, the Post hoc T-tests by grade were found to be significant for these scores. That is to say that the higher labor grade subjects tended to score significantly higher than the lower labor grade subjects for the CR and CG measures. Also, when a Manova procedure was performed on the SR score by grade, there was a significant difference. However, post hoc T-tests showed no significance.

The next three independent variables studied were Race, Sex and Sessions (time blocks). These results are contained in Table 16 below.

Table 16. Manova Posttest with Pretest. Multivariate and Univariate tests by Race, Sex, and Sessions.

Test	F	Sig.
<b>Multivar-Wilks</b>	.970	.453
	<b>Univariate</b>	
<b>VR</b>	.397	.530
<b>VG</b>	.090	.764
<b>CR</b>	1.644	.204
<b>CG</b>	1.453	.232
<b>RR</b>	.173	.678
<b>BR</b>	4.577	.036
<b>SR</b>	.182	.670
<b>ER</b>	.406	.526

As can be seen from the above table, there were no significant differences found in the dependent measures across the Race, Sex, or Sessions groupings.

The remaining independent variables to be explored were Education Level and Treatment. The Control and CBT groups had no coded goals, thus the Manova procedure was run on all scores by Education Level and Treatment. These results appear in Table 17.

Table 17. Manova Posttest with Pretest. Multivariate and Univariate by Education Level and Treatment.

Test	F	Sig.
<b>Multivar-Wilks</b>	.861	.699
	<b>Univariate</b>	
<b>VR</b>	.739	.619
<b>VG</b>	.851	.534
<b>CR</b>	1.206	.310
<b>CG</b>	1.161	.334
<b>RR</b>	1.255	.286
<b>BR</b>	.605	.725
<b>SR</b>	.106	.899
<b>ER</b>	2.609	.082

A Manova of the One-to-One treatment, the Small group treatment, and the Classroom treatment by Goal and Treatment was performed and appears in Table 18.

Table 18. Pilot Three Manova Posttest with Pretest. Multivariate, Univariate by Goal and Treatment (for treatments 1, 2, and 3).

Test	F	Sig.
<b>Multivar-Wilks</b>	1.072	.391
	<b>Univariate</b>	
VR	.317	.729
VG	.824	.444
CR	1.074	.348
CG	.731	.485
RR	1.454	.242
BR	.036	.964
SR	.897	.413
ER	1.796	.175

There were no significant differences in the dependent measures across the independent variables of Education level, Goal, and Treatment for the Pilot Study Group Three subjects.

An effort was made to determine if any Pilot Study Group Three pretest scores were significant across any of the independent variables. An Anova procedure was used to test for differences. Five significant scores, by Job grade, were found (see Table 19).



Similarly, these same pretest scores proved to be significantly different across Races. That is to say that Whites scored significantly higher than African Americans and race "other"., on the VR, VG, and CR scores and Whites also scored significantly higher on the CG and BR scores than African American subjects. Post hoc tests confirmed these results.

For the independent variable of Sessions(time blocks), the six pretest scores of VR, VG, CR, CG, RR, and BR were found to be significant. Post-hoc Anovas confirmed these results. That is to say that on the above six pretest scores, those subjects receiving ten hours of training scored significantly higher than subjects who received between eleven and twenty hours of training.

Table 20 presents a summary of the description of the pretest scores across Education Levels.

Table 20. Anova Pretest Scores across Education Levels, with Means.

Score	SS	MS	F	Sig.
VR	578.196	2859.098	10.697	.000
VG	126.302	63.151	11.431	.000
CR	1253.558	626.779	6.100	.004
CG	77.313	38.657	5.316	.007
BR	815.470	407.735	5.704	.005

  

Score	Mean: HS.	Mean: 2yr-col	Mean: College
VR	40.45	39.04	69.74
VG	10.88	11.04	15.29
CR	32.50	34.09	51.80
CG	9.52	9.82	14.26
BR	69.00	71.31	83.45

As can be seen in the table, those subjects who were college degreed scored significantly higher on the five pretest measures than the other two education groups. Post-hoc Tukey and LSD tests confirmed these results.

The pretest VR, CR, CG, and BR scores were found to be significant across the goal conditions. Post-hoc tests confirmed the fact that those subjects who chose the Interpersonal goal scored significantly higher in those measures-pretest-than subjects choosing the Oral/Written goal and the "both" goal. No other significant differences were

found in the pretest scores across the independent variable conditions.

The posttest scores were then analyzed. As in the pretest, five scores were found to be significant across Grades(see Table 21).

Table 21. Anova Posttest Scores by Grade, with Means.

Score	SS	MS	F	Sig.
VR	12340.68	12340.68	24.80	.000
VG	204.549	204.549	22.52	.000
CR	5331.829	5331.829	25.13	.000
CG	306.272	306.272	23.02	.000
BR	4098.827	4098.827	27.46	.000

  

Score	Mean:Grade<20	Mean:Grade>20
VR	49.84	72.92
VG	12.64	15.46
CR	42.84	56.05
CG	11.89	15.02
BR	73.30	85.08

Subjects who were in labor grade twenty and above scored significantly higher in the five posttest scores than subjects in the lower labor grades. Post-hoc tests confirmed these findings. As was true in the pretest Anovas, the BR score also revealed a significant two-way interaction by grade and

tenure indicating that the high tenure and high labor grade subjects scored higher on the posttest BR score than low tenure and low job grade employees.

Similarly, these same posttest scores were found to be significantly different across Races. That is to say that Whites scored significantly higher than African Americans and race "other" on the VR, VG, CR, and CG scores. In addition, Whites scored significantly higher on the BR score than the African American subjects. Tukey and LSD post-hoc tests confirmed these results. In addition, the CG posttest contained a significant two-way interaction for Race by Sex. Female Blacks (n=35), scored significantly higher than Male Blacks (n=5). Also, the Business English Raw posttest was found to be significant in a two-way interaction (sex by sessions).

As was true for the pretest Pilot Three results for sessions, so too was the case for the posttest scores of VR, VG, CR, CG, RR, and BR. These scores were found to be significant at the .01 level. These findings were confirmed by post-hoc tests. That is to say that on the above six posttest scores, subjects receiving ten hours of training scored significantly higher than subjects who received between eleven and twenty hours of training. The Employee Self-rating posttest score was also found to be significant by Race.

Post-hoc tests revealed that African Americans scored significantly higher than Whites on this measure.

The final posttest procedures measured the scores across Education Level and Goal. Table 22 presents a summary of these results across Education Levels.

Table 22. Anova Posttest Scores by Education Levels, with Means.

Score	SS	MS	F	Sig.
VR	4869.09	2434.66	9.564	.000
VG	89.415	44.708	8.936	.000
CR	1158.452	579.226	4.650	.013
BR	1153.292	576.646	7.443	.001
Score	Mean: H3.	Mean: 2yr-col.	Mean: College	
VR	43.70	44.41	73.80	
VG	10.88	11.89	15.36	
CR	36.62	41.66	54.46	
BR	67.00	69.69	84.10	

College degreed subjects scored significantly higher in the posttest scores VR, VG, CR, and BR than the other two education levels. Tukey and LSD post-hoc tests confirmed these results. The Business English Raw posttest score was the only score significant by Goal. That is to say that subjects who chose the Interpersonal goal scored significantly higher than subjects in the other two goal choice categories.

Once again, Tukey and LSD post-hoc procedures confirmed these results.

Discussion of the Results Related to the Pilot Study Group Three Data Set.

As was seen in Table 12, all posttest scores were found to be significantly higher than the pretest scores. When the scores were compared across all independent variables, significant differences were found for only a few comparisons. The Comprehension Raw scores and the Comprehension Grade Equivalence scores were significant most strongly across Grade levels(see table 15). No significant differences were found for any other independent variables including the five levels of Treatment groups.

The Anova procedure (with appropriate post-hoc procedures) yielded a closely matched set of results for the pretest and the posttest scores(Tables 16 through ??). That is to say that the following applied

<b>Independent Var.</b>	<b>Sig. Pretest Scores</b>	<b>Sig. Posttest Scores</b>
<b>Grade</b>	VR, VG, CR, CG, BR	VR, VG, CR, CG RR, BR
<b>Race</b>	VR, VG, CR, CG, BR	VR, VG, CR, CG, BR
<b>Sessions</b>	VR, VG, CR, CG RR, BR	VR, VG, CR, CG RR BR
<b>Education</b>	VR, VG, CR, CG, RR, BR	VR, VG, CR, CG, BR
<b>Goal</b>	VR, CR, CG, BR	BR

Discussion of the Results Related to the Combined Data Set.

The Pilot Study Groups one, two, and three were combined into an All Pilot Study Group. This combined group data set was subjected to the same statistical procedures as the individual groups.

In table 23 are the results of the Manova for all Posttest scores with the Pretest scores serving as covariates.

Table 23. All Pilot Groups. Manova Multivariate, Univariate.  
N=169

Multivariate		F	Sig.	
Pillais		24.837	.000	
Hotellings		73.854	.000	
Wilks		46.915	.000	
Score	MS	F	Sig.	Power
VR	12921.72	253.57	.000	1.000
VG	245.715	199.67	.000	1.000
CR	4557.77	81.61	.000	.042
CG	277.941	73.88	.000	.781
RR	86639.800	32.46	.000	1.000
BR	3800.75	92.64	.000	1.000
SR	88.127	59.968	.000	1.000
ER	8.889	9.293	.000	.982

Table 24 contains the descriptive statistics that follow from Table 23 above.

Table 24. All Pilot Group. Pretest and Posttest Means and Standard Deviations.

Score	Pretest	Pretest	Posttest	Posttest
	$\mu$	$\sigma$	$\mu$	$\sigma$
VR	50.746	22.696	54.225	22.597
VG	12.799	3.247	13.333	3.156
CR	39.988	14.572	45.574	14.718
CG	11.371	3.803	12.648	3.682
RR	234.189	70.777	240.426	75.285
BR	75.337	12.912	76.763	13.240
SR	3.928	1.407	6.949	1.654
ER	4.587	1.387	7.877	1.036

The results reported in the table indicate that an increase in the mean scores of each of the eight scores across the pretest and posttest conditions was found.



An effort was made to discover if any of the scores differed across the independent variables. The Manova procedure for all scores across the Tenure, Age, and Grade conditions yielded non-significant findings for the first six scores: VR, VG, CR, CG, RR, BR. The Supervisor Rating score and the Employee Self-Rating score, although significant by Grade in the Multivariate and Univariate tests, were not found to be significant using the post-hoc T-Test procedure. The ER score by Grade was found to be significant at the .05 level across Grades.

<u>Score</u>	<u>Mean:Grade&lt;20 n=96</u>	<u>Mean:Grade&gt;20 n=42</u>
ER-Pretest	4.48	4.80
ER-Posttest	7.98	7.61

That is to say that the lower labor grade subjects rated themselves as having achieved a significantly higher skill gain than the higher labor grade subjects.

Next, the Manova procedure was performed on all scores across the Race, Sex and Sessions(time blocks) groupings. The first seven dependent measures were not found to be significant. However, the Employee Self-Rating score by Race produced a Multivariate significance of .023 and a Univariate test result of .004. T-test post-hoc procedures confirmed

these results. Specifically, African American subjects rated themselves as having significantly gained more in skill achievement than White subjects.

A Manova procedure was used to determine if there were any differences for the scores across Education level, Goal, and Treatment conditions. The results are summarized in Table 25.

Table 25. All Pilot Groups. Manova Posttest with Pretest by Education, Goal, and Treatment. Multivar. Univar.

Multivariate		F	Sig.
Wilks		.230	.997
Univariate			
Score	MS	F	Sig.
VR	23.689	.468	.627
VG	.360	.287	.751
CR	14.914	.258	.772
CG	.218	.305	.737
RR	896.307	.345	.709
BR	10.569	.261	.770

The first six scores showed no significant differences across Education level, Goal, or Treatment conditions. The SR and ER scores had a Multivariate significance of .019 and a Univariate significance of .048 for SR and .039 for the ER score across treatments. The SR by Education level, although significant at the Multivariate (.009) and the Univariate (.011), was not found to be significant using the post-hoc

analytic procedures. When post-hoc procedures were applied to the SR and ER scores across the treatment groups, the following results were obtained.

**SR:** significant for treatment **One-to-One** over treatment **Classroom**.

**ER:** significant for treatment **One-to-One** over treatment **Small Group**.

**ER:** .021 significance for treatment **Classroom** over treatment **Small Group**.

Once again, it is important to note that the CBT group and the Control group had no SR nor ER scores.

A final Manova procedure was applied to the first six scores across the Treatments. Table 26 contains these results.

Table 26. All Pilot Group. Pretest and Posttest Manova. Multivariate, Univariate by Treatment Groups.

Multivariate		F	Sig.	
Wilks		2.094	.002	
Univariate				
Score	MS	F	Sig.	Power
VR	152.617	3.154	.016	.811
VG	1.585	1.297	.273	.398
CR	48.575	.866	.485	.271
CG	5.094	1.366	.248	.418
RR	5159.31	1.979	.100	.584
BR	115.86	2.961	.022	.782

The table reveals that the Univariate test for the VR and BR scores were not significant at the .01 level of significance but they were significant at the .02 level. Post-hoc T-tests for paired groups revealed the following:

#### **Vocabulary Raw Scores**

- The Classroom treatment scores were significantly higher than the One-to-One treatment scores.
- The Small Group treatment scores were significantly higher than the Classroom treatment scores and the CBT scores.
- The Small Group treatment scores were also significantly higher than the One-to-One treatment scores.
- Control group scores were higher than the Classroom scores and higher than the CBT scores and higher than the One-to-One scores.

#### **The Business English Raw Score**

- The One-to-One scores were higher than the Classroom scores.
- The One-to-One scores were higher than the Small Group scores.

- The One-to-One scores were higher than the Control Group scores.
- The Small Group scores were higher than the Classroom scores.
- The Small Group scores were higher than the CBT scores
- The Control Group scores were higher than the Classroom scores and the CBT scores

The final statistical procedure applied to the All Pilot Group dependent measures was an Anova. Pretest scores were examined first, then posttest scores. Table 27 summarizes the pretest differences across Grades.

Table 27. All Pilot Group. Pretest Anova by Grade, with Means.

Score	SS	MS	F	Sig.
VR	9183.433	9183.433	19.726	.000
VG	196.803	196.803	20.538	.000
CR	2691.111	2691.111	14.154	.000
CG	165.884	165.884	12.731	.000
BR	3533.110	3533.110	25.927	.000
Score	Mean: Grade<20		Mean: Grade>20	
VR	45.50		61.34	
VG	12.06		14.29	
CR	37.73		44.54	
CG	10.83		12.45	
BR	72.58		80.91	

The RR, SR, and ER pretest scores were not found to be significant across Grades. Thus, the higher labor grade employees scored significantly higher in the pretest scores in table 27 than the lower labor grade subjects.

The results of the analysis of the Pilot Three pretest scores across Races are similar to the All Pilot pretest scores across Races. Specifically, the VR, VG, CR, and CG pretest scores were higher for Whites than for African American or other subjects. The White subjects scored significantly higher on the pretest BR than African American employees. Post-hoc procedures confirmed these results.

Similarly, the six pretest scores of VR, VG, CR, CG, RR, BR were found to be significantly different across sessions(time blocks). Post-hoc procedures verified these results. Specifically, ten-hour subjects scored significantly higher on these six scores(pretest) than subjects having more than ten sessions.

Pretest scores for the All Pilot Group across Education levels matched the results of pilot three pretest scores across Education levels(see Table 20). The Tukey and LSD post-hoc tests confirmed these results. Specifically, on the pretest scores: VR, VG, CR, CG, and BR, the College graduate group scored significantly higher than the High School graduate group and the Two-Year college group.

The same results of pretest scores across Goals of Pilot Three were repeated for the All Pilot Anova data set. Specifically, the Interpersonal goal group scored significantly higher than the Oral/Written group or the "both" group on the VR, VG, CR, CG, RR, and BR scores. No other independent variables were found to have significantly different pretest scores.

The posttest scores for the All Pilot group were then analyzed. As was true across Grades(see Table 21), for the Pilot Three scores, so too was the case for the All Pilot group scores across Grades. However, in addition to the VR, VG, CR, CG, and BR scores, the All Pilot group significance included the Reading Rate Raw Score which was found to be significant across Grades. Specifically, the means of the higher labor grade subjects, in these six posttest scores were higher than the means of the lower labor grade employees. These results were confirmed in the post-hoc tests. The Anova for the Employee Rating posttest score did show a significant difference across Tenure groupings but the post-hoc test wasn't significant at the .01 level.

When the independent variable of Race was factored into the All Pilot group posttest data set, the results matched the pretest results score for score. That is to say that the VR, VG, CR, and CG scores were significantly higher for White subjects than for Blacks and others. For the BR score, Whites

scored significantly higher than African Americans. These results were confirmed in the Tukey and LSD post-hoc procedures.

The African American subjects scored significantly higher in the Employee Self-rating posttest score than the White subjects. Post-hoc tests confirmed these results at the .01 level.

Similarly, the five posttest scores of VR, VG, CR, CG, and BR were significant by sessions(time). Post-hoc tests confirmed that the ten hour group scored significantly higher on the posttest scores than the subjects who were in the longer session category.

The Comprehension Grade equivalency post test score yielded an .011 three-way significant interaction(Race by Sex by Sessions).

The all pilot posttest scores across Education levels produced similar results(see table 22) for the VR, VG, CR, CG scores as well as the BR score for the All Pilot posttests. Once again, Tukey and LSD post-hoc tests confirmed the results that the College group subjects scored significantly higher than the High School group and the Two-year college group.

When the Goal independent variable was factored into the All Pilot posttest analysis for VR, VG, CR, CG and BR scores, they all showed significance. Post-hoc tests confirmed that the Interpersonal goal subjects scored significantly higher on



these scores than the Oral/Written goal subjects and the "Both" goal subjects.

The only posttest score that was significant by Treatment groups was the BR score. Post-hoc tests revealed that the Control group scored significantly higher than the Classroom group, the CBT group, and the One-to-One group. The Small group scored significantly higher than the Classroom group, the CBT group, and the One-to-One Tutoring group. The One-to-One group scored significantly higher on the BR posttest than the Classroom group.

#### Discussion for the All Pilot Group Results

As was seen in Table 22, all posttest scores were found to be significantly higher than the pretest scores. When the Manova procedure was applied by Grade, only the ER score prevailed as being statistically significant. This score arose as the only significant finding across Races as well. The SR and ER scores were found to be different across treatment groups. The Manova for the independent variable Treatment, when analyzed alone, resulted in the VR and BR scores being significantly different across a few groups.

The Anova procedures taken in combination with the post-hoc analyses, once again produced a closely matched set of

results for the pretest and the posttest scores across the independent variables. These findings are summarized below.

<b>Independent Var.</b>	<b>Sig. Pretest Scores</b>	<b>Sig. Posttest Scores</b>
<b>Grade</b>	VR, VG, CR, CG, BR	VR, VG, CR, CG RR, BR
<b>Race</b>	VR, VG, CR, CG, BR	VR, VG, CR, CG, BR
<b>Sessions</b>	VR, VG, CR, CG RR, BR	VR, VG, CR, CG RR BR
<b>Education</b>	VR, VG, CR, CG, RR, BR	VR, VG, CR, CG, BR
<b>Goal</b>	VR, CR, CG, BR	BR

## CHAPTER V

### DISCUSSION.

In this chapter we will revisit the hypotheses stated in Chapter Three. The results will be discussed with respect to how they relate to the hypotheses. The limitations of the research will be discussed including the issues of design and analysis raised by Cook and Campbell(1979). Finally, a description of a future research program will be presented.

#### Discussion of the Hypotheses

Hypothesis 1. There will be no differences between the pretest scores and the posttest scores across treatment conditions.

In the course of the analysis of the data set, a distinction was made between Pilot Group Three-the pilot in which the other four treatments were introduced-and the All Pilot group. In all pilot groups, the posttest scores considered alone(pretest to posttest) were found to be significantly higher than the pretest scores, except for the Employee Self-Rating score of Pilot Group One and Two combined. In Pilot Three, there was no difference found in posttest scores across treatment groups. In the All Pilot

Group, the Vocabulary Raw score, the Business English Raw, the Supervisor Rating score, and the Employee Self-Rating score were found to be significantly different across some of the treatment groups. Specifically the VR and BR scores were significantly different across treatments. For the VR scores, the Classroom methodology produced scores that were significantly higher than the One-to-One methodology. Was this due to the different treatment methodologies? The content of the session to session curriculum was identical to each of these two treatment groups. The primary difference was that all classroom subjects experienced between ten and twenty hours of training. All One-to-One subjects received ten hours of training. Yet there were no significant differences across time blocks(as will be seen below). The BR scores proved a reversal of the above. That is to say that the One-to-One subjects experienced significantly higher BR scores than the Classroom subjects. It is safe to assume that in any one classroom session, the skill learning needs of some of the subjects present in the classroom were not being addressed because class time may have been devoted to the learning needs of the majority of learners present, but not devoted to the learning needs of all who were present. In One-to-One Tutoring, the needs of the learner were addressed as soon as they arose. This ability to immediately respond to the learners needs was also a part of the Small Group methodology.

The Small Group VR scores were higher than the Classroom scores, the One-to-One scores, and the CBT scores. For the BR scores, the One-to-One scores were not only higher than the Classroom scores, as stated above, but the One-to-One scores were also higher than the Small Group scores. The Small Group BR scores, in turn, were higher than the Classroom scores and the CBT scores.

Can these results be attributed to the different treatment methodologies? Many of the Small Group subjects worked solely on the Interpersonal goal. Two of the three classroom groups of Pilot Three worked on goals coded as "both" (Oral/Written and Interpersonal). Were these classroom groups burdened with too large of a lesson plan even though their hourly sessions went up to fifteen to twenty total sessions? Was the oral/written content for the Classroom group covered too quickly? Could this factor have impacted their scores to be lower across the pretest and posttest conditions? A case could be made for this view.

Another complication involved the education level of the subjects. The proportion of Small Group subjects who were College degreed was higher than the Classroom or the CBT groups. This may have biased the testing outcome.

The Control Group VR scores were higher than One-to-One, Classroom, and CBT scores. The Control BR scores were higher than the Classroom scores and the CBT scores. Again, the high

education of the Control group and the short time lapse between pretest and posttest, for the Control group, may well have impacted these results.

In this study, most small groups consisted of three subjects. In some of the cited work of Gordon et.al.(1989), a group of this size would be considered a tutoring group and not treated as a different treatment group. Under that umbrella, the One-to-One Tutoring methodology and the Small Group methodology of this study, overwhelmingly produced significantly higher test scores.

The Supervisor Rating scores and the Employee Self-Rating scores were also found to be significant across treatment groups. The SR scores for the One-to-One Tutoring methodology were greater than the SR scores for the Classroom methodology. That is to say that when the Managers of the subjects in each group rated their employees' demonstrated skill advancement on the job, the One-to-One tutoring provided a more noticeable gain to the manager than the subjects in the Classroom methodology. In a number of instances, a few Supervisors had employees in multiple methodologies at one time.

When the employees provided the pretest and posttest Self-Rating scores, One-to-One Tutoring subjects rated themselves significantly higher in skill(goal) achievement than the Small Group subjects. These two scores(SR,ER) offer a strong endorsement to the One-to-One treatment methodology.

Once again the final treatment group significance was the ER score. The employees in the Classroom treatment group rated themselves higher in the ER than the Small Group treatment group. The Classroom group tended to have more goals to achieve than the Small Group subjects (more goals, more content, more sessions equaled more hours of training). The Classroom subjects stated that they experienced such a movement in skill achievement that was greater than the small group subjects. This finding was not expected.

Overall, the null hypothesis #1 was rejected. The One-to-One Tutoring methodology did not prove to be the strongest treatment. From the aspect of the test results, the One-to-One treatment was ranked lower than the Control group. However, for the four scores that were significant across treatment groups, it should be noted that the One-to-One treatment group subjects performed significantly higher than the Classroom group subjects and the Small Group subjects (in all but the VR scores).

Hypothesis 2. There will be no differences between the pretest scores and the posttest scores across time blocks.

Throughout all of the pilot groups, when the pretest scores were compared to the posttest scores by sessions (time blocks) there appeared to be no significant differences. Given these findings, null hypothesis #2 is accepted. The findings are somewhat inconsistent with those reported by

Gordon(1989,1991). However, even though statistically significant differences did not occur across time blocks, these results, when compared to Gordon's, provide support for the notion of successful score gains in a shorter duration of training.

Hypothesis 3. There will be no interaction effects regarding treatment conditions and time blocks.

Viewing all of the pilot group combinations of analysis leads this study to accept this third null hypothesis. There were no interaction effects between treatment conditions and other independent variables, nor between time blocks and the other variables. This study hoped not to find such interaction, and none was found.

Hypothesis 4. There will be no differences in the Supervisor rating scores across treatment conditions.

As explained in Chapter four, the Supervisor Rating scores were found to be significantly higher for the Tutoring treatment group compared to the Classroom treatment group. Given these findings, the null hypothesis #4 is rejected.

Hypothesis 5. There will be no differences in the Supervisor rating scores across time blocks.

Based on all of the Pilot group data sets analyzed, this null hypothesis was not rejected and is, therefore, accepted. There were no differences in the Boss rating scores across sessions(time blocks).



Hypothesis 6. There will be no interaction effects with respect to treatment conditions and/or time blocks.

No significant interaction effects were found. Thus, null hypothesis #6 was not rejected and is, therefore, accepted.

Hypothesis 7. There will be no differences in the Employee Self-Rating scores across treatment conditions.

As was reported in chapter four, the Employee Self-Rating scores were found to be significant across the treatment groups. The subjects of the One-to-One Tutoring treatment group rated their movement in goal achievement significantly higher than those employees in the Small Group treatment condition. The Employees of the Classroom treatment group also rated their goal achievement significantly higher than the Small Group subjects. Null hypothesis #7 was rejected.

Hypothesis 8. There will be no differences in the Employee Self-rating scores across time blocks.

The results of the combinations of pilot groups revealed that there were no differences in the Employee Self-rating scores across sessions(time blocks). Given these findings, null hypothesis #8 was not rejected.

Hypothesis 9. There will be no interaction effects with respect to treatment conditions and/or time blocks. Due to the results of the analysis of the Employee Self-Rating scores, this null hypothesis was not rejected.

Hypothesis 10. There will be no relationships among the pretest scores nor the posttest scores for Sex, Age, Race, Job Grade, Education level, Tenure, and Goal.

This null hypothesis was rejected. There were significant differences found in scores, both the Manova and the Anova procedures. The analysis of the Pilot Study Group Three data set revealed effects by Grade and pretest/posttest effects by Grade, Race, Sessions(time), Education level, and Goal. The All Pilot Group Manova analyses revealed (pretest to posttest) significant differences across Grades and Races. The Anova pretest/posttest procedures showed effects across Grades, Races, Sessions, Education levels, and Goals.

### Limitations

When viewed from the perspective of Cook and Campbell's threats to internal and external validity(1979), some concerns arise that enumerate the limitations of this study. In the area of testing, the Dailey Business English Test was not created with an alternate form. Thus, all subjects were administered the same test for each testing session. In Pilot one, all twenty hour subjects were assessed with this test a total of three times. This same group of fifteen took one of the forms of the Nelson-Denny twice and were administered this measure a total of three times. The somewhat leveling effect was that the time between the testing sessions was approximately three months.

A further testing instrument concern involves the Grade Equivalence scale of the Nelson-Denny. The maximum Grade Equivalence score was 16.9 based on a certain raw score. There were some subjects in all three pilot groups whose raw scores exceeded the maximum Grade Equivalence. Some subjects that were coded with a 16.9 Grade Equivalence score, would have been coded with a higher score, had the scale been constructed to reflect an actual raw score in every case. The lowest Grade equivalence on the scale was 3.7, yet a small handful of subjects had raw scores that were off the scale on the low side.

Another concern deals with the method of selecting the subjects. Subject selection was not random. All subjects in Pilot Study Group One were considered to be high-potential employees. They were also minority employees. Pilot Study Group Two and Three subjects were more randomly selected, yet true random selection was not possible given the setting in which the study was conducted.

The selection of the Control group also was not random. The Control Group subjects were volunteers. They tended to come from high labor grade positions and most were college degreed; some were educated beyond College. It could be said that they were much more sophisticated in test taking strategies and levels of testing performance. In addition, this group was the only group that experienced a short time

lapse between the pretest and posttest sessions. The Control group was posttested two to three weeks after their pretest date. All other groups were tested ten to twenty weeks after their pretests. This was not able to be rectified and may account for the significant results of the Control group.

The CBT group experienced some conditions that the other groups did not experience. This group had to pursue their training on their own time and not on company time. The training for all other groups (except the Control group) was conducted during the normal work day. Another factor was that some of the CBT subjects did not finish all of their CBT modules prior to their posttest date, even though they had a few months between testing sessions. This factor may have damaged their test results.

### Conclusion and Suggestions for Future Research.

One-to-One Tutoring did not hold up to the standard of being the best of all methodologies. It was equal to the Small Group methodology and somewhat better than the CBT and Classroom methodologies. It should be noted that throughout this study the investigator observed a strong element within the One-to-One methodology as well as the Small Group methodology. This element seemed to boost motivation,

participation, and skill achievement. This element could be described as the individual relationship that framed the adult learning sessions. If traditional learning is nested within the customized and individualized intellectual and emotional attention directed to the adult learner, will learning be enhanced? It appears to have been enhanced in this study. It is my recommendation that future research efforts should be directed at addressing this social learning relationship question within the context of the adult learner within the business community.

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## VITA

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