

THE IMPACT OF TECHNOLOGY ON LEADERSHIP EDUCATION: A  
LONGITUDINAL STUDY

A Dissertation

by

ROBERT T. JONES

Submitted to the Office of Graduate Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2004

Major Subject: Agricultural Education

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## ABSTRACT

The Impact of Technology on Leadership Education: A Longitudinal  
Study. (August 2004)

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The purposes of this study were to determine the effectiveness of a computer-assisted lab environment in a course on leadership and to determine if undergraduate students believed that leadership concepts could be successfully taught in an asynchronous environment. The same research methodology and survey instruments were employed across a five year time difference from 1999 to 2004 to additionally measure temporal differences in students' perspectives. Students' attitudes toward computer-based leadership education were measured by a leadership perception index, a technology perception index, a class-inclusion acceptance index, and a discussion technology acceptance index administered through a post-activity survey that measured responses in both a quantitative and qualitative format.

Students participated in a leadership lab activity in one of three treatments: 1) no computer-facilitated interaction and traditional classroom interaction, 2) completely asynchronous, computer-facilitated interaction, or 3) hybrid interaction consisting of half computer-facilitated, and half-traditional classroom interaction. A post-activity survey was used to collect data about the students' perceptions of their experiences.

Post-activity survey quantitative scores from 1999 and 2004 indicated that a majority of students accepted learning about leadership through asynchronous technological means. Somewhat contradictorily, students in 2004 indicated a much greater qualitative skepticism to technology use than their 1999 counterparts, who much more favored inclusion of technology. Students who were not exposed to any technological experience in this activity quantitatively answered that the interpolation of technology into leadership education would not be successful in 1999, but changed that opinion to be favorable in 2004. Quantitatively, the hybrid group felt the use of technology was the most acceptable of the three treatment groups, with the asynchronous group also finding favor to a lesser extent.

Students in 2004 used computing resources more frequently from off-campus than in 1999, when the majority of students used computers to access the assignment on-campus. Students who completed parts of the assignment asynchronously did so most often between the hours of 8 p.m. and 2 a.m.

No statistically significant quantitative differences were found in the temporally displaced data, other than students in the control group of 2004 were much more receptive to technology use to facilitate leadership education.

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I would also like to thank certain special teachers, who will probably never read this. A few amazing teachers along the way made an invaluable contribution to this penultimate goal in my educational journey. I could not be here without the guidance and teaching excellence of: Mrs. Rooney (K), Mrs. Rice (1), Mrs. Bowman (2), Mrs. Harding (3), Mrs. Kirby (3), Mrs. Capel (4), Ms. Willbanks (4), Mr. Laich (5), Mrs. Sherrard (6, 9), Mrs. Williams (7, 8), Ms. Woods (8), Mrs. Cox (9), Mr. Ulrich (10), Mrs. Nabers (10, 11), and Mr. Edenfield (10, 11).

Thanks to my parents, particularly my mom, for always making me go look up words in the dictionary, letting me read late at night when I was a kid, and always encouraging me.

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## CHAPTER I

### INTRODUCTION

In 1999, at the height of the most recent “tech boom” the NASDAQ stock market was at all time highs and people had thrown away the old economic paradigms of making profits and having products. Technology was “cool,” savvy, exciting, and most definitely the industry to be employed by. Daily stock market initial public offerings made millionaires instantly. Alas, like most market bubbles, the good times did not last. March of 2000 saw dramatic losses in the stock market and the easing of monetary policy that had yet to tighten through the spring of 2004. The excitement was over... and paradigms that were never gone reasserted themselves in force (Dietrich, 2002).

In 2004, despite the lack of overt optimism about technology and computing, computers were even more prevalent than they were five years ago. Whether playing a computer-type game on a portable cellular telephone, or trying to get cash from an automatic teller machine, the entire world had become filled with these silicon avatars. Computers and technology may not have appeared to be as attractive from an investment standpoint, but in the “cooling off period” that had accompanied this economic downturn, computing had continued an astonishing pace of technological adoption (Kling, 1998). Students in 2004 abandoned handwritten essays, en masse, in favor of spell-checked, word processed documents. Forget trudging to the library to do research. Previously an eponym, even the ability to “google” something had made its

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This dissertation follows the style and format of the *Journal of Agricultural Education*.

way into the Oxford English Dictionary. Computers in 2004 had become both necessary and ubiquitous in daily life, even more so than in 1999.

As one could note the ever increasing presence of computers, one could also easily surmise that computers were becoming vastly more affordable for the average person (Kaminski, 2002). Far from being a luxury, most households in the United States and other first-world countries had at least one personal computer. The social ramifications of this “information revolution” were becoming apparent. Paradigms on “how business was done” and “how students learn” were changing on an exponential basis.

As a result of all these computers, seemingly everywhere, the 2004 era Internet existed. The Internet, as it existed in 2004 using Internet Protocol version four, could accommodate a minimum of 4,228,250,625 individual devices (with a theoretical maximum of 277,098,404,709,375 devices) which were all capable of talking to each other across essentially the same network (Hubbard, Kusters, Conrad, Karrenburg, & Postel, 1996). Future versions of “the Internet” such as “6-Bone” utilizing IPv6 (Internet Protocol version six) dramatically increased both the speed of communications, and maximum theoretical device limits. The IPv6 numbering scheme for the Internet (IPv6) potentially had a unique identifying address for every grain of sand on the planet. In 2004, anyone connected up to this global network could access public content on any of the remote hosts. With that sort of infrastructure, possibilities of distance learning through computer-assisted instruction had become reality.

The event horizon of asynchronous learning had thus been crossed, where the marvels of the computing innovation had begun to replace teachers in the classroom. Computer-assisted instruction (CAI) offered students the opportunity to work asynchronously from their peers at any hour, pace, or level that they choose. Computers, in addition to having offered a completely asynchronous experience, could be used in combination with traditional teaching methods that offered an augmentation of the teacher's educational message to the student. CAI could cater to all types of students and all types of learning styles (Corbett, 1992). The intrinsic flexibility of a smaller ratio of computers to students had afforded the computer the perception of becoming an increasingly valuable tool in the educational environment during this time period.

At Texas A&M University, during the five years since the original study of technology and leadership education (Jones, 2003), the university had formally adopted distance education technologies to supplement formal instruction. In 2004, many courses at Texas A&M University were offered on a completely asynchronous basis through the use of WebCT and Vista (Office of Distance Education, Texas A&M University, 2004). In addition to offering learning course content and material via CAI, the university had formally removed printing and mailing of student bills, printing of student course catalogs, and postal delivery of overdue library notices. The university president in 2004 chose the campus e-mail system (Neo) as his way of guaranteeing delivery of information to students, faculty, and staff. Per 2004 student regulations of Texas A&M University, every student was recommended to check his or her email on a

daily basis to receive important information and communiqués from the university's departments, staff, or faculty.

It was shown, in an earlier study, that computers had the ability to teach students factual information at lower levels of Bloom's Taxonomy and students were equally likely to retain the information as if they had participated in a traditional classroom experience (Corbett, 1992). In 2004, all Texas A&M University students exhibited learning in this form successfully simply by being registered and attending classes that they were only informed of via computer-assisted instruction. In teaching higher level concepts that had been traditionally associated with social concepts, was it possible that an indirect social interface such as a computer could provide students the opportunity to learn concepts as thoroughly as in a traditional classroom?

This project continued previous research from 1999 on investigating the use of technology and CAI in leadership education for the Department of Agricultural Education at Texas A&M University (Jones, 2003). During the fall term of 1999, CAI was used during a one-class lesson in the laboratory section of the class Agricultural Education 340: Professional Leadership Development. What did the students think of the activity? In 1999, students thought that technology could be successfully used to teach leadership education. Specifically, computer-assisted instruction was seen as an acceptable instructional delivery method.

Can leadership education be taught successfully through utilization of modern technology such as the personal computer? In 1999, students felt that the asynchronous delivery of educational content from a computer was an acceptable form of instructional

design. Did students' perception of their existing status as a leader make them more or less comfortable with technology? In 1999, most students felt that they were leaders and also felt comfortable with the use of technology. Did the amount of technology that students were exposed to affect their perceptions of the ability to use technology to teach leadership? In 1999, students who experienced more technology during their lesson were more likely to agree that technology in the form of computer-assisted instruction would be successful. With a five year temporal dilation of data collection, how had students' perceptions changed in relation to use of technology for instruction? What were the implications of these changes in perceptions, if any?

### Statement of the Problem

From at least 1999 onwards, computers had existed in most levels of the educational environment and their increasing power and decreasing cost set the precedent for that trend to continue (Wilkinson & Allen, 1998). As enrollment continued to grow in post-secondary education, teachers faced increasing needs to effectively use resources at their disposal, such as computers, to increase the reach of their educational message. If additional technology was deployed, could it be unilaterally stated that students learn all concepts from computers as equally well as they would in the classroom? Due to these concerns, it was necessary to measure teaching more advanced concepts from Bloom's Taxonomy to students to see if students felt that their educational experiences were positive ones. With the results of student opinion as

a framework, and with temporal trend data available, the larger questions of technology utilization as appropriate for leadership education could be answered.

To investigate the problem a traditional leadership course was evaluated. In fall 1999 and spring 2004, Texas A&M University academic course AGED 340: Professional Leadership Development deployed a multi-level technological presentation of instructional material to laboratory sections where students used varying levels of technological instruction to participate in a leadership lesson. This leadership lesson, an ethics exercise entitled “Maytown,” was easily transformed from a stapled stack of papers for each student into an online activity in which students could participate. The essential question was “Can computers facilitating the content dissemination and discussion of a leadership activity successfully teach students?”

### Purpose and Objectives

The purposes of this study were to determine the effectiveness of varying levels of CAI in a leadership education course and to determine temporal effects of five years of technology development, its deployment and adoption, and differences in student perceptions. The following objectives were identified:

1. Determine the appropriateness of utilization of technology as a leadership education teaching medium.
2. Describe students’ perceptions and acceptance of technology as a discussion tool and teaching mechanism.

3. Describe any positive relationship between student technology acceptance and extent student self-leadership perception.

4. Describe how students accessed asynchronous assignments. What time? What were the implications?

5. Describe how students' perceptions might have changed after 5 years. Was there a significant statistical difference that could be found in their attitudes?

### Significance of the Study

This research sought to answer the question of whether computers could be effective in communicating higher level concepts that had traditionally been assumed to require a social context to understand, in particular by looking at trend data from “more” and “less” technologically adept samples of the same population, and also measured by temporal displacements of samples. Additionally, the research sought to discover students' perceptions about their own leadership experience and how that might have related to their perception of technology. During the academic leadership course, Agricultural Education (AGED) 340, students were afforded tremendous opportunity to interact with their peers during the lab environment where they could face-to-face discuss concepts of and relating to leadership. In attempting to have an asynchronous study, students were deprived of this face-to-face contact and discussion of concepts. Because of the deprivation of a “social context” that CAI imposed, it was important to determine whether leadership education was an appropriate context in which to use CAI.



Students will remember and apply information that was presented to them in what they considered to be a meaningful way based on having a foundation of understanding in order to learn (Ausubel, 1968). Therefore, measuring student perception of their experiences using technology following this particular lab activity was an invaluable step toward understanding the quantity and quality of their knowledge acquisition based on their initial framework of understanding how to use computers. Based on students' perception of their experience, CAI could be successfully used to teach more abstract concepts such as leadership education, however, students in 2004 seemed to enjoy technology less than their past peers.

#### Definition of Terms

Some of the terms in this study require definition. For this study, the following terms have been defined:

340TA index - The index compiled from post-activity survey results that indicated students' perception of utilization of technology to teach AGED 340.

Agricultural Education 340 (AGED 340) - The professional leadership development academic course taught at Texas A&M University used in this research. This course has a two hour equivalent lecture portion taught by the instructor of record for the course. The remaining hour's worth of credit was a laboratory exercise typically taught by graduate students within the department.

Asia-Pacific Network Information Centre - One of the four regional registries that served as the database maintainer and distributor of Internet Protocol address space for Internet service providers under authority vested in it by the Internet Assigned Numbering Authority. APNIC served the Australasia and Oceania regions of the world.

American Registry of Internet Numbers (ARIN) - One of the four regional registries that served as the database maintainer and distributor of Internet Protocol address space for Internet service providers under authority vested in it by the Internet Assigned Numbering Authority. ARIN served the North and South American regions and sub-Saharan Africa regions.

Computer-Assisted Instruction (CAI) - The use of both computer hardware and software to augment and/or supplant traditional classroom instruction to teach students.

Domain name - A designator given to a particular Internet area or Internet Protocol address with a name in order to facilitate human memory of a name as opposed to an Internet Protocol address.

Domain Name Service (DNS) - A computer process that took computer domain names and translated them into their actual IP addresses to facilitate computer communication.

Digital Subscriber Line (DSL) - A telephone technology that used existing copper infrastructure into homes to provide asymmetric Internet access to phone customers that focused on download capabilities.

DTA index - The index compiled from post-activity survey results that indicated students' perception of utilization of technology as a means to facilitate discussion.

Internet Assigned Numbering Authority (IANA) - The body empowered by the United Nations to be the supreme holder of record for all Internet Protocol addressing and dispute resolution. IANA delegated this responsibility to regional authorities it had empowered to handle regional affairs.

Internet Protocol - Short for Transmission Control Protocol/Internet Protocol, Internet Protocol (IP) refers to the numerical address characteristics that computer network devices must have had to communicate on the global Internet.

LP index - The index compiled from post-activity survey results that indicated a students' self-perception of their leadership abilities.

Maytown - The ethics-based leadership activity that was deployed to the students during a laboratory session of AGED 340 in different technological ways that students completed and then used their experiences during the activity to evaluate technology effectiveness in leadership education.

Null hypothesis - The null hypothesis was a term that statisticians used to indicate the statistical hypothesis tested.

Réseaux de IP Européens (RIPE) - One of the four regional registries that served as the database maintainer and distributor of Internet Protocol address space for Internet service providers under authority vested in it by the Internet Assigned Numbering Authority. RIPE served the European regions and Africa north of the Sahara.

Reverse lookup - The concept of taking an IP address and finding out the domain name assigned to that address, the owner of the block of IP addresses, and the geographic location of the use of that particular IP address.

Temporal displacement - The passage of time.

TP index - The index compiled from post-activity survey results that indicated students' attitudes toward acceptance of technology.

UNIX - A computer operating system developed by AT&T laboratories in 1970. This operating system was typically used to perform higher end server functions.

### Assumptions

This research assumed that across different sections of the AGED 340 laboratory the different teaching assistants in the laboratory sections appropriately deployed their chosen technological lesson. In addition, the assumption was made that for the two treatment groups, although each of the sections per variable were taught by different staff, that the staff taught consistently enough for the data between different sections of the same treatment group to be combined for statistical analysis purposes.

It was assumed that the respondents that submitted answers to the post-activity survey instrument did so truthfully and correctly. In addition, where errors or omissions were made by students, it was assumed that these results would not have yielded statistically significantly different outcomes of the statistical analyses. Students who chose not to complete a survey, or did not complete the assignment, it was assumed, would not have affected the calculated statistics in a meaningful way.

The researcher assumed that reliable and valid findings could be obtained from the data gathered from students.

Based on the results of both Kolmogorov-Smirnov and Shapiro-Wilk tests (Upton & Cook, 2002), none of the data from either 1999 or 2004 was parametric or normally distributed. It was assumed that even though the data were nonparametric, that parametric-based statistical tests could be run on the data and yield significant results. The parametric tests run on the data that were collected were “robust” statistics (Briers, personal communication, April 26, 2004) that could compensate for nonparametric data.

It was assumed that students at Texas A&M University were computer literate, because in 2004 students were required to find, register, and pay for courses solely via a computer interface.

### Organization of the Remainder of the Dissertation

Chapter II presents a review of literature that explores technology growth and its utilization in 2004-era education, technology, more specifically, in the world of leadership education, and Ausubel’s “meaningful learning” concept and its application to technology interpolation in the classroom. Brief mention is made of temporal displacement, its factors relevant to the campus experience (as examples), and longitudinal studies.

Chapter III explains the methodology and procedure of this experimental study. In Chapter IV, the results and analysis are presented. Finally, Chapter V provides a conclusion, summary, and recommendations for further study.

## CHAPTER II

### REVIEW OF LITERATURE

#### Introduction

The technology facet of leadership education study through the Department of Agricultural Education at Texas A&M University was a new incorporation into the efforts of the existing Leadership Education team. As such, the scope of this research sought to expand and update the foundations established by Corbett in 1992 where it was established that technology based computer-assisted instruction (CAI) was equally as effective as traditional classroom instructional methods in teaching plant identification to horticulture students.

The Department of Agricultural Education at Texas A&M University supported leadership education as one of the primary goals of the department's educational mission. Three faculty positions were dedicated to coordinating an undergraduate leadership major (Agricultural Development) that prepared students in agricultural leadership and communications. An active graduate program allowed students advanced scholarly endeavors concerning the theory and philosophy of leadership education. Courses such as Professional Leadership Development, Youth Leadership Programs, Leadership for Teams, and internship experience opportunities were the cornerstones of leadership education provided by the department.

The leadership education workgroup had a long history of research into the factors contributing to the effectiveness of leadership education. The premises of

leadership research in the Department of Agricultural Education at Texas A&M University focused on the effectiveness of leadership education. Specifically, could leadership competencies be taught and which methods enhanced the learning of these competencies? A strength of this research emphasis was that it provided a strand of leadership scholarly inquiry which paralleled the efforts of other leadership scholars who defined leadership competencies through their research and investigation (Townsend, 2002). Numerous studies were conducted by members of the Texas A&M leadership team to determine necessary components for successful leadership education to occur.

In 1991, Barry Boyd sought to determine if 4-H members developed leadership life skills and to ascertain if the skill development was related to their participation in 4-H. He found that 4-H members perceived themselves as having developed a higher level of leadership life skills than non-4-H youth (Boyd, 1991).

In 1993, Karen Murphy and Christine Townsend investigated how components of leadership could be taught. In their study, the characteristics of ethical leaders and the ethical decision-making abilities of student leaders were determined. The most common ethical characteristics identified were honesty, communication, integrity, and moral character. Only communication was possessed by a significant majority of the student leaders and they were inconsistent in their ethical decision-making ability (Murphy, 1993).

In 1995, Bradley Dodson and Christine Townsend continued the investigation into the effectiveness of leadership education by studying students who enrolled in a high school leadership course. The researchers discovered, in this study, that the more

active students were in the FFA, the higher their perceptions were in the areas of making decisions, communication, understanding self, and working with groups. Additionally, the simulation activities used in the course were viewed by the students as “valuable,” “stimulating,” and “a great help to learning” (Dodson, 1995).

Dale Fritz and Christine Townsend looked at an intact leadership development program to assess the development of leadership knowledge and skills of the participants. The results indicated that participants recognized the helpfulness of leadership knowledge and skills in their careers. Additionally, those who did not anticipate promotion perceived that developing people/programs and understanding organizational dynamics were more helpful topics than did the group who did anticipate promotion. Additionally, women were more likely than men to rate organizational dynamics as a helpful topic (Fritz, 1995).

Richard Cummins and Christine Townsend assessed and measured the attitudes of participants in leadership labs at Texas A&M University. The purpose of this study was to determine if attitudes could be changed, and to determine if attitude changes were maintained over time. This study illustrated no differences in attitudes toward leadership among different groups based on age or gender prior to training. In addition, all participants had a more positive attitude toward group-control of group process than toward leader-control of group process prior to training. In this study, participants’ attitudes toward leadership were influenced only slightly with training (Cummins, 1995).

In 1996, Kim McNulty and Christine Townsend researched a collegiate leadership course, which used a variety of instructional methods, to ascertain how



students with various learning styles responded to different methods of instruction. The researchers discovered the majority of participants in the study were field-independent and no significant relationships between perceived effectiveness of specific leadership instructional methodologies and student's learning styles existed (McNulty, 1996).

Conclusions reached in 1997 were based on research by Jules Bruck and Chris Townsend. Their study developed a more concise understanding between field dependency and the new leadership paradigm of teams and group-centered leadership. As a result of this study and building on past research results, it was recommended that college students enroll in a course which teaches leadership theory and includes activities which simulate leadership problems. Prior to training, college students should determine their field-dependency, and as a result, their attitude toward working in groups and leadership perceptions. Specifically, field independent students should participate in a leadership course to enhance the self-perceptions toward working with groups. (Bruck, 1997)

Simultaneously, Laurie Thorp and Christine Townsend developed a hypothesis that gender may influence a participant's ability to learn participative leadership techniques. Results of this study indicated that following training, women in a single gender laboratory had a higher perception of their ability to lead, work in groups, make decisions, communicate, and understand themselves than the women in the coeducational laboratory. It was also discovered that the more previous participation a woman had in leadership courses and activities, the stronger she perceived her ability to lead. However, a woman's previous participation in leadership courses and activities

had no relationship to her perceived ability to work with groups, make decisions, communicate or understand herself (Thorp, 1997).

A follow-up study was designed by Jason Taylor and Christine Townsend to investigate gender influences from a male's perspective. The study revealed the following aspects: a collegiate leadership class did not enhance male's perceptions of their skills of working in groups, making decision, or understanding themselves. Additionally, the gender make-up of the class had no effect on the previous perception areas. The more leadership education and experiences of males, the weaker their perceptions in traditional leadership skills. Finally, males' perceptions of decision making and understanding themselves were weakened by previous experience but were not affected by their current leadership class or prior leadership education (Taylor, 1998).

Aaron Cummins investigated how team process instruction would affect students' perceptions of working in teams. Cummins and Christine Townsend manipulated a collegiate senior seminar and found that task and maintenance skills could be taught in a class setting. However, values toward working in teams was not affected by the team process training. From this baseline study, it was recommended that team process training be intensified and provided prior to or during a student's team project experience (Cummins, 1998).

In 1998, Tracy Brick studied FFA members' self-perceived leadership skills. In this national study, she determined that length of membership did not affect leadership perceptions but activity within the chapter did have an influence. Additionally, FFA

officer activities did not have an influence on members' perceptions of their abilities to work in groups and make decisions. Brick and Christine Townsend concluded that no matter when a member joins the organization, he or she could become a secure leader through the activities of the FFA. And, officers should strengthen their teaming skills to intensify their security in group work and decision making (Brick, 1998).

In a study of collegiate, non-teacher certified Agricultural Education graduates, Amber Dailey and Christine Townsend discovered that students who thought their leadership courses were relevant to their lives had greater career and quality of life satisfaction. From this result, Dailey and Townsend recommended that courses that teach leadership skills include application and action-items so that students could relate their leadership knowledge to their personal agendas (Dailey, 1999).

Jennifer Tabke continued the inquiry into effectiveness of leadership courses and studied a collegiate course that included students with extensive leadership practice. In this case study, she found that students with leadership experience did enhance their self-perceptions of their leadership skills following the course. Tabke and Christine Townsend concluded that even leaders who had gained experience through practice could strengthen their perceptions of their leadership abilities through the study of leadership theory (Tabke, 1999).

Rachelle Hodges Toupence conducted her research in a specific context in order to determine if self-perceived attitudes toward leadership skills were changed. She investigated teens that attended a wilderness camp where leadership skills were

purported to be developed. Toupenca determined that the respondents strengthened their leadership self-perceptions following a camping experience (Toupenca, 2002).

Larcel McGhee began a line of inquiry to investigate whether people from non-white cultures viewed leadership in a particular manner. He questioned collegiate black student leaders as to their perceptions of their leadership skills. In his study, he found no unusual perceptions by these collegiate black student leaders. He concluded that people, regardless of their culture, take on the leadership perceptions of the majority culture (McGhee, 2000).

Laurie Thorp (2001) created a qualitative study to discover the relationship of a school garden with children's self-esteem. Her work involved creating the garden, leading lessons, and evaluating the results through interviews and observations. She concluded that gardens provided an environment for student accomplishment and enhancement of their abilities to understand themselves in a positive manner. In addition, she recommended that teachers be provided "people-support" to facilitate the addition of a garden into their daily class curriculum.

Other indicators of the interest in leadership education programs could be demonstrated by the rise in enrollment of the Professional Leadership Development (AGED 340) course. During 2003, more than 800 undergraduate students enrolled in the course. The current level of enrollment was capped only by limited facilities and available faculty (Townsend, 2002).

The Texas A&M University and Texas Tech University joint "Decorate at a Distance" program (Shinn, 2001) showed increasingly blurry boundaries between

distance education and the traditional classroom. This program was able to evolve because of the interpolation of technology through computer mediated communications that afforded students the opportunity to learn from the faculty in Agricultural Education at both institutions. That new concept of a joint degree programs was made possible by technology and computer-assisted instruction (CAI).

### Technology Growth and Utilization in Education

Technology continued a rapid advancement with the advent of personal computing. Technological development continued to grow under the precepts of Moore's Law which stated that the number of transistors on a microchip would double every eighteen months (Meieran, 1998). The ubiquitous presence of computers (Stajano, 2002) enabled students to "develop a broad, deep and creative understanding of community, culture, economics, and international politics, past and present, and acquire the social skills to work across differences and distances" (Riel, 1994, p. 471) that provided "an array of tools for acquiring information and for thinking and expression (allowing) more children more ways to enter the learning enterprise successfully. These same experiences provided the skills that will enable students to live productive lives in the global, digital, information based future they all face" (Dwyer, 1994, p. 8).

Computers had been used as a part of the educational process since the 1960s, having been introduced as computer-assisted instruction. In 2004, the continued economies of scale that computers offered to address different student learning styles

made computer equipment and computer-assisted instruction increasingly favorable. Computers had a proven record of assisting in educational growth through individualization, increased proficiency at accessing, evaluating, and communicating information, and the ability to increase students' quantity and quality of thinking and writing (Peck & Doricott, 1994).

In 2004, computers used in educational instruction had been deployed in a variety of ways. Ranging in use from drill and practice, tutorials, developing problem solving skills, programming, application development, and as a communications medium to instructors, computers had become multipurpose tools of the primary through post-secondary educational landscape.

Computers, as well as assisting in educational development, were conduits to enter the educational process. All students who wished to take the Graduate Record Examination in the United States to enter any graduate school had to use a computer to take an adaptive test from the Educational Testing Service (ETS, 2003). Technology, in this instance, not only facilitated learning, but was the gateway to more learning. At Texas A&M University, like many other universities in the nation, students were responsible for claiming their centralized electronic mail, or “Neo” identification that was translated as a unique 32 hexadecimal character number for each student, faculty, and staff member at the university (Cato, personal communication, January 3, 2004). This lightweight directory access protocol (LDAP) account became students' sole conduit to register for classes, pay for school electronically by check or a credit card, and ultimately communicate with their professors and engage in any online courses offered

through Texas A&M University's distance education platform of WebCT. Technology use had become a cornerstone-enabling element of the modern post-secondary student.

Aside from granting mere "access points" to the educational system, technology through other computer-assisted instruction offered students unique opportunities to learn at their own pace (Steinberg, 1991). Both in 1999 and 2004, many courses at Texas A&M University used either the Trans-Texas Video Network (TTVN) or WebCT, a distance learning, web-based technology as instructional design mediums that allowed students to complete their entire academic courses without ever meeting other class participants in person. This opportunity for the instructor to use technology enabled a more organized forum for students to find and utilize reference materials for courses. Instructors were also afforded the opportunity through technology to prepare course work, keep grades, and maintain information about students.

Students could use technology to aid in their education process through finding research for projects and class requirements. In addition to students that had the ability to find an entire encyclopedia on a single compact disc (Fain, 1992), the days of trudging to a traditional library were over for many students (Bell, 2000). Most library consortia by the dawn of the new millennium had a strong online presence that handled accesses and requests for data from persons all across the globe. Students could use the resources of the global Internet to find almost any information, anywhere, in mere seconds assuming they knew where and how to search for it.

Entire major fields of study at the undergraduate level were designed to develop, deploy, and use technology as a lifelong career. At Texas A&M University, Computer

Science, Computer Engineering, and Information and Operations Management degrees prepared students for careers in dealing with computers. Computers, thus, were an integral part of their educational process.

### Technology and Leadership Education

Although direct links between ability to educate and technology use could be found in multitudes, very little research by 2004 had been done on using technology in leadership education. Patricia Dillon, an adjunct faculty member at Chapman University in California, laments in 1999 from an unpublished conference paper that “technology and leadership are seldom found in the same sentence” (p. 4) and because of that her choice to research those combined topics “was very discouraging” due to “very little being written about a linkage between technology and leadership.” At the 1999 conference of the Association of Leadership Educators, she presented these opinions and the results of an experimental class she held at her university.

Her class fostered the seminal work in the field of technology and leadership education. One key item that was discussed in the context of her class was how technologies could be evaluated against traditional leadership themes such as empowerment, trust, and inclusiveness. It was discovered that new technologies had a potential “downside” to them. When, for example, a manager has a cell phone with the “Direct Connect” feature like a “walkie-talkie,” they could interrupt employees any hour of the day very easily. Instead of facilitating communication and growing trust, constant



interruption via this technology was actually reducing a leader's effectiveness (Dillon, 1999).

It was important to note that leadership focused on personal qualities found in people, such as charisma, empowerment, inclusion, compassion, and vision. Technology had typically been associated with "things," such as cameras, computers, and televisions. In 2004, the increased pace of the development of these technological "things" impacted people every day. Empirical logic tended to indicate, and Ms. Dillon agreed, that these two seemingly opposites of "things" and "people" could come together to benefit humanity in some way (Dillon 1999).

Ms. Dillon found some small solace in her quest for literature on in the work of Mary E. Boone's *Leadership on the Computer*, which the Speaker of the House of Representatives of the United States Congress deemed required reading for all members of the House of Representatives during the 1995 congressional term. Her book explored the lives of sixteen Chief Executive Officers of companies in the private sector to demonstrate how acceptance, understanding, and utilization of technology helped them to be better leaders.

Klenke (1994) noted that information technology and the actions of leaders created new organizational forms. As society developed new ways to handle the vast myriad of information that was continually being developed during all eras of humanity's existence, new social structures were designed within existing workforces or organizations. Just like people had adopted and adapted to typewriters, so, too, by 2004 had people adopted word processors. The culture changes in between those technologies

developed an entirely new way of dealing with an old problem of getting documents “out the door.” Leaders had to be prepared to deal with the consequences of technological change. Leadership educators must also be ready to deploy and innovate the technologies used in delivery of their curriculum. Crawford, Gould, and Scott found in 2003 that “leadership educators must prepare students to be able to understand the challenges brought on by rapid innovation and the changes in relationships (really the people) that will obviously occur when technology is advanced” (p.14) and that “no longer is innovation just the backdrop for leadership in the future organization, it is now center stage and leadership educators need to be preparing students to assume leading roles in this new production” (p.15).

Unfortunately, in 2004, almost no literature existed on the impact of technology on either being a leader or in its role in leadership education. The only semi-relevant course that could be found on technology and leadership was taught by the University of Pretoria in South Africa. It was hoped that this work could provide at least some keys to opening the doors of relationships between technology and leadership.

#### Ausubel and “Meaningful Learning”

Ausubel, in his work from 1968, stated that “if I had to reduce all of educational psychology to one principle, I would say this: the most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly” (p. 18). This concept established the foundation of “meaningful learning.”

As a cognitive learning theory, the work of Ausubel was still being researched in 2004. Computers could, through adaptive behavior, ascertain a student's level of knowledge and were able to tailor lessons accordingly. Students could build on their basis of understanding on how to utilize technology to incorporate new, seemingly unrelated concepts into their cognitive maps.

This research operated under the assumption that students in 1999 and 2004 already were computer literate because of computer use increasing in the world and academic requirements to become computer literate. Thus, this assumption continued that there should not have been any problems with students using computer technology in order to accomplish the mission of computer-assisted education. Students should have been able to take their existing knowledge about computers and use this knowledge as an intellectual framework, the roots of which were theorized by Ausubel, to engage in "meaningful learning" via computer-assisted instruction.

Aragon, Johnson, & Shaik noted in 2002 that "learners could be just as successful in the online environment as they could in the face-to-face environment, regardless of their learning style preferences." Assuming that the basic foundations of computer literacy were established, there was no reason that students should have had a differentially successful educational experience based on the treatment group to which they were assigned.

## Temporal Displacement, Causality, and Longitudinal Research

Five years could be a long time, particularly when dealing with the acquisition of technology, its use, and deployment. The five years from 1999 to 2004 had seen the following innovations in technology be adopted on the Texas A&M University campus:

1. Students had to register online.
2. The university had suspended printing of student schedules, grades, overdue library notices, and course offerings for each semester. This information had to be found online.
3. Students had the opportunity to take completely asynchronous courses through the use of WebCT, a distance education technology platform.
4. Student rules and regulations strongly recommended students to check their central “Neo” e-mail at least once daily for important notices and communiqués from the university.
5. More students (based on the results of this study) accessed assignments remotely from off-campus locations than did from on-campus locations.

The development of these technologies and their changes to the campus environment exemplified a microcosm of many other changes that have occurred during the past five years. These changes had required “downstream” changes in the 2004 students’ behaviors from those of 1999. Menard (1991) defined longitudinal research as an “analysis involv[ing] some comparison of data between or among periods” (p. 4).

Longitudinal research offers “a diachronic analysis of the incidence of conditions and events,” and “because longitudinal research is a broad term, methods for the analysis of social change may also vary substantially” (Ruspini, 2000, p. 1).

There are several forces that govern causality in the present. The same natural laws govern all matter in the Universe, whether that matter makes up stars and planets, or whether it composes the cells in a person's brain. Gravity, electromagnetism, and quantum forces determine the interaction and outcome of all events in the Universe.

While some events, such as flipping a coin, may seem to be random temporal occurrences, their outcomes are determined by the forces of nature. These outcomes could be illustrated by tracing the contributing causal forces of an event backwards in time. When a coin is flipped, it could land on one of two sides. One of these two outcomes occurs not by random chance, but through forces which act on the coin, including air density and wind, local gravitational forces, the force and trajectory at which the coin was thrown, and the weight of the coin itself. While these and other factors may seem to be random and spontaneous, each force acting on the coin was in turn caused by another force. For example, the force at which the coin was thrown was determined by the neuromuscular development of the person throwing it, which in turn was determined by the person's experience, diet, environment, and genetic makeup. The person's genetic makeup was determined by which genes were passed on from the parents, which were determined by when the parents conceived the child, which was determined by when the parents first met, which was determined by the geographic locations of the parents, which could be traced back through economic, political,

geological, and evolutionary causal forces, which in turn can be traced back to the creation of Earth and the Solar system, which in turn was determined by the forces existing at the creation of the Universe.

This is just one small chain and example of temporal causal events that determined the outcome of a coin toss. While it seems there might be a near-infinite number of forces acting upon the hypothetical coin, and while the outcome of the coin toss may have actually been unpredictable to any kind of human perception, the outcome of the coin toss was destined to happen in only one way since the birth of the Universe for this particular causal event (Chronos Technologies, 2004).

### CHAPTER III

#### METHODOLOGY AND PROCEDURE

The purposes of this study were to measure the effectiveness of CAI in teaching leadership education to students enrolled in a leadership course at Texas A&M University. Additionally, this study sought to determine student perception and acceptance of technology as a discussion tool and teaching mechanism. Also, this study sought to determine the relationship between student self-leadership perception and extent of technology acceptance. Finally, the research study was proposed to be a longitudinal study of this work from 1999 to identify any effects of temporal dilation of student perception compared with prior student perceptions and experiences. The research design and methodology used during this study is presented in this chapter.

#### Sample

In 1999, a total of one hundred students completed the post-activity survey that was used to conduct this study. This number increased to 145 in 2004. In 1999, these students were enrolled in one of five targeted sections of AGED 340 “Professional Leadership Development” during the fall term at Texas A&M University. In 2004, students were enrolled in sections 501 – 510 of the AGED 340 class. A five point Likert-type scale was used to measure the sample in the post-activity survey instrument. Because of the “no opinion” option that was offered as a choice to students on the survey

instrument, when students selected the option of “no opinion” their results reduced the sample size. “No opinion” results were tabulated for frequency, but not included in the statistical calculation results for each question.

In 1999, the minimum number of respondents to one of the sixteen post-activity questions was 74, and the maximum number of respondents was 99. In 1999, the average sample size for the sixteen questions was 87.63. For 2004, the minimum number of respondents to one of the sixteen post-activity questions was 116, and the maximum number of respondents was 145. The average sample size for the sixteen questions in 2004 was 129.44.

Students (within sectors) were randomly placed into either a control group or one of two different treatments groups. The ratio used to assign students to groups both in 1999 and 2004 was 1 : 2 : 2 assignment to control group : hybrid treatment group : asynchronous treatment group. In 1999, a total of five sections of AGED 340 participated in the exercise. This number increased to ten sections in 2004. In 1999, there was one control, two hybrid, and two asynchronous sections. This number increased in 2004 to two control, four hybrid, and four asynchronous sections of the class. Each class section held approximately twenty-five students, this number being consistent in both 1999 and 2004. Depending on their section assignment, students in the sample completed the post-activity survey instrument in differing ways. Students who were in the control groups or hybrid treatment groups completed their post-activity survey instruments during their normal lab class period. All sample members of the control or hybrid treatment sections completed their post-activity surveys on the same



date. Students from the sample in the asynchronous treatment group completed their post-activity survey instruments via the world wide web as opposed to by paper copy, and did so within the assigned window for the assignment which was a week.

### Design

This study used a post-activity survey to measure perceptions. The sixteen questions were categorized and scored as four indices. A qualitative section at the end of the post-activity survey instrument was added to solicit qualitative feedback on student perception of their experiences. In 1999 and 2004, there were two treatment groups and a control group (Table 1). The varying results of the treatment groups and control group were analyzed both in a qualitative and quantitative format. This research was designed to be a “mixed methods” study. For the quantitative format, alpha was determined with a least a .05 confidence level.

Table 1  
*Design of the Project. (N = 245)*

Year	2004	1999
Section - Treatment	501- Hybrid	501- Asynchronous
	502- Asynchronous	502- Asynchronous
	503- Control	503- Control
	504- Hybrid	504- Hybrid
	505- Asynchronous	505- Hybrid
	506- Asynchronous	
	507- Hybrid	
	508- Control	
	509- Asynchronous	
	510- Hybrid	
Control	Variable	Variable
1999 n = 25	Treatment #1	Treatment #2
2004 n= 30	Asynchronous	Hybrid
	1999 n = 38	1999 n= 37
	2004 n= 39	2004 n= 76

The control groups performed the Maytown activity (discussed on page 45) in a the traditional classroom environment. The entirety of the activity was photocopied for all the students, and physically distributed at the lab session prior to the week assigned to this activity. Students were told to complete the Maytown assignment by reading through their packets, responding to the activity in a handwritten (1999) or typed (2004) format, and to then come to class the following week prepared to discuss this ethics activity. The first treatment group, the asynchronous treatment group, was given a slip of paper at the termination of their lab section the week before the activity was to commence, was told to go to a particular website ([http://maytown.tamu.edu/section50\[x\]](http://maytown.tamu.edu/section50[x])) and also informed to not physically come to class the following week. Students were advised on this web site that they needed to

read through the activity, develop their thoughts, and post their initial responses and thoughts prior to when their lab would have started the next week. For this treatment group, in lieu of attending the following lab session, students replied to each other's responses online mirroring an online discussion using threaded notes technology. These students then completed the post-activity survey in an online format.

The second, and final, treatment group was the hybrid group. This group was given a website, in the same format as the asynchronous treatment group, and told to complete the activities on this website prior to attending class the following week. These students prepared to attend the next lab section by posting their initial thoughts and responses to the activity online using discussion thread technology. Then these students attended class the next week for a traditional-type discussion.

All students completed a post-activity survey. Students from the hybrid and control sections completed a paper-based post-activity survey that was the exact same "look and feel" as the post-activity survey that the asynchronous treatment group completed. The asynchronous treatment group completed their surveys online. Results for the paper-based post-activity survey instrument were typed into Microsoft Excel®. Online results from the asynchronous treatment groups were automatically populated into Microsoft Excel®.

In order to measure objective four, additional data were collected from the asynchronous and hybrid treatment groups. This data were demographic in nature and included Internet Protocol (IP) addresses where students accessed the activity web site,

times and dates of their access, their remote web browser application type, and the duration of their online experience.

Both qualitative and quantitative data were collected in both 1999 and 2004. Qualitative and quantitative data were both input in the same manner. Qualitative data were then extracted and retained section number, treatment type, and year. Since not all students availed themselves of the opportunity to provide qualitative data, these data were a subset of the larger quantitative study.

### Experimental Treatments

The Maytown activity was originally adopted from the University of Oklahoma and was redistributed at Texas A&M University with their permission to use in AGED 340 classes. This activity, in some form, was used each semester. Although by 2004, a “refreshed” version of the original activity had been created by the departmental faculty at Texas A&M, in order to maintain the integrity of this research study, the same Maytown lesson was used in 2004 that had been used in 1999. Web pages based on the original “Maytown” paper lesson were created on a web server for the CAI. A discussion forum was programmed using both Microsoft Frontpage® web server extensions and Microsoft Windows® 2000/2003 Server to allow students to post and reply in a threaded discussion online, indexed by students’ section. The online survey was developed using Microsoft SQL Server® that received ported data from the web-based survey application. These results were then sent to Microsoft Excel® for further

analysis. The computer programming was divided into two main efforts: digitizing and web formatting the “Maytown” lesson and activity, and creating the discussion posting forum and post-activity survey instrument. Although the format and structure of the entire assignment appeared the same in 2004 as it did in 1999, different servers were used during these distinct time periods. In both instances, however, there was no discernable unavailability of the server during its needed use, meaning that students should have been able to access the web server resource during the entire assignment window.

The Maytown activity is included in Appendix C. The root of the activity was that students were to respond to what they feel were the five most important out of ten items that had accumulated in their “in box” while they were away. Each of the items left in the “in box” posed a different sort of ethical dilemma that needed to be addressed. Students used the lab experience to discuss issues related to ethics and one of the objectives of the lesson was to help students develop a better understanding of different ethical perspectives on issues. Students were to cast themselves in the role of Michael Marzella, the director of a Rural Rehabilitation District for the town of Maytown. Background information about Maytown, Michael, and his staff was available to the students through hyperlinks from the main index page of this web-based assignment. The requirements for the assignment were clearly outlined for students on this starting web page, including times that various phases of the assignment needed to be completed. Students who were in the control group had printed copies of the materials that were

printed from the online web pages and subtly edited to change the directions with regards to “posting” versus “writing.”

Following reading the background and biographical information related to Maytown, students started reading each of the letters in Michael Marzella’s “in box,” regardless of the treatment or control group of which students were a member. Each of the letters had some type of controversial content that was designed to prompt student discussion and feedback. Since students could only respond to five of the ten total letters, another objective of the activity was for the students to compare what other students chose to respond to and discuss with each other why they ranked the importance of items in the manner in which they did.

The two treatment groups were presented with the initial assignment’s requirements and the Maytown letters online, and students were required to post their initial responses to the web page before their next class section met or would have met. In one of the treatment groups, the “hybrid,” students posted their initial thoughts and responses, some students read over each other’s responses, and then attended class the next session to discuss. After this next regular class meeting and session of discussion, hybrid students filled out a post-activity survey instrument in class and provided their perceptions of the Maytown experience. The traditional class was presented with paper copies of instructions and the Maytown letters and wrote out their responses to these letters that they chose as the most important in advance of the next class session. These traditional, control group students discussed their results during the next regular class session, and then filled out a post-activity survey instrument at the end of that class. The

last treatment group, the asynchronous sections, did not attend the laboratory class during the next regularly scheduled session. Instead, these students posted their initial thoughts and responses before the time the next class session was due to meet, and then during the following week responded to each other's postings. This last, completely asynchronous group completed their post-activity survey instrument online.

The type of experimental treatment did not affect the content of the post-activity survey, however, the traditional control class and the hybrid classes were given "paper" copies, while the asynchronous treatment group completed the survey online. The choice was made to have differential delivery methods to attempt to capture student perceptions immediately following participation in the experience. This could only be done using differing delivery mediums for the post-activity survey instrument.

### Class Structure and Treatment Assignment

As a part of the AGED 340 academic course, a laboratory section was required once a week for fifty minutes. The laboratory sessions were taught by teaching assistants who were typically graduate students in the department, and not the class instructor of record. During the instructor of record's teaching sessions, which were not laboratory sessions, all students were presented the same material at the same time. The lecture portion of the class instructed students on the principles and practice of leadership theories while the laboratory "break-out" sections focused on the application of leadership theories by using activities.

Because of the size and popularity of this class, during 1999 three different instructors taught non-honors sections of this course. Sections 501 through 505, inclusive, were the sections used for this experiment. Students signed up for these classes independently of this experimental procedure. In 1999, sections 501 through 505 were taught by the same instructor of record for the main classroom portions of the course. Each of the sections, however, had a different teaching assistant for the laboratory session. In 1999, class sections were assigned to their experimental group by choosing slips of paper out of a hat that had section numbers labeled on them. In 1999, sections 501 and 502 were randomly chosen to receive the experimental treatment of a completely asynchronous activity involving only the computer to directly interact with for the assignment. In 1999, section 503 was chosen randomly as the traditional classroom control. Sections 504 and 505 for 1999 were randomly chosen to receive the hybrid treatment of both instruction and CAI as their variable experimental treatment.

In 2004, an attempt was made to gather more data points. Sections 501 – 510 were taught using the same the Maytown activity and experimental procedure as was used in 1999. Sections 501 – 505 were taught by one instructor of record, and sections 506 – 510 were taught by a different instructor of record. Two instructors of record in 2004 yielded a total of six graduate students that were responsible for the various sections of the laboratory activity. Although the activity itself was the same across treatment and control groups, variability in teaching style and course facilitation by both instructors of record and teaching assistants were present.



Sections 501, 504, 507, and 510 in spring 2004 were the hybrid treatment group, chosen randomly from scraps of paper drawn from a non-transparent bowl. Sections 503 and 508 were randomly chosen as the control sections in 2004. Finally, sections 502, 505, 506, and 509 were chosen as the asynchronous sections in 2004.

Regardless of the treatment or control group that students were placed in, statistical information from the means of the course examinations in AGED 340: Professional Leadership Development show that students' learning is similar across different sections of the course.

### Instrumentation

Two instruments were used to collect information from this activity. Students who were in the asynchronous and hybrid treatment groups had their online responses collected for grading by the teaching assistant through the web programming on the discussion board. This first "instrument" was not related to student perceptions and only gathered demographic data and student assignment data. This demographic data helped to answer research objective four. This instrument recorded their name, response, what time they posted the response, the type of web browser used, and where the response was posted from in terms of its Internet Protocol (IP) address. The servers in both 1999 and 2004 were permitted to advertise web services through the Texas A&M University firewall so students could access the activity, survey, and assignment, from both on-campus and from any other Internet service provider in the world.

The second instrument used in this study was the post-activity survey. In 1999, this survey was completed online by sections 501 and 502 while in 2004, sections 501, 504, 507, and 510 completed the post-activity survey online. Completing the survey online for these sections was a function of their random selection as part of the asynchronous treatment group. The 1999 hybrid treatment groups of sections 504 and 505 along with the control section 503, as well as the 2004 hybrid sections 501, 504, 507, and 510, and control sections 503 and 508, submitted paper copies of the post-activity survey instrument. The post-activity survey instrument is included in Appendix A. There were a total of sixteen questions on the post-activity survey that asked students to rate their answer to the question with the following Likert-type responses: strongly agree, agree, disagree, strongly disagree, or no opinion. For quantitative analysis, these answers were valued from four to one, respectively. “No opinion” responses were tabulated for totals, but were not included in any of the statistical results that were generated. A qualitative section in this instrument was provided for students to provide whatever comments they felt would be appropriate regarding their experiences during this activity.

This second instrument’s results in the delivery form of the post-activity survey for the asynchronous treatment group were parsed automatically by Microsoft’s SQL Server® and Microsoft Excel®. The results from the control group and hybrid technology group were tabulated and recorded by hand into Microsoft Excel®. From the questions in the survey, four indices were developed to assist with providing the answers to the research objectives. The post-activity instrument’s questions were specifically

developed to be added to indices later. The duration of the instrument was kept short (at a total of sixteen questions) to hopefully facilitate more students submitting responses.

The indices created from the post-activity survey are shown Table 2.

Table 2  
*Indices Created from Survey.*

Short Name	Long Name	Question Numbers
LP Index	Leadership Perception Index	2
TP Index	Technology Perception Index	7, 8, 9, 10, 11, 12, 13
340TA Index	AGED 340 Technology Acceptance Index	3, 4, 5, 6, 14, 16
DTA Index	Discussion Technology Acceptance Index	1, 15

Each of these indices was compiled to find the Likert-type values associated with each one of these indices. Based on the Likert-type responses from strongly agree to strongly disagree directly corresponding to a four through one scale, the indices made it possible to analyze holistic positive or negative attitudes toward each higher-level index. All of the survey questions were written with a directed, positive statement and did not use any converse statements that would require students to indicate “disagree” to actually indicate a favorable, or “positive” response. Because of this construction in the instrument design, the indices could be compiled to find “positive” reactions on an index

where students' responses lead to a 2.5 or higher, and "negative" reactions to index values where the students' responses lead to a 2.5 or lower.

### Data Collection

The treatments and survey instruments were administered during the fall 1999 and spring 2004 Agricultural Education 340 academic course "Professional Leadership Development" at Texas A&M University. Students were requested to complete the post-activity survey instrument during their laboratory session. Students provided their responses to the survey instrument either online or via paper copy depending on their experimental treatment group or control group assignment. The online form was developed and coded using Microsoft Frontpage® linked to Microsoft SQL Server®. The online form was printed straight from the compiled web page and copied onto 8.5" x 11" white paper for the control group, which completed the post-activity survey instrument by hand at the end of students' regularly scheduled class sections which met (control and hybrid treatment groups).

Non-control sections accessed the post-activity survey web page asynchronously at [http://maytown.tamu.edu/section50\[x\]](http://maytown.tamu.edu/section50[x]) (where  $x = 1$  or  $2$  in 1999, and  $2, 5, 6,$  or  $9$  in 2004 depending on the student's section in which they were enrolled). Microsoft SQL Server® ported the online data to Microsoft Excel® files which were used for data mining purposes. Students on all of the post-activity survey instrument identified themselves by their section.

As previously mentioned, there was some variability in different instructors of record for different course sections, as well as different teaching assistants for different laboratory classes. During the data collection periods, several different events occurred that need to be clarified. Firstly, although the activity was the same across all sections and treatment groups, there was a difference in grade weight of the assignment in between sections 501 – 505 and sections 506 – 510 in 2004. As well, the grade weighting was different between two different instructors of record between the 1999 sections 501 – 505 and the 2004 versions of the same class sections. In 2004, while sections 505 – 510 valued the Maytown assignment as 11% of the total grade, it was valued at 1% in sections 501 – 505. In 1999, the Maytown assignment was 7.5% of the total grade for sections 501 – 505. These different grade weights might have contributed to variability of the results.

A problem arose with control section 503 in 2004 with the administration of the post-activity survey instrument. The lab instructor mistakenly did not give students the survey during the completing of the lab period following the Maytown activity. The survey was administered the following day to students who attended the larger lecture portion of the class, however, not all students that attended the previous day's lab attended the lecture. This was one instance where data were lost in 2004.

Section 508 of 2004 had a problem in that the instructor decided to take the class outside instead of using the same environment that the other hybrid and control classes from both 1999 and 2004 had used: Scoates Hall, room 101.

With regards to qualitative data, students who had to use a paper copy of the survey were forced to write their comments down and contributed less due to time constraints and the need to actually write versus type. Students completing the post-activity survey instrument asynchronously left qualitative results more often. These qualitative results tended to be “richer” and provide more detail.

### Analysis of Data

There was a large amount of both quantitative and qualitative data that were collected from the students during their participation in this activity. The actual activity itself, where performed online, contained a wealth of information including where students used computers, both on and off-campus, at what times they posted, and the quality (or lack thereof) of their responses to this assignment. For the purposes of this research the quality of students’ responses did not contribute to the research objectives and were spurious in nature with regards to the intent of finding out the temporally dilated effectiveness of CAI technology in leadership education. As such, the quantitative and lesser amount of qualitative data from the post-activity survey have been explained in obtaining research results.

The data collected from the administration of the post-activity survey instrument was analyzed primarily using Microsoft Excel® on a personal computer. Frequencies, means, modes, medians, standard deviation, t-tests, correlation of results across indices, and minima and maxima means calculated through regression have been employed to

illustrate results where appropriate. In order to perform some of the higher order statistical functions and to check for accuracy of lower level ones, SPSS® (Statistical Package for the Social Sciences) was used. In particular, the multivariate analysis of covariance (MANCOVA) result listed for objective five was calculated specifically using this program. The quantitative results from the Likert-type scale students were presented with were compiled by individual section, and additionally by treatment type, by year of treatment, and by entire sample size, regardless of treatment.

The Likert-type scale included five possible answers, and were assigned the following values for data analysis purposes: 4- “strongly agree,” 3- “agree,” 2- “disagree,” or 1- “strongly disagree.” Respondents who chose the “no opinion” option were counted for frequency; however, these results were omitted from the statistical analysis, thus lowering the sample size for that question if the “no opinion” option was selected. Based on these post-activity survey responses, an analysis of each question by both section and treatment group was completed.

For each section, treatment, and the total sample size, the total number of valid (that is, not “no opinion”) results were counted as “eligible responses.” The Likert-type scale’s sum of all respondents’ choices for each question was obtained. A frequency analysis was conducted to determine the mode. The total number of eligible responses was divided into the total sum of all the respondents’ answers to each question. This obtained the mean for that question. The median was also obtained for each question. All of these statistics were calculated by section, treatment, year, and entire sample size across all the experimental treatments and control group.

Standard deviation was calculated for each question in order to determine the confidence value with an alpha equal to 0.05. From this confidence interval, both minima and maxima mean was determined through regression.

Independent samples t-tests were used to compare the three groups and also to compare some results across temporal dilation. Correlation techniques were used to determine relationships between indices. Each of the indices that was created to coalesce data together was subjected to a check of bivariate correlation obtaining the Pearson r statistic to validate significant correlations at the alpha .05 level. Multivariate analysis of covariance (MANCOVA) with a Pillai-Bartlett trace was used to discover results across temporal domains and treatment groups.

It should be noted that in the course of the analysis a total of four different independent variables exist for sixteen dependent variables. The independent variables in this investigation could be described as: section number, treatment type (if any), year, and instructor. The dependent variables were the sixteen survey questions with quantitative values represented by the Likert-type scale. For analysis purposes, these sixteen dependent variables were coalesced into four when combined into indices. Additionally, although there were four independent variables, data were not analyzed based on differing instructor of record or teaching assistant by section.

In order to answer objective four, the total web server log files from the hybrid and asynchronous groups were compiled. These logs held a total of over 27,960 lines of students' individual requests for page information from the asynchronous and hybrid treatment groups' websites. Microsoft Access® was used to remove duplicate IP



address entries based on one hour session maximums to identify 1,074 distinct sessions to the Maytown activity divided among 156 different Internet domains.

A combination of Microsoft Word®, Microsoft Excel®, and Microsoft Access® was used in order to correct the data to remove the researcher looking at and testing the web pages, access to secondary systems of the server, and to identify, classify, and remove obviously spurious data from the field of collection. Microsoft Access® was used to determine date and temporal access of data, and queries using SQL (Structured Query Language) were designed to sort students into their respective times and dates of access to the assignment.

Based on the captured IP addresses of students by the Maytown web server, a reverse DNS (Domain Name Service) look up was performed on each of the distinct 1,074 IP addresses that registered accessing the server. This reverse DNS look up gave the specific name of the remote accessing host. In order to verify more geographic information, these host names and IP addresses were queried against the master holding databases of the three major IP registries appointed by IANA (Internet Assigned Numbering Authority): ARIN (American Registry of Internet Numbers), RIPE (Réseaux de IP Européens), and APNIC (Asia Pacific Network Information Centre). Reverse DNS information was obtained on an interactive command line session basis through the “nslookup” command, and whois information was obtained by the “whois -h” command issued on the publicly available UNIX services for the Texas A&M University campus.

For qualitative data analysis, data were chunked into categories and were triangulated based on results from QDAMiner.

## CHAPTER IV

### FINDINGS AND RESULTS

This chapter contains information related to the students' perceptions of the leadership activity, their feelings about technology deployment and utilization, their feelings about themselves as leaders, and how open they were to utilization of technology in the both the fall 1999 semester course and spring 2004 semester academic course, AGED 340: "Professional Leadership Development," at Texas A&M University.

The purposes of this study were to determine the effectiveness of varying levels of CAI in a leadership education course and to determine temporal effects of five years of technology development, its deployment and adoption, and differences in student perceptions. The following objectives were identified:

1. Determine the appropriateness of utilization of technology as a leadership education teaching medium.
2. Describe students' perceptions and acceptance of technology as a discussion tool and teaching mechanism.
3. Describe any positive relationship between student technology acceptance and extent student self-leadership perception.
4. Describe how students accessed asynchronous assignments. What time? What were the implications?
5. Describe how students' perceptions might have changed after 5 years. Was there a significant statistical difference that could be found in their attitudes?

These objectives guided the choice of relevant data obtained during the study and its subsequent statistical analysis. Findings for each of these objectives will be discussed in this chapter.

### Findings Related to Objective One

Objective one was to determine the appropriateness of utilization of technology as a leadership education teaching mechanism. To accomplish this objective, the control and treatment groups were given a post-activity survey to measure their attitudes toward interpolation of CAI into leadership education.

In analyzing the “appropriateness” of technology incorporation, three of the indices that were compiled from both the 1999 and 2004 data were used, the 340TA index identifying the acceptance of technology in AGED 340, the DTA index, identifying the acceptance of technology as a medium for discussions, and the TP index, which identified the acceptance of technology in general. The 340TA index was composed of questions which had Likert-type choices of strongly agree, agree, disagree, strongly disagree, or no opinion. The “no opinion” responses were counted for frequency, but excluded from statistical calculations. The remaining eligible responses were assigned values from four to one, inclusively, and respectively. The questions used in the 340TA index calculation are identified in Table 3.

Table 3  
*Questions Comprising the 340TA Index.*

- 
3. I wish there were more opportunities to use technology in AGED 340 to work at my own pace.  
 4. Computers are helpful in learning AGED 340 concepts.  
 5. The use of computer technology has enabled me to be more productive in this course.  
 6. I would like to see more AGED 340 lab assignments on computer.  
 14. I feel like the discussion I gained from this activity was good.  
 16. I think AGED 340 could be taught successfully by distance learning technologies such as the web.
- 

The DTA index, the discussion technology acceptance index, was designed to measure students' attitudes to using technology to facilitate discussion. The DTA index was composed of questions which had Likert-type choices of strongly agree, agree, disagree, strongly disagree, or no opinion. The "no opinion" responses were counted for frequency, but excluded from statistical calculations. The remaining eligible responses were assigned values from four to one, inclusively, and respectively. The questions used in the DTA index calculation are listed in Table 4.

Table 4  
*Questions Comprising the DTA Index.*

- 
1. I feel like the level of technology used in this activity helped me understand the activity better.  
 15. I feel like I would be able to be more open with my AGED 340 comments if all discussions were in an online format.
- 

The TP index, the technology perception index, was designed to measure students' attitudes to using technology to facilitate discussion. The TP index was

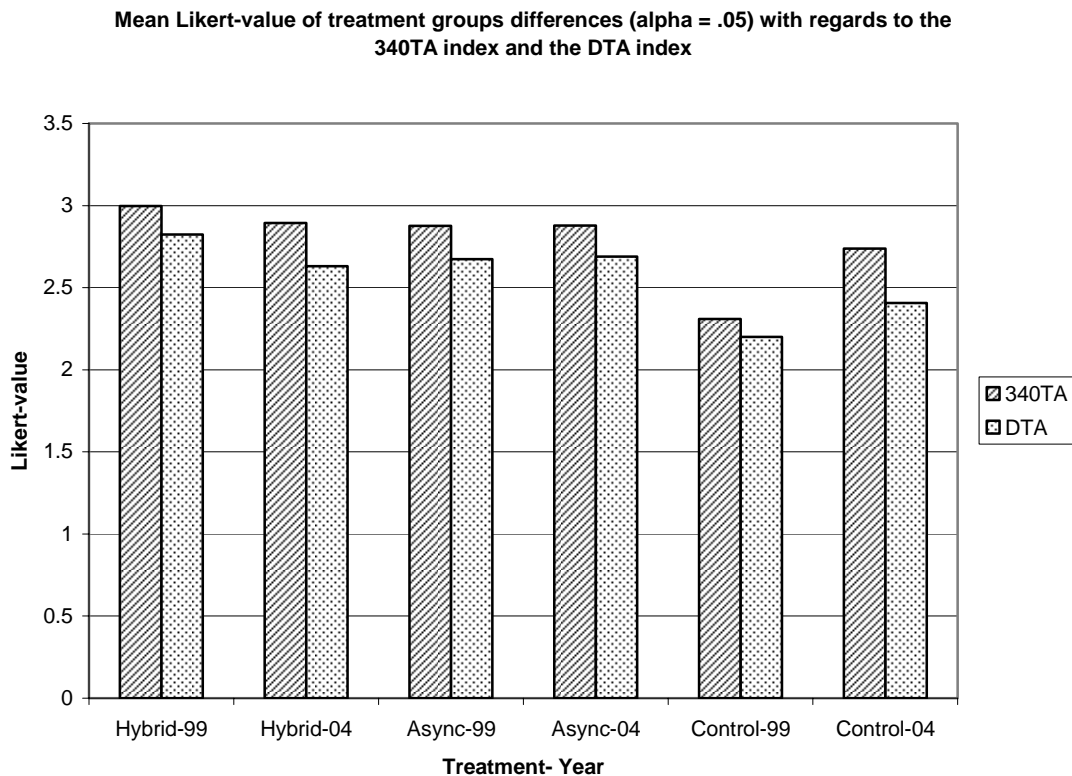
composed of questions which had Likert-type choices of strongly agree, agree, disagree, strongly disagree, or no opinion. The “no opinion” responses were counted for frequency, but excluded from statistical calculations. The remaining eligible responses were assigned values from four to one, inclusively, and respectively. The questions used in the TP index calculation are listed in Table 5.

Table 5  
*Questions Comprising the TP Index.*

- 
7. I am comfortable using computers.
  8. In the future, computers will be used as a part of teaching techniques for all college classes.
  9. Computers are becoming necessary to perform work efficiently.
  10. In completing assignments, classes that use computers take less time than classes that do not use computers.
  11. Computers help reduce the workload encountered in the home, school, and workplace.
  12. Computers are important in my present major.
  13. Computers are important to my future.
- 

In checking the bivariate correlation of the 340TA index, all questions were found to have statistically significant correlations with each other at the alpha .05 level. The DTA index's two items were found to be statistically significantly correlated at the alpha .05 level. These indices were therefore useful when looking at means across the indices of the various component questions. For the purposes of statistical correlation confirmation, bivariate correlation to obtain the Pearson r statistic were used in both one and two-tailed analyses of the respondent's answers to the individual questions. The differing experiences of the control groups and treatment groups showed a difference in

agreement with regards to acceptance of technology on the 340TA index and acceptance on technology in discussions on the DTA index. Figure 1 exhibits these results.



*Figure 1.* Mean Likert-value of treatment groups response with regards to the 340TA index and the DTA index. The 340TA index measured students technology acceptance in AGED 340. The DTA index measured student acceptance of discussion technologies such as WebCT.

Figure 1 showed a noticeably lesser acceptance toward usage of technology from the control group of 1999. Both of the variable treatment groups in both 1999 and 2004 that had been exposed to technological usage in leadership education felt that it was possible, on average, to incorporate technology successfully into leadership education. The control group of 1999, which was not exposed to technology, did not feel that the

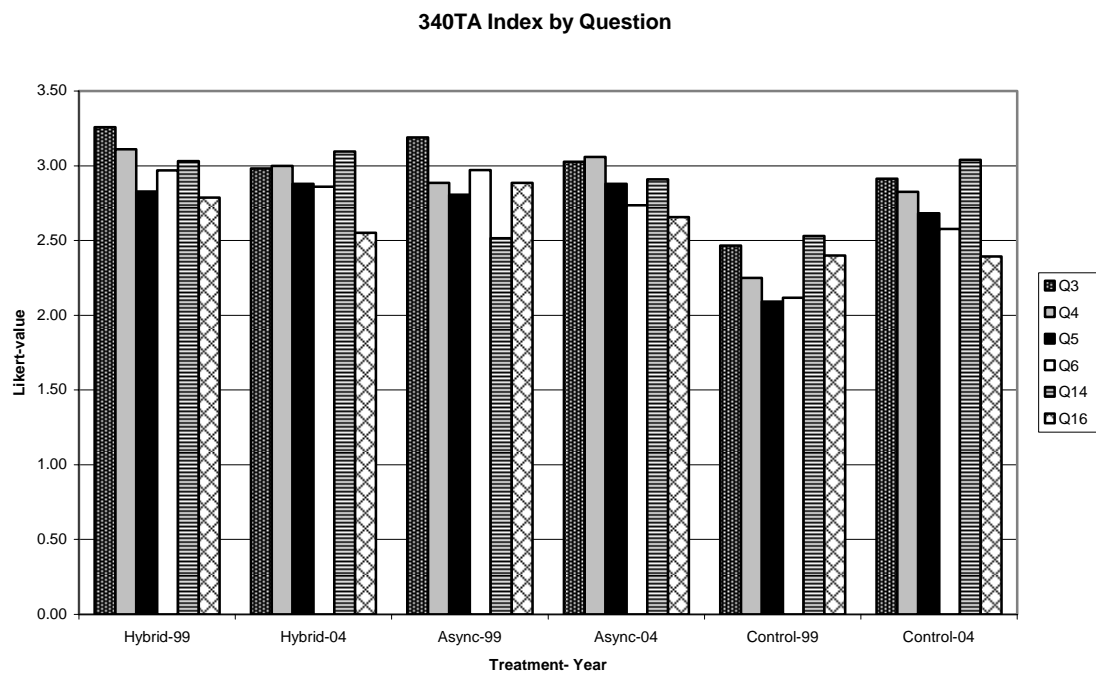
incorporation of CAI into AGED 340 would be successful. This attitude had changed in 2004 across the average of the index, however, students in the control group of 2004 disagreed more than agreed with question sixteen, which was “I think that AGED 340 could be taught successfully by distance-learning technologies such as the web.” Students in 2004, as they did in 1999, thought that leadership education could be taught with technological methods such as CAI, although with a score of less than 2.5 in both 2004 and 1999, control subjects did not believe that discussions could take place successfully in an online format.

The group that was exposed to the hybrid treatment of both traditional classroom instruction and technological utilization had the highest acceptance index values of discussion technology and utilization of technology in AGED 340 for both 1999 and 2004, while the fully asynchronous group had a slightly lower, but still positive, acceptance value of technological deployment across both indices. Acceptability standards were set by means greater than 2.5 which indicated that more student respondents agreed rather than disagreed with the index parameter items.

In order to understand the ability to utilize technology in a leadership education classroom, understanding students’ perception of technology inclusion was integral to that process. In order to measure the success of technology utilization and deployment, student perceptions were tabulated. From Ausubel’s “meaningful learning,” students would be able to learn more information if they could relate to a base of technology and then apply that base toward building new knowledge on leadership education. Since

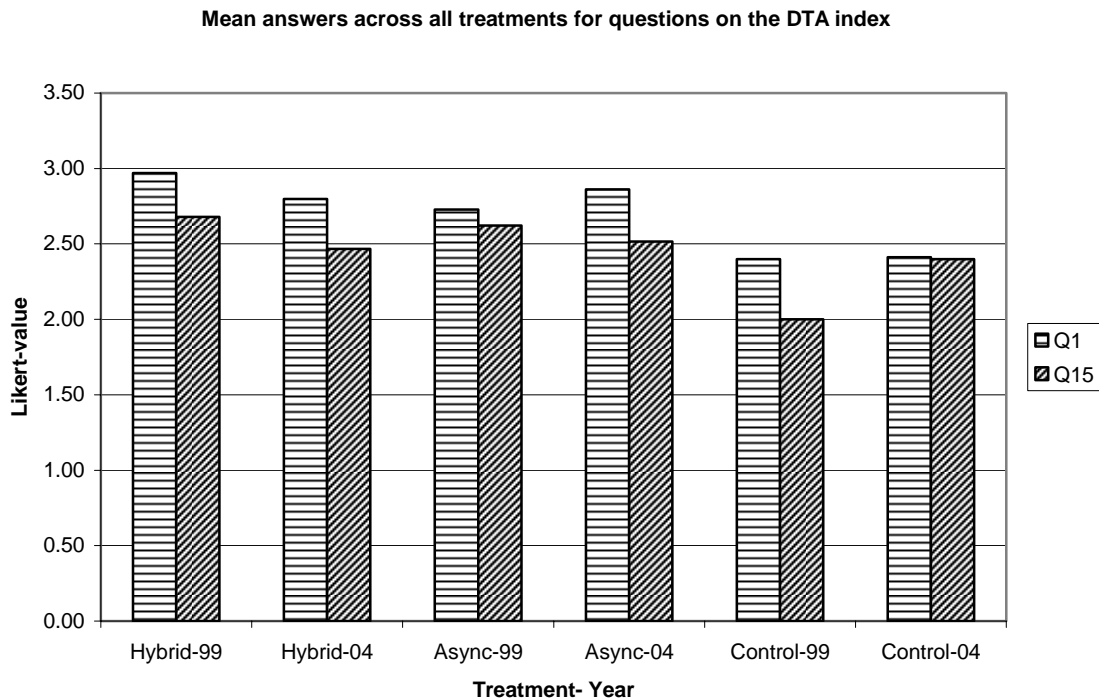
students generally agreed with the 340TA and DTA indices, it could be conjectured that technology utilization was appropriate for leadership education.

Individual results for the indices show an acceptable degree of internal consistency across each index as measured by a bivariate correlation to obtain a Pearson  $r$  statistic. In Figure 2, the data from all the treatment groups was analyzed across the 340TA index. In Figure 3, the data from the DTA index was analyzed for all treatment groups. The means for each question in the indices was shown by treatment group.



*Figure 2.* Mean answers across all treatments for questions on the 340TA index. The 340TA index measured students' acceptance of technology utilization in AGED 340.





*Figure 3.* Mean answers across all treatments for questions on the DTA index. The DTA index measured students' acceptance of technology to mediate discussions.

The control groups, which comprised the traditional classroom groups, showed lower acceptance across the board on both the 340TA and the DTA indices both in 1999 and 2004. These control groups had a smaller number of students in both the 1999 and 2004 sections than each of the other treatment groups. With an alpha set at .05, the mean becomes impossible to conclusively determine real values at the “agree/disagree” statistical separator of 2.5 on the Likert-type scale based on a linear regression analysis. A lower confidence level would have to have been employed to rule out the possibility of a Type I error being made. The DTA index for the control groups from 2004 reflects

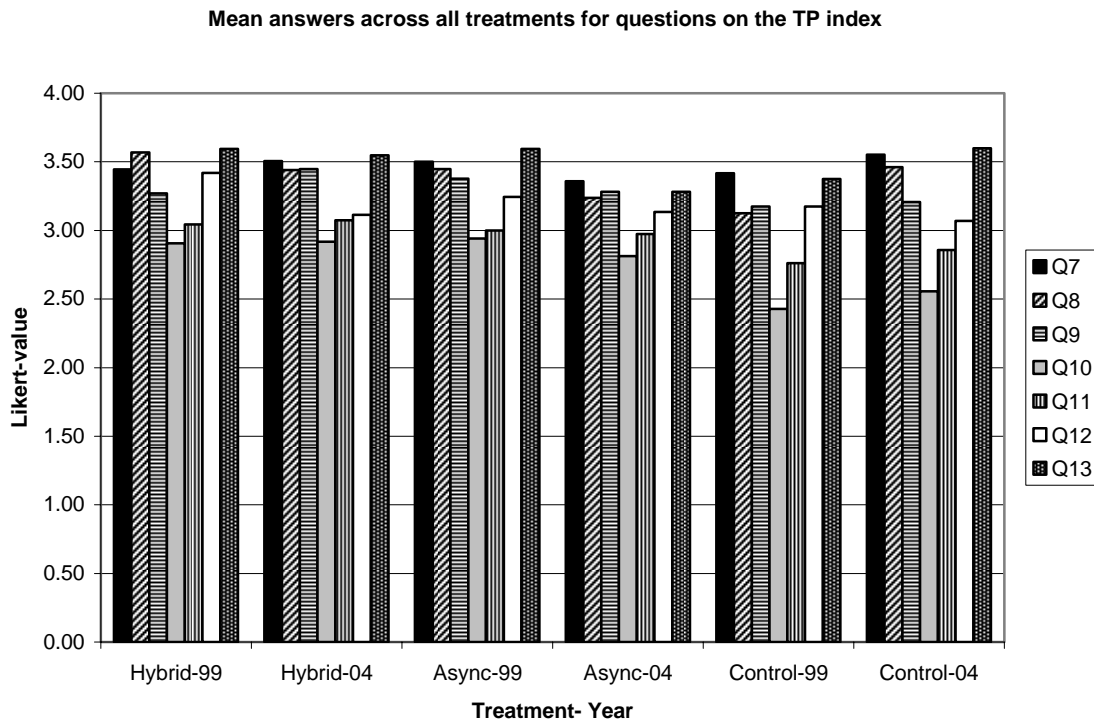
the possibility of a Type I error occurring. Figure 2 looks at the component questions from the 340TA index of the control group with an analysis of means per question.

Figure 3 looks at the component question values from the control group with regards to their DTA index component answers.

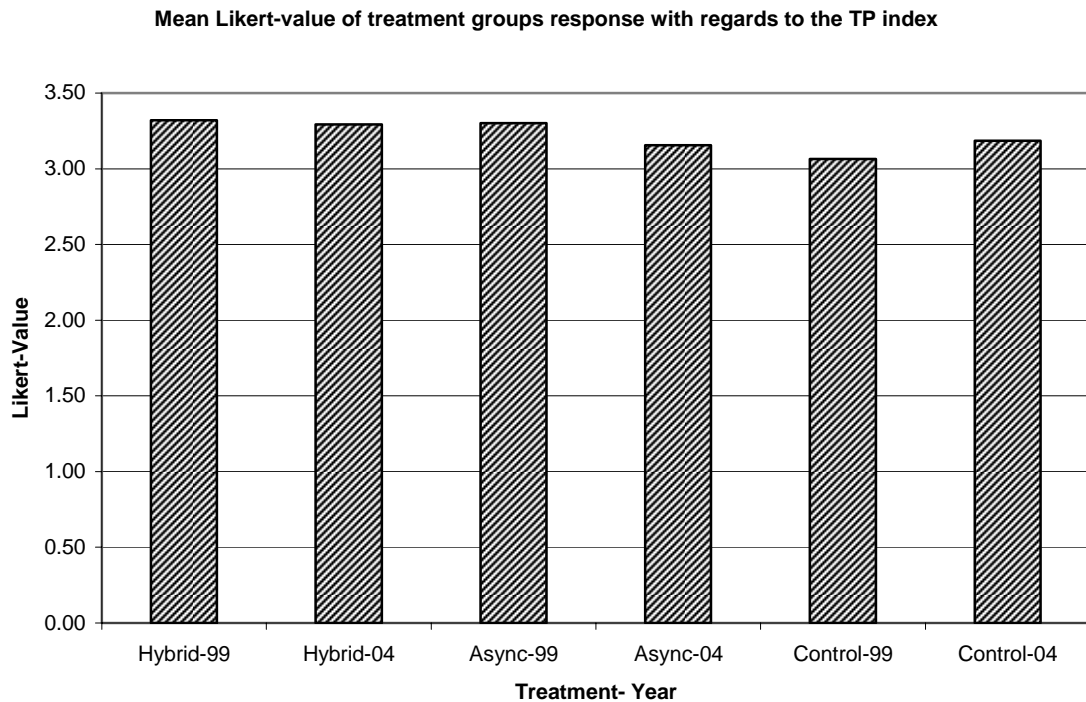
The hybrid group, in total, had the most positive general attitudes toward the question components of the 340TA and DTA indices. Although no Type I errors were visible from the 340TA index based on regression analysis, there was the possibility that question 15 from the DTA was subject to a Type I error, in both 1999 and 2004. Figure 2 looks at the component questions from the 340TA index from the hybrid group with an analysis of the means. Figure 3 looks at the component question values from the hybrid group with regards to their DTA index component answers.

The Technology Perception index, or TP index, was created from post-activity survey questions 7, 8, 9, 10, 11, 12, and 13. This index measured students' attitudes toward technology and whether or not they were accepting of technology. This was also important to understand whether or not it was appropriate to use technology in leadership education. A negative score on this index could well act as a veto mechanism regardless of the 340TA index or DTA index score. Students perceptions of technology could be seen in their TP scores, which are shown in Figure 4 in response to the individual question responses across treatment and temporal displacement, and in Figure 5 with regards to the total mean scores of students on the TP index components. In order to determine the viability of the TP index, bivariate correlation was completed to obtain a Pearson r statistic. It was determined that all except questions 7 and 11 in correlation

were statistically significantly correlated at the alpha .01 level. Questions 7 and 11 were statistically significantly correlated at the alpha .05 level.



*Figure 4.* Mean answers across all treatments for questions on the TP index. The TP index was the technology perception index, which measured students' acceptance of technology.



*Figure 5.* Mean Likert-value of treatment groups response with regards to the TP index. The TP index was the technology perception index, which measured students' acceptance of technology.

In order to understand whether or not students accepted technology, and whether or not this acceptance afforded an acceptable teaching and discussion method a null hypothesis was developed measuring the variance between the 340TA and DTA indices across treatments and time, hypothesizing that there was no difference in attitudes toward the two indices. Table 6 shows a t-test of the means of time dilated index scores for the 340TA and DTA indices across treatments.

Table 6  
*T-test of the 340TA Index Compared with the DTA Index.*

Paired Samples Test	Mean	St. Dev.	St. Error of Mean	t	Sig.
340TA – DTA Index	.21	.078	.032	6.697	.001

Because the means from the t-test across the temporally adjusted 340TA and DTA index comparisons yielded that there were statistical differences in between the means, the two index scores can not be directly compared. However, since both of the aggregated means were all higher than 2.5, as evidenced from the graph in Figure 1, more students agreed than disagreed holistically with the inclusion of technology in the academic course AGED 340: Professional Leadership Development.

#### Findings Related to Objective Two

Objective two, was in many ways, a subset of objective one. The appropriateness of utilization of technology from objective one was directly based on student perception of technology as a discussion and teaching mechanism. The results from objective one's 340TA and DTA indices were directly applicable to objective two in establishing student acceptance.

In completing the assignment of the post-activity survey, students were given the opportunity to complete a free form response section that posed to them "I would like to

provide the following comments about this experience.” A variety of useful qualitative data were obtained from 37% of the total respondents across all the sections in 1999, and 27% in 2004. In 1999, only 8% of this 37%, however, came from the control group as part of a non-weighted analysis. A weighted analysis would have expected 25% of the 37% of the total qualitative responses from students to come from the control group. Similar results were found from paper versus online post-activity surveys in 2004. It could be inferred that students were much more likely to write qualitative responses when they had the opportunity to type their answers as opposed to having to write them by hand.

The “chunking” of the qualitative responses into themes by variable treatment or control group resulted in different chunking threads based on temporal displacement. In 1999, there were three themes students generally identified: the assignment was interesting due to using technology, the instructions from either the teaching assistant or on the web were unclear, and using computers was, unfortunately, going to increase, but there was a negative social element to this increase.

*1999 Qualitative Data*

In receiving the completely asynchronous treatment, one student describes, “I think this computer experience was educational in learning more about Aged [sic] 340. But we can’t [t] rely on computer classes to teach us(students) [sic] everything we should know. We still need classroom instruction.” Another student from this treatment identified that “I believe computers need to be incorporated to all classes, but I do not feel that they should take away the value received from interacting with other people.” These students who were forced to interact solely with the computer clearly identified the missing “social” component of instruction. This lack of a face-to-face social interaction was summed up well by this student, “how [sic] can it help with discussions if you're only typing on a computer. AGed [sic] 340 is learning to deal with people. On the web someone will say anything because they don't have to be in the same room with people so they are less likely to watch their tongues. Face to face contact allows one to have to deal with others [sic] facial and body expressions which are major parts of communication.” This completely asynchronous group (n = 38) had a 50% response rate to the qualitative feedback section, dramatically more than the other two groups.

Most students in the asynchronous group had solely positive comments to make about their experience. Of the nineteen respondents, 57.9% indicated solely positive experiences from this activity. Students’ positive experiences were “chunked” into two groups: they enjoyed completing the assignment over the Internet because of the flexibility with regards to time that this instructional design format gave them to

complete the assignment at their leisure, having time to formulate responses, and additionally these students found the assignment “enlightening,” “interesting,” “cool,” or “different.”

A total of 21.05% of respondents from the asynchronous group found the exercise confusing, either from the instructions the teaching assistant gave them, or the instructions and requirements for the assignment from the web page. A final 21.05% found the exercise to be “negative” because of social concerns.

The control group, as aforementioned, lacked a significant number of qualitative responses. This control group had the traditional classroom instruction utilized. Most chose not to avail themselves of the opportunity to handwrite responses into the comments section. One student identified the need to enhance skills with the personal computer because “computer/distance learning is the future.” Another student identified that they would most likely not have completed the assignment because it would have required them to print out 26 nearly empty pages of paper. The student did not want to read the material online and felt that they would have to print it, but did not want to because of environmental concerns.

The technology hybrid section had a total of 39.4% of qualitative respondents. Comments from respondents in this treatment group were “chunked” four ways: students had problems with the instructions or features, students enjoyed the experience and had positive comments, students did not like the social ramifications of the experience, or just that using computers themselves was a good experience. A total of 20% of students felt similarly to the feelings of one student who stated that “computers are the future and



need to be implemented in every college class.” Nearly 46.7% of students identified that the experience was generally positive. An additional 20% of students identified that the experience was marred by having difficulty with the instructions or the web page technology. One student from this category wanted a “spell check” function on the postings web page. Finally, 13.3% had negative feelings about the technology used due to social concerns. One student in this category identified, “It is all about interaction w/ [sic] people and if it was only on the web. [sic] It would be yuck! [sic]”

An analysis of the qualitative data from all the sections showed a common theme. Both sets of students subjected to CAI variable experimental treatments identified a negative social component involved with using CAI. Yet, the qualitative results seemed to indicate that, despite this negative social concern, students generally accepted technology utilization in leadership education. The qualitative section apparently gave students the chance to address a concern they did not feel was adequately represented in the instrument- and should have been. Across the three experimental groups, 18.4% had negative feelings about using technology to teach leadership education. A total of 44.7% of respondents listed opinions that were coded into positive responses. The remaining responses were outliers or the 18.4% that had a problem with the instructions on the web page or from the teaching assistant for the laboratory section.

In evaluating the student perception and acceptance of technology for discussions and leadership education, both quantitative and qualitative data indicated that students accepted technology as an aid. Some students raised the concern over having

technology as the sole instrument of a teaching portfolio. Those that did not share that concern enjoyed the freedom to generate responses and completed assignments in their own time and at times that were convenient for them.

### *2004 Qualitative Data*

Based on the understanding of the 1999 qualitative data, and what was learned with regards to students in different treatments being more or less inclined to write qualitative responses based on their treatment level, for 2004 the sum of qualitative data were placed together and categorized accordingly. Much like in 1999, however, students who had the ability to use a computer to type responses as part of the post-activity survey wrote qualitative responses more frequently, and usually left longer, richer responses.

In 2004 responses were chunked into five major themes: students who liked the activity and its use of technology, students who were more or less “on the fence” with regards to technology and its use, students who did not like the activity because of its use of technology, students who wrote about the assignment in general and did not make mention of technology, and students who felt that the assignment was unclear because of the directions given for the assignment. A total of 37 students responded to the request for qualitative data in 2004, which was a response rate of 25.5% as compared to the total numbers that completed the quantitative instrument.

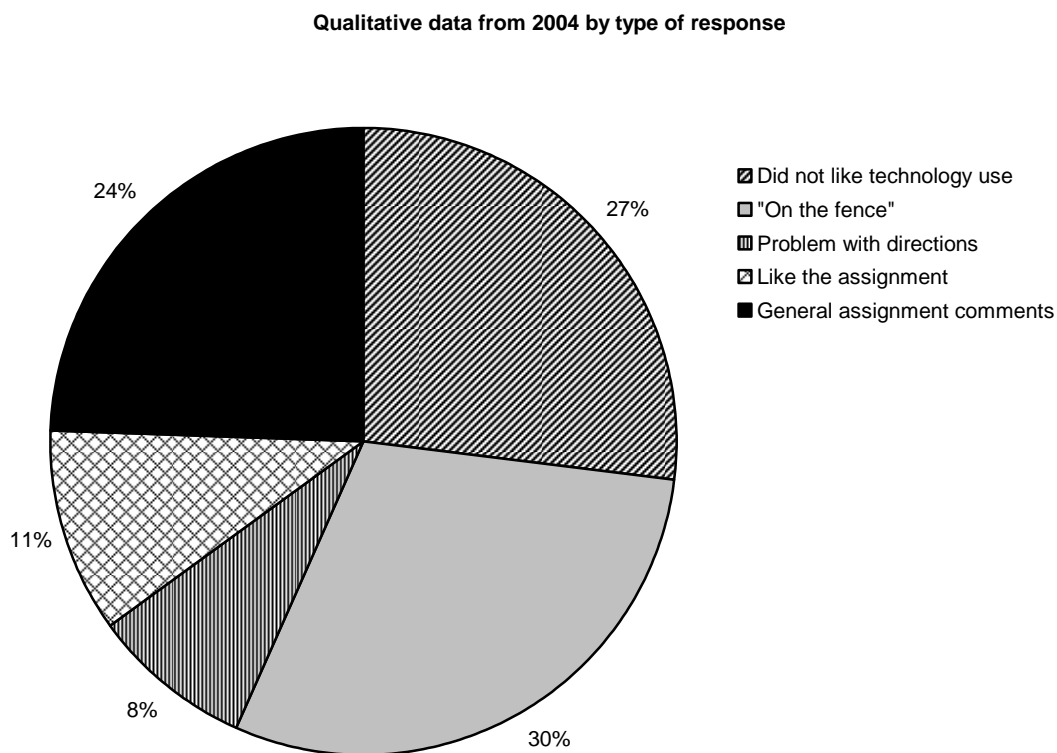
Sample responses from the group that did not like technology included comments such as: “the course could be taught online but I think it would be better to go to class,” “Leadership theories and applications simply cannot be effectively taught through a computer!” and “I enjoy the links on the computer for help in reviewing for exams, but I prefer to do lab work in lab.” Students who found problems with the directions stated so clearly, in the format of “the directions were kind of confusing,” and “the directions were not specific enough.”

Most students who left qualitative responses did so in an “on the fence” type manner, meaning, they said something positive about the experience and using technology, but completed a virtual “about face,” said something negative within the same feedback statement about using technology as well. Some of these student responses include, “While I agree that the computer based ‘lab’ is neat and cuts down on work, I feel that a lot less is learned than is learned in a classroom where interaction with other people is key. Computers [sic] are liquid courage-anyone can say something on a computer, but being part of a leader is being about to stand up in a group of real people and express ideas. I think that would be an impossible situation to simulate by using computers in distance education,” and “It was a good experience, never done something like this before. Using computers is more efficient and effective but the human interaction in class is very good, so it would be kinda [sic] hard to make AGED 340 a distance learning class.”

Other students simply discussed the assignment in general and did not relate their comments to use of technology. Some of these student responses included, “This

assignment was my least favorite. I found it extremely difficult to take seriously [sic] considering I would never do this guy's job or any government job. The letters were petty and rather annoying. All Americans seem to want to do is complain,” and “I don't feel that this project taught me anything new. More of a time consuming assignment. [sic]”

Figure 6 illustrates the breakdown of qualitative responses from 2004 by subject categorization.



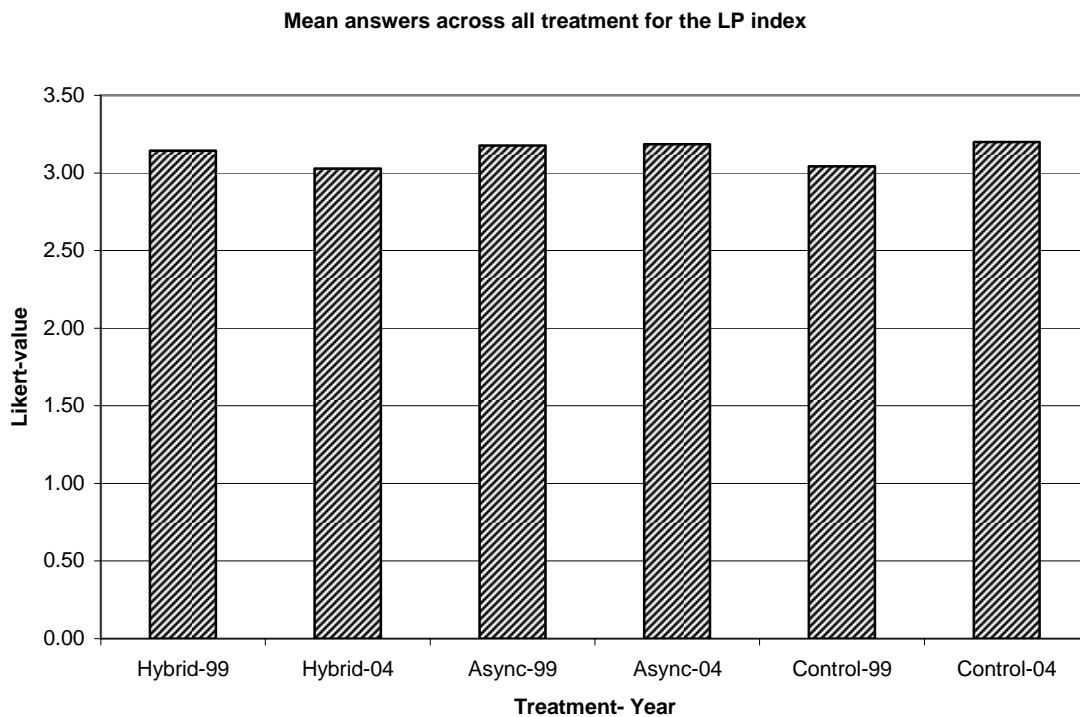
*Figure 6.* Qualitative data from 2004 by type of response.

In addressing students' perceptions and acceptance of technology as a teaching mechanism, although one could observe what seems like uniform acceptance from the indices on the 340TA and DTA indices, and general positive attitudes on the TP index from objective one of this study, the qualitative data, even though a subset of the quantitative responses, paints a somewhat different picture. Students wanted to ensure that their voice was heard, particularly in 2004, with regards to an "only technology" based solution. Only 11% of students in 2004 actually "liked" the assignment, while fully more than half were either on the fence, or did not like the interpolation of technology as a sole method of teaching the course. In this instance, the 2004 qualitative data suggests a cautious balance of use of technology and a definite change of attitudes from 1999 and the excitement surrounding the technology revolution. In particular, these qualitative results were important because the wholly asynchronous students were the ones that left the majority of the qualitative data.

### Findings Related to Objective Three

Objective three wanted to determine the relationship between student self-leadership perception and their acceptance of technology. The goal of this objective was to establish an understanding of whether or not people that thought that there were leaders were accepting of technology. A Leadership Perception index, or LP index, was established in the post-activity survey by one item that was coded by respondents in a Likert-type scale. The survey item was contained in question two, "I would perceive

myself to be a strong leader.” Students were able to choose from five responses: strongly agree, agree, disagree, strongly disagree, or no opinion. The respondents who chose the “no opinion” option were tabulated for frequency, however, not included in statistical analysis. Figure 7 shows the results of the LP scale across the six groups, temporal adjustments notated.



*Figure 7.* Mean answers across all treatments for the LP index. The LP index was created to measure student self-leadership perception.

A null hypothesis that the students that believed themselves to be leaders had more accepting attitudes toward technology was created. Measuring the variance of the

TP index against the LP index across all six temporally adjusted treatment groups, the t-test results (Table 7) showed that the null hypothesis could be accepted. Most students had a predisposition to perceiving themselves as a leader, and also being accepting of technology.

Table 7  
*T-test of the TP Index Compared with the LP Index.*

Paired Samples Test	Mean	St. Dev.	St. Error of Mean	t	Sig.
TP – LP Index	.09	.118	.048	1.866	.121

#### Findings Related to Objective Four

Objective four sought to understand the nature of the students who participated either asynchronously or in a hybrid treatment section for this assignment. Where were students accessing the asynchronous portions of their assignments? For this part of the study, data from the 1999 and 2004 hybrid and asynchronous sections was used. The control group, not using any sort of computer technology or CAI, had no data points available for this research objective. To begin the analysis, the total number of online respondents to the survey was analyzed. In 1999, thirty-eight total students responded in a solely asynchronous manner and had their location information captured by the Maytown web server as they were completing the post-activity survey. From that

analysis, thirty of the students in 1999 used some sort of facilities of the Texas A&M University campus (whether dial-up modems, on-campus computer labs, or other university resources) to complete their assignment. Of the asynchronous students for that year, those students represented 78.9% of the total. 21.1% used some fashion of not campus affiliated connection, and most of these connections seemed to be from the local cable company that offered a cable modem service for home Internet access.

These results changed dramatically in 2004. In 2004, thirty-eight students from the asynchronous sections submitted post-activity survey information. In this instance, however, twenty-four of those students came from off-campus, or non-campus affiliated computing connections to the Internet. Only fourteen of the thirty-eight students used the campus facilities. 63.2% of students no longer used the campus facilities, while 36.8% still did. This represents almost a “flip flop” of connectivity options, with students in the five year temporal difference gaining much greater access to the resources of the campus from remote locations.

In addition to the post-activity survey filled out by the asynchronous sections, additional data were able to be captured from the large number of qualitative responses students made with regards to the activity and assignment. In this instance, a wealth of student information was able to be isolated, such as their location on the Internet, the time they were accessing the assignment, how long they used the server’s Maytown application, and what pages students looked at. Ranking each individual user with a distinct Internet Protocol (IP) address for a specific session maximum time of one hour, students were individually tracked to see their work.



For 2004, a total of 27,960 web requests were made of the server during the operating time period for the asynchronous and hybrid treatments. The highest number of users for the 2004 treatment was on March 8 and March 9, 2004, the day before and day of the assignment's initial due date for the hybrid and asynchronous sections. A total of 156 individual domains were subjected to reverse domain name service (DNS) lookup to determine where students actually posted. Inside of the tamu.edu domain space, students posted from the computing center in Read, the students' residence hall network, Recreation, Parks, and Tourism Sciences, Economics, Agricultural Education, Agricultural Engineering, the Student Computing Center, Student Life, the campus digital subscriber line (DSL) connections, the campus virtual private network (VPN), the West Campus Computer Lab, Evans Library, the campus modem pool, and the Memorial Student Center. Students in the Bryan/College Station area appeared to mostly use local apartment connections (such as Sterling Village on Holleman Drive in College Station), the local cable company connections, and DSL provided by Verizon, the local phone company.

Of the 27,960 total connections made to the server in 2004, these were categorized into 1,074 individual sessions to the maytown.tamu.edu web site for course work. Unfortunately, the Internet was a global resource, and pages from the assignment were globally visible. As with any interconnected network, there were a number of out-of-country visitors, that could not be necessarily ruled out as legitimate unique visitors. For 2004, inside the United States, there were "visits" from such cities as: Phoenix, AZ, Irvine, CA, Los Angeles, CA, San Francisco, CA, Tampa, FL, Chicago, IL, Indianapolis,

IN, Kansas City, KS, Somerville, MA, Baltimore, MD, Minneapolis, MN, Kansas City, MO, Newark, NJ, Weehawken, NJ, New York, NY, Cleveland, OH, Columbus, OH, Tulsa, OK, Austin, TX, Dallas, TX, Houston, TX, San Antonio, TX, Norfolk, VA, Seattle, WA, Milwaukee, WI, Ft. Bragg (military), the U.S. Department of Agriculture, and Washington D.C. Just like attention was attracted from inside the United States, visitors from: Australia, Canada, China, France, Germany, Hong Kong, Italy, Japan, Mexico, The Netherlands, Poland, Russia, Spain, Taiwan, and the United Kingdom visited the site. The largest international interest was from Japanese academic institutions.

With regards to the time students started their initial session connections, most students started these session between 8:00 p.m. and 2:00 a.m. which showed the highest number of connections and activity. This yielded further credence to the well-held belief that college students tend to stay up late. 41.9% of connections took place during this time period.

In discussing implications of the raw data for student connectivity related issues, it seemed that students took advantage of computing connectivity from pretty much anywhere. A number of students used on-campus facilities and apartment complex computing facilities. These facilities may not give students administrative access to the computer's operating system to install additional "plug-ins" to view assignment related materials. Instructors should take care to make sure that the least common denominator of ubiquitous technology was used.

### Findings Related to Objective Five

Objective five sought to understand the differences in temporal displacement of five years with regards to students' changes in attitudes. Much of this data has already been interspersed throughout the other four objectives. In evaluating the total changes that have taken place, comparison of index values across treatment groups was an effective measurement. Aside from changes in the control groups between 1999 and 2004, the results were very similar. The control sections in 2004 appeared to accept technology, its use, its ability to discuss, and its ability to program an academic course AGED 340: Professional Leadership Development, more than their 1999 predecessors. Hybrid treatment groups appeared slightly less enamored with technology and its use than their 1999 predecessors. Asynchronous groups overall, appeared to have roughly the same opinions about technology in 2004 as they did in 1999, from a quantitative standpoint.

The interesting data with regard to temporal displacement was not the quantitative data. The dramatic "flip-flop" between qualitative data supporting technology in 1999 and the lack of support in 2004 was telling. It appeared that students were not as enamored with technology in 2004. This lack of excitement may be due to many factors and may also represent the beginnings of a technology temporal causal loop. As a society, it was possible to have reached a point where technology was less exciting and usable because of its concerns. As technology receded from the limelight

somewhat, it had the ability to become more or less in favor at different temporal periods.

To validate these conclusions for quantitative data, multivariate analysis of covariance (MANCOVA) with a Pillai-Bartlett trace was used to confirm that all treatment groups indices' mean values with a nominally dichotomous covariant of temporal incursion yielded no statistically significant difference. A p-value of .570 was obtained against the 340TA index, a value of .944 was obtained against the DTA index, and a value of .838 was obtained against the TP index. These p-values offered statistical confirmation that, across differing treatment groups, there was no statistically significant difference in the temporally displaced means.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

Chapter V discusses a summary of Chapters I through IV, and offers conclusions drawn from the findings presented in Chapter IV. Additionally, recommendations for further research and future experiments of the same vein were presented. The first part of Chapter V summarizes the purposes and objectives of the study, the literature review, the methodology, and findings of the study. The second part of the chapter offers data analysis of the findings and draws conclusions based on the findings. The final part of the chapter offers recommendations for additional research based on the results of this experiment and recommendations for future action based on these results.

#### Summary

The purposes of this study were to determine the effectiveness of a computer-assisted lab environment in a course on leadership and to determine if undergraduate students believed that leadership concepts could be successfully taught in an asynchronous environment. Additionally, this research sought to evaluate changes in students' perceptions across a five year study that collected data from the same survey instrument in 1999 and 2004. Students' attitudes toward computer-based leadership education were measured by a leadership perception index, a technology perception index, a class-inclusion acceptance of technology index, and a discussion technology

acceptance index administered through a post-activity survey that measured their responses in both a quantitative and qualitative format.

Due to the increased computing power and decreased cost of computers, measuring students' acceptance of computers as a teaching media had become increasingly important as the post-secondary education of students continued to grow and students demanded more non-traditional access to the classrooms of today. There was a paucity of research on the uses of technology in the field of leadership education. This study should add to the extent knowledge base of this topic. In particular, this study established the following objectives:

1. Determine the appropriateness of utilization of technology as a leadership education teaching medium.
2. Describe students' perceptions and acceptance of technology as a discussion tool and teaching mechanism.
3. Describe any positive relationship between student technology acceptance and extent student self-leadership perception.
4. Describe how students accessed asynchronous assignments. What time? What were the implications?
5. Describe how students' perceptions might have changed after 5 years. Was there a significant statistical difference that could be found in their attitudes?

A review of literature for this study discussed technological growth and its subsequent usage in education, technology in the field of leadership education, and the concept of Ausubel and "meaningful learning." Information on temporal concepts such

as temporal displacement and temporal causality loops were identified. Finally, the review of literature section contained information on the growing “constraining” nature of technology in 2004 as people increasingly became servants to technological masters such as cell phones, pagers, e-mail, and the need to instantly respond to various methods of communication.

Technological growth continued to increase with Moore’s Law (Meieran, 1998) and this continued to impact the ability to use computers for asynchronous learning tailored to students’ individual learning styles (Steinberg 1991). Students had embraced the changes in technology to make activities such as a journey to a physical library obsolete (Bell, 2000). Students had the ability to find information on a compact disc that would have amounted to an entire printed set of encyclopedia (Fain, 1992).

In the field of leadership education and the use of technology to teach it, little research had been completed. Dillon laid the framework from her conference presentation in 1999 that technology and leadership did work together, and she lamented on the lack of research that had been conducted in this area.

David Ausubel, in his 1968 work, identified the concept of “meaningful learning” that a student’s base of understanding was the constructive framework which could be used to build new ideas. Since modern university students have an understanding of the computer, this framework, he would suggest, was the basis for cognitive learning via computer-assisted instruction (CAI).

The population of this study included students enrolled at Texas A&M University in the academic course Agricultural Education 340 “Professional Leadership

Development” in sections 501 through 505, inclusive, during the fall 1999 semester, and sections 501 through 510, inclusive, during the spring 2004 semester. Students participated in a laboratory activity entitled “Maytown” through one of three groups: a completely asynchronous experience treatment, a traditional classroom experience control, or a hybrid experience treatment of classroom and asynchronous participation. The asynchronous and hybrid treatment groups used computing technology to log on to a web page designed for the laboratory session and to read the content and interactively post some sort of responses on the activity’s “posting” web page.

A post-activity survey instrument was used as an instrument to collect both quantitative and qualitative data about the students’ experiences in order to determine the objectives of this study. The same post-activity survey instrument was used in both 1999 and 2004. The other instrument used in this survey focused on presentation and entering of the assignment by students in the non-control sections using asynchronous technology via the web. The information the second instrument gathered was demographic data from the activity experience. This demographic data on student geographic location when using the computer, time at which they used the computer, and duration they spent on the assignment was used to address the fourth objective.

Students were assigned to variable or control experimental groups by random selection. The traditional class control groups of section 503 in 1999 and sections 503 and 508 in 2004, were afforded a traditional class presentation and discussion of the lesson, while handwriting their responses to the post-activity survey on a copied paper after the activity’s completion. Students in sections 501 and 502 for 1999 and sections



502, 505, 506, and 509 in 2004 had a completely asynchronous experience, where they did not come to class the next week, and instead, read the assignment and completed their initial responses before the next class session would have been held. In lieu of attending the following lab session they were able to work asynchronously, and they posted responses to their classmates postings in the form of an online discussion. These groups filled out their post-activity survey online. Sections 504 and 505 in 1999 and sections 501, 504, 507, and 510 in 2004 were presented with a hybrid experience that enabled them to read the assignment and post their initial responses to it online, and then come to class and discuss the results. They also filled out the post-activity survey instrument on paper following their in-class discussions.

The data that was collected from the post-activity survey was analyzed using Microsoft Excel® and SPSS® on a personal computer. Descriptive statistics were used to analyze appropriateness of leadership education through technological means based on students' perceptions related to their experiences during the "Maytown" activity. Students' perception of technology related to their perception of their own leadership ability was also measured. Data were measured by compiling indices based on the sixteen question post-activity survey.

## Findings Related to Objective One

Objective one of this study was to determine the appropriateness of utilization of technology as a leadership education teaching mechanism. The findings were as follows:

1. In the experimental treatment groups that were exposed to using technology, the students felt that interpolation of technology would be successful in leadership education, based on quantitative results from both 1999 and 2004. Students in the control group, who were not exposed to any technology during this assignment, did not feel that integrating technology into leadership education would be effective in 1999, however had changed their opinions with the 2004 sampling of students.
2. Students expressed some reservations about being confined to a wholly asynchronous experience because of social concerns. These reservations were a minority in 1999, but represent more than 50% of qualitative responses in 2004. Qualitative responses were a subset of the quantitative data, with a 25.5% response rate in 2004. More qualitative data came from students that were exposed to the asynchronous treatment that used the most technology.
3. Indices designed to measure students' perceptions to inclusion of technology in AGED 340 and discussions online measured that technology use was "appropriate."
4. Analysis of mean scores of students' acceptance index in AGED 340 and acceptance of discussion technology online as a whole confirmed a null hypothesis that

regardless of experimental treatment, and temporal displacement, students accepted the idea of discussions using technology, and also the inclusion of technology in leadership education.

### Findings Related to Objective Two

Objective two sought to evaluate student perception and acceptance of technology as a discussion and teaching mechanism. Due to the type of quantitative research conducted, objective two was a subset of objective one. The statistical information from objective one equally applied to objective two as a measure of students' perceptions. Because of Ausubel's "meaningful learning," students need to understand technology in order for it to be a successful teaching medium.

"Appropriateness," thus, of objective one was established by student perception.

Qualitative data were analyzed in addition to quantitative data for objective two. The results of research into objective two found:

1. Student opinion changed from 46% to use of technology in 1999 for AGED 340 to 57% who had reservations in 2004. This qualitative data highlights concerns about the validity of the quantitative instrument.
2. The majority of students quantitatively accept technology and its ability to be used as a teaching tool, corroborating with Corbett's results from 1992, however, although the post-survey instrument appears to be stable from multiple use, questions of validity may be raised.

3. Students were concerned about technology being solely used as an educational offering in place of traditional teaching.

#### Findings Related to Objective Three

Objective three wanted to determine the correlation between students' self-leadership perception and their opinions on technology. Findings related to this objective were as follows:

1. Most students taking the academic course AGED 340 evaluated themselves as leaders.
2. Most students taking the course AGED 340 were accepting of technology.
3. A t-test between the leadership perception (LP) index and the technology perception (TP) index confirmed a null hypothesis that students who believe themselves to be leaders had favorable attitudes toward technology. Temporally divergent groups were combined to achieve this result.

#### Findings Related to Objective Four

In evaluating students completion of the assignment, various demographic factors were able to be gathered. These demographic data provide student location when completing the assignment, time students accessed the assignment, and duration students

were working on the assignment. In 2004, more students used off-campus than on-campus resources to complete their assignments, which was diametrically opposite the results from 1999.

Students were most likely to complete their assignments during the evening hours, with more students completing their assignments from 8 p.m. to 2 a.m. than at any other time period during the day. Most students waited until the day before or the day of the assignment being due to take any action towards completing the assignment. In addition to students using the on-campus, cable modem, digital subscriber line (DSL), and apartment complex offerings, “visitors” to the site from a diverse list of other American cities, and fifteen other countries visited the site during the assignment’s duration.

#### Findings Related to Objective Five

Objective five sought to describe the changes in student perceptions based on a five year difference of student population. In this study, the most remarkable difference that was seen in the quantitative data from the control groups, where students switched from not approving of using technology for teaching the academic course AGED 340: Professional Leadership Development class, to in 2004, favoring its use. The means for the 2004 control groups on the DTA index for measuring acceptance of using technology to aid in discussion remained disfavoring, however, the 2004 group exhibited a marked increase in acceptance from the 1999 participants’ thoughts. The 2004 hybrid groups

had slightly less favorable reactions to use of technology than their 1999 counterparts, and the asynchronous quantitative data from 2004 was similar to the results for 1999.

The most noticeable change in temporal data were from the one opportunity via an open ended feedback section that students had to provide qualitative data about their perceptions of the experience. In 1999, most students favored the greater inclusion and use of technology in the classroom. In 2004, more than half of students who chose to respond to this question expressed skepticism of this same precept. This striking difference leads to questions of content validity of the quantitative section of the instrument. Although the instrument has proved to be stable and reliable over time, such disparate quantitative data from the qualitative responses naturally raise concerns about the validity of the quantitative data itself. One of the chief reasons for concern was the fact that more qualitative data were gathered from the completely asynchronous participants who had no human interaction for this activity.

Completing a multivariate analysis of covariance (MANCOVA) with a Pillai-Bartlett trace confirmed that all treatment groups across the two temporally displaced period yielded no statistically significant differences in students' perceptions across time. A p-value of .570 was obtained against the 340TA index, a value of .944 was obtained against the DTA index, and a value of .838 was obtained against the TP index. These p-values offered statistical confirmation that, across differing treatment groups, there was no statistically significant difference in the temporally displaced means.

## Conclusions

The following conclusions were based on research from this study as detailed in Chapter IV and summarized in the previous section.

1. The majority of students favored using technology to teach leadership education from a quantitative perspective. Students who indicated qualitatively that the experience was favorable noted both in 1999 and 2004 that they appreciated the opportunity to work with their own timeframes. This finding supported Peck and Doricott from 1994 who found that computers increased students' quantity of thinking.

2. Students in the course all accepted the role of technology in the world and in the world of education although many were concerned about the lack of direct, face-to-face interaction. This concern markedly increased in 2004, probably in direct response to increased utilization of technology on the campus to facilitate or replace traditional classroom instruction. Students made sure to mention in their qualitative responses that the role of teachers was important in the educational process both in 1999 and 2004.

3. Students who had the highest acceptance across time of technology utilization in teaching leadership education were those that had the hybrid experience of both getting classroom education and being able to participate in a partially asynchronous experience. This led to the conclusion that although these students rated technological interpolation highly, they may not have rated it quite so highly (as their

completely asynchronous peers did) had they been exposed to an only asynchronous experience. As attitudes and general knowledge had changed, the control group of 2004 showed a marked increase in acceptance of technology in teaching leadership education, differing from the results of 1999 (Jones, 2003).

4. If students used technology in their laboratory experience, they were more accepting of technology in general, and utilization of technology in leadership education. The exposure to technology for variable treatment group participants seemed to “sweeten” the idea of technology utilization for them. This supported the results of Steinberg in 1991.

5. Survey results indicate that regardless of treatment type, students were able to learn from this assignment. Qualitative responses from the main student activity and exercise showed a wealth of responses for both 1999 and 2004 indicating participation and thought devoted to the exercise. This finding supported studies completed by Prick, Thorp, Taylor, and others who found leadership could be learned.

6. Students completed their activities during all hours of the day and night when they were assigned to one of the technology-utilizing treatment groups. Students would most likely be amenable to holding more classes at night. The majority of students used the computer between 8 p.m. and 2 a.m. This further supported Steinberg’s conclusions from 1991.

7. Some students would respond more to educational opportunities in an asynchronous environment, as evidenced by the differential response rate of the qualitative analysis section by students according to experimental treatment type,



noticeable in both 1999 and 2004. In addition to more responses from the asynchronous groups, the responses tended to be longer and more developed, indicating student preferences of being able to type as opposed to handwriting indicative of students that learned at their own pace as suggested by Steinberg in 1991.

8. Clearly written instructions must to be given to students in advance of attempting to complete an asynchronous assignment.

9. There was a relationship between being a self-perceived leader and positive ideas about technology. This lead to the conclusion that leaders in 2004 may have needed to understand technology in order to be successful leaders. This would have represented a “resurrection” or “restructuring” of existing trait theories in leadership. This agreed with the conclusions of Donald Ausubel from his 1968 work.

10. Four independent variables existed in the 2004 experiment, and three in the 1999 experiment. These variables, aside from the measured temporal displacement and treatment group, may have contributed to additional unmeasured variability.

11. Qualitative data from 2004 dramatically raised concerns about the validity of the quantitative instrument. This concern was a “points of departure” from 1999 when the different data types seemed to be in synchronicity.

12. Most students accessed data from off-campus in 2004, as opposed to most using on-campus facilities in 1999. This showed the growth of computing resources even during the recent economic downturn of this time period. Although American society may not have heard as much about computers during this period, their continued

pervasive infiltration into the “standard way of life” was apparent. This supported the conclusions of Bell in 2000.

13. Student quantitative perceptions of use of technology in leadership education had not changed significantly over time. Only the control groups from 2004 exhibited any marked quantitative change in attitudes from their respective counterparts of 1999, and even this data, although different, was not statistically significantly different. This change may have been due to the fact that technology and its use was more pervasive in 2004.

14. The qualitative data from 2004 may have pointed to the potential onset of a temporal causality loop between technology affinity and technology adoption. The fact that more students seemed to indicate a marked concern for interpolation of technology in academic courses could have been indicative of a potential negative backlash on the part of campus students to faculty with regards to the removal of time honored traditional classroom teaching sessions. This finding refuted the discoveries of Stajano (2002), Riel (1994), and Dwyer (1994) who ventured that computers helped students develop social skills.

## Recommendations

### *Recommendations for Practice*

Based on the findings and conclusions from this research study, the following recommendations for practice are made for instruction using computer-assisted instruction in leadership education:

1. Instructors should take care to understand the lowest common denominator of student technological ability to achieve Ausubel's "meaningful learning." Lessons should not be about learning technology, but should instead be about learning the educational subject matter. In addition, to facilitate student computer availability, instructors should assume that students may not be using a "home computer" and make the necessary preparations to keep required "plug-ins" and "miscellaneous installs" required to successfully complete an asynchronous lesson or activity to a minimum to ensure that students can access content. A combination of traditional classroom instruction and computer technology utilization appears to best meet the needs of students enrolled in leadership education courses. Students in 2004 have qualitatively voiced a strong desire to continue some level of traditional classroom instruction, although many acknowledged that using the computer for "basic stuff" was "appropriate" and "even useful."

2. When using computer technology, ensure that the technology is appropriately documented with instructions so that students will be able to learn about

the desired lesson, not focus on the technology and its problems. Additionally, make sure documentation includes sample responses or adequately quantifies expectations of participation in online activities.

3. In reaching out to quieter students, online discussions may foster them to put forward more discussion. This conclusion and recommendation was reinforced from student qualitative data in 2004.

4. Students fear a loss of social interaction because of technology deployment in education. Work to mitigate students' fears by ensuring appropriate "face-to-face" social contexts exist in classes. Try to avoid a "downturn" in student acceptance of technology as part of the negative cycle of a temporal causality loop.

5. This study indicated that computer-assisted instruction was an effective method for teaching leadership education. More software or activity development needs to be converted to the computer to meet the widest variety of instructional needs and situations.

6. Students should be given the opportunity to learn "on demand" as evidenced from the times which they accessed the assignment online. Universities should consider offering students classes at night, when some students feel alert enough to tackle schoolwork.

### *Recommendations for Additional Study*

The findings in this study led the researcher to propose that additional research be undertaken in the following areas:

1. This study should be repeated on a wider scale, using similarly “simple” technology to confirm this study’s results and further confirm or place suspect in the validity of the quantitative section of the post-activity survey, which in 2004 had somewhat contradicted with the qualitative portion.

2. This study should be refreshed for more up-to-date content. The “Aggie-Town” activity developed at Texas A&M University in the Department of Agricultural Education may provide a more meaningful activity for students to relate to.

3. New technologies have entered the educational marketplace. These products should be evaluated for leadership education potential. Technology continued to develop and unfold, and as broadband connectivity reached more end-users in the form of cable modems, digital subscriber lines (DSL), and satellite, more multimedia content could add more personal touches to CAI.

4. Further research on this study should be confined to fewer independent variables. In particular, having one instructor of record across all measured sections of the course, and the same teaching assistant for all lab sections, could diminish unaccounted-for variability.

5. A larger population of students should be surveyed after online experiences to evaluate their perceptions of technology utilization in leadership education using a more broadly constructed instrument to improve index consistency.

6. Additional online experiences should be developed to provide students more of a foundation on which to make their “technology as appropriate” assessment. These experiences should confirm the broader use of distance education as a whole rather than as an individual lesson.

7. Research should be undertaken to measure instructors’ perceptions on both technology and distance education and see if these perceptions had any effects on students’ responses to both qualitative and quantitative results. The quality of students’ reflections should also be measured against instructors’ perceptions.

8. Research should be undertaken to see if changes to trait theory have occurred and that successful ability to be a leader was a result of understanding and being able to use technology.

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APPENDIX A  
POST-ACTIVITY SURVEY

Post-Activity Survey Form- Section 501

1. I feel like the level of technology used in this activity helped me understand the activity better.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

2. I would perceive myself to be a strong leader.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

3. I wish there were more opportunities to use technology in AGED 340 to work at my own pace.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

4. Computers are helpful in learning AGED 340 concepts.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

5. The use of computer technology has enabled me to be more productive in this course.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

6. I would like to see more AGED 340 lab assignments on computer.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

7. I am comfortable using computers.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

8. In the future, computers will be used as a part of teaching techniques for all college classes.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

9. Computers are becoming necessary to perform work efficiently.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

10. In completing assignments, classes that use computers take less time than classes that do not use computers.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

11. Computers help reduce the workload encountered in the home, school, and workplace.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

12. Computers are important in my present major.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

13. Computers are important to my future.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

14. I feel like the discussion I gained from this activity was good.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

15. I feel like I would be able to be more open with my AGED 340 comments if all discussions were in an online format.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

16. I think AGED 340 could be taught successfully by distance-learning technologies such as the web.

Strongly Agree  Agree  Disagree  Strongly Disagree  No Opinion

I want to provide the following comments about this experience:

Please register completing this application:

Last 5 Digits of my Student ID

Submit Comments

Clear Form

Revised: October 17, 1999 .

APPENDIX B  
STUDENT QUALITATIVE DATA

## 1999- 501/502- Wholly asynchronous treatment group

I think this computer experience was educational in learning more about Aged 340. But we can rely on computer classes to teach us(students)everything we should know. We still need classroom instruction."
how can it help with discussions if you're only typing on a computer. AGed 340 is learning to deal with people. On the web someone will say anything because they don't have to be in the same room with people so they are less likely to watch their tongues. Face to face contact allows one to have to deal with anothers facial and body expressions which are major parts of communication.
I really liked doing this over the internet because I could do it whenever it was convenient to me.
The computer thing is very cool, but the Maytown thing itself is kind of dumb in my opinion
I think that discussions are sometimes difficult over the computer. It is easier to get direct feedback while talking to a person. More people tend to get involved in that way as well because someone may say something that sparks a thought. Plus, through a computer people can just kinda write nothing comments while in a room you can ask them to explain themselves more to get a better feel for what they mean. I deal with computers all the time so it my opinion isn't based on the fact that I don't like computers.
This has been an enlightening experience. I think the neatest part of the assignment is reading classmate's replies to my original letters.
I feel that I was able to better formulate my responses by being able to sit and think about them, then type them. But, I don't feel that I recieved good feedback from other students because some of their answers seemed short and lazy. One drawback of this format is that there is no authority to 'make' you spend a little extra time and put forth a good effort.
I found it difficult to post the replies. I thought thought that we were suppose to click on the post link at the top instead of at the bottom. It should have been more clear.
I wish that the instructions were clearer and more to the point.
It was an interesting and different approach.
I think that this was a very interesting assignment. It was very interactive and I had a chance to express my views without being in a class setting.
This was an interesting activity because it allowed for interaction with other class mates over the internet.
I felt that this was a good activity in that it let the student work at their own pace and around their schedule and that I didn't have to spend time writing all the information and flipping between sheets of paper to respond
I feel that is a good exercise but I think there could have been a little more guideline how the proper format to the letters. We need to know how the TA grades. Each

person has their own style of grading, some stricter than others. The TA's needs to give further instructions, then just say go to the web page.
I liked it
I found the project very confusing. The purpose of the assignment is still unclear. "
I think that having this assignment over the web was a very cool experience. I think it adds to our learning experience and also helps students become more familiar with learning over the web. I think that in the future, some courses will be held over the web, and I think this exercise helps a lot, and is something fun and different.
This experience was good. This was the first time that I have done anything like this and I did enjoy it. I had preconcieved ideas but the overall experience was good and I would not mind doing it again.
I believe computers need to be incorporated to all classes, but I do not feel that they should take away the value received from interacting with other people

1999 503- Traditional classroom instruction control group

We did not use the computer, but I feel comfortable using them.
Envision the future and other on-line reading assighments hindered by learning because I was reluctant to print out 26 almost empty pages. What I would have gained (learned) was severely outweighed by the amount of paper that would be wasted.
computers/distance learning is the future. I need to get better with PC.



1999- 504/505- Hybrid half-asynchronous, half traditional treatment group

I thought this assignment was related to this class.
Computers are the future and need to be implemented more in every college class.
I thought this assignment was pretty basic and good. It was a lot less time consuming than the other assignments.
Need word check. Need a link to Maytown. When you hit the tab button the cursor disappears.
The discussion was helpful. It allowed me to get the insight of others and expand my point of view.
it was easy to follow; good. Rather cool assignment. (happy face)
great exercise, easy access was very convenient.
needs better instructions about posting.
Anytime computers can be used is a good learning experience b/c computers are going to be w/us.
I think the world is moving towards being all computer based but I am against it- I think it is only causing more problems in our society.
I'm not really sure how this assignment pertained to leadership. I guess it was just a way to get more experience on the computers.
It was a good assignment
It is all about interaction w/people and if it was only on the web. It would be yuck!
I liked it
Need a little clearer instructions.

#### 2004 Qualitative Data

it was a good scenario to build around
The activity on the computer was good, but the in class duscussion was what made it worthwhile.
Assignment are quick "on-line," but discussions "in person" are useful and important for quick response and opinions- it's more beneficial.
I think that face to face discussion of this assignment is more important than the use of technology. After all you will lead people face to face not through a computer.
:)
Leadership theories and applications simply cannot be effectively taught through a computer!
I feel that on-line learning would benefit the students in a way that they can learn at their own pace, but I feel that student/teacher interaction still needs to be a part of the learning process

I thought that it was very well thought out but the direction were not as clear as they could have been.
It was interesting to see the different different items. Then choosing the ones we chose to respond to and felt like I could make my beliefs and knowledge known.
It was very informational on the stress and organization level that a leader must endure. It's very helpful to know that leaders face many day to day challenges. Work doesn't always follow cameras and major disasters as well as sunny days.
I felt this was an easy way of doing this assignment but it does not allow for interaction with other students. This interaction is what actually allows us to learn how to deal with those around us in society. Without this knowledge we will never be able to be effective leaders.
The course could be taught online, but I feel that it would be better to actually go to class. Computer are now and will be important to Ag in the future.
Good exercise. Simple and effective.
I do not like doing assignments on the computer and people being able to view my work. I think I should reserve the right to decide who I want to view my assignments.
I think 1/2 computer, 1/2 in class was very affective.
Provided that there is still avenues of class discussion. Enjoyed this activity.
I think the interaction between students and profs. Is viatel in a leadership course. Just doing it on a computer does not help one deal with discussing issues in person and that is a large part of leadership.
computers are helpful, but can become impersonal.
I was a good experience, never done something like this before. Using computers is more efficient and effective but the human interaction in class is very good, so it would be kinda hard to make AGED 340 a distance learning class.
While I agree that the computer based "lab" is neat and cuts down on work, I feel that a lot less is learned than is learned in a classroom where interaction with other people is key. COmputers are liquid courage-anyone can say something on a computer, but being part of a leader is being about to stand up in a group of real people and express ideas. I think that would be an impossible situation to simulate by using computers in distance education.
This activity really gives a nice little glimpse of the trials a leader of an organization may face.
I liked this assignment, although i am not completely for on line classes. i dont think it is a good idea to cut out human interaction in the classroom. i think that is sad and not a good idea.
i think computers help people be more open than they would be in a personal setting. but i think that the personal setting is crucial to developing people skills, those cant be learned on computer.
Some of the instructions weren't specific enough. I was a little confused at first but then got the clarification I needed. I think its a good learning tool because it helped me to see what other people would write in response to the same letters that I w

cool assignment!
It was a good experience
I like how it put me in a real life situation, but I would like to be myself and not Michael M.
Like doing it ahead of time but I think class discussion was good.
the directions were kind of confusing
I enjoy the links on the computer for help in reviewing for exams, but I prefer to do lab work in lab.
It was a little boring, but it does offer some insight into being a leader
I enjoyed the human interaction and feel it is a vital part of the leadership learning experience.
I like the huma interaction. I am an engineer and like the "real" part of the class.
I think the lab discussion and applications are important.
This assignment was my least favorite. I found it extremely difficult to take seriously considering I would never do this guy's job or any government job. The letters were petty and rather annoying. All Americans seem to want to do is complain.
I don't feel that this project taught me anything new. More of a time consuming assignment.
I enjoyed this project and didn't find it too time consuming. I have no managerial experience, so it was a nice introduction to possible situations in the workplace. I would have liked to get feedback from students as well as Dr. Boyd or Tony (people that

APPENDIX C  
MAYTOWN ACTIVITY



# Maytown In-Basket

An Agricultural Leadership Activity  
Originally Developed by Oklahoma State University.

## INSTRUCTIONS

☛ You will be responsible for:

- 1) reading through the following letters
- 2) writing 5 of your own unique initial responses by lab start time on Tuesday, March 9 and bringing to class

☛ Place yourself in the position of [Michael Marzella](#), Executive Director of the [Maytown](#) Rural Rehabilitation District (RRD). **Respond to five of the ten items (at left) in your in-basket accordingly by writing letters and bringing them to class.**

☛ It's Saturday you've been gone all week to a conference in Washington. You stop in the office to check your mail and clean up your "in-basket" before you start the next week.

☛ Your in-basket contains ten items--ten phone calls, letters, etc. that you missed while in Washington. **1st prioritize the items from most important to least important.**

☛ **Read each in-basket item and respond to your top 5 accordingly.**



IN-BASKET ITEM NO. #1  
**Leising Correctional Center**  
**P.O. Box 358**  
**Statesville, Oklahoma 70001**

July 18, 2003

Dear Mr. Marzella,

You'll probably think its funny getting a letter from a guy in prison, but Rev. Kagen our chaplain said it was worth a try.

I have served four years on a ten-year sentence for an arson conviction. I was only nineteen and I think I got in with a bad crowd. We was out drinking one night and thought we'd try to scare old man Hamilton by burning down one of his hog sheds. We didn't count on that gas line exploding and burning down his barn, house, and pickup though. We sure didn't think about anyone being in the house. I feel real bad for what happened to Mr. Hamilton. Rev. Kagen got hold of me after I got here and really showed me how to put my life back together. I'll graduate this summer with an associates degree in leisure studies-- I guess these four years haven't been a waste after all.

I wish now that I had listened to Johnny Walker when he was telling us young guys that we needed an education. He really knows his stuff, even the religion stuff, but I was too interested in my Trans Am and my girlfriend Amy. Anyway I've matured a lot in the last six years. I think I would like to help young people the way Johnny does and maybe show them how to do more than play pool and drink beer.

I am asking you to consider me for a job with the RRD when I get out if you need any help. I guess there is nothing I'd rather do and could do a better job at.

Yours Truly,

Matt James



IN BASKET ITEM NO. #2

## Maytown Super Foods

*1200 East Central, Maytown, Calvin  
Mr. David Fisher - Owner and Manager*

July 20, 2003

Michael G. Marzella  
Executive Director  
Rural Rehabilitation District  
120 E. State Street  
Maytown, Oklahoma 71010

Dear Mr. Marzella:

As a man who has a vital interest in the progress of the Maytown area, I wish to express my admiration for the fine work you and your staff are doing for that unfortunate segment of our population. Believe me, as a man who ate lard sandwiches for my school lunch and only finished the third grade, I can appreciate how much a full stomach can mean towards helping children learn.

I have been proud to be a part of your Pre-School Program by supplying you with the most nutritious hot lunch and breakfast foods at a reasonable price as you would find anywhere in this country. I get the pleasure of contributing something worthwhile, while the same time increasing my volume of sales.

I would like the opportunity to express my thanks to you in the best way I know how. Please drop by my store and pick up an assortment of cured meats for you and your wife. It is men such as you who make Maytown a great place to live!

Sincerely Yours,

David Fischer



IN-BASKET ITEM NO. #3



Irick Feed and Grain

Est. 1861 "Your Local Feed Dealer"

Family Owned - *Joseph R. Irick, President*

July 21, 2003

Michael Marzella  
Executive Director  
Rural Development District  
120 E. State Street  
Maytown, Oklahoma 71010

Dear Sir:

We understand you employ Mr. Stanley Kennedy as your Finance Director. We feel you should call Mr. Kennedy's attention to the fact that his account with Irick's is seriously in errors. There have been no payments of any amount paid to us since April 4, 1997. At that time we informed Mr. Kennedy that any further charges to his account would be unauthorized. In the past two months Mrs. Kennedy has made three unauthorized charge purchases totaling \$645.89. This brings their account balance to \$4,213.45 or \$3,213.00 over their maximum authorization.

As Mrs. Kennedy's family have been steady customers since this store was established, we have hesitated to embarrass them by taking the obvious steps; however, we now feel that we have gone beyond our capacity to accept further neglect of this financial responsibility. If substantial payment is not made by August 1, 2003, we will be forced to turn the account over to a collection agency. Thank you for your cooperation.

Yours Truly,

Molly C. Irick  
Account Supervisor





IN-BASKET ITEM NO. #4

***St. Catherine's Catholic Church***

*233 W. Bratwurst Place Daily Mass - 5:30 a.m.*

*Maytown, Oklahoma 71010 Sunday Mass - 7:00 & 9:30 a.m.*

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*July 20, 2003*

*Michael Marzella*

*Supervisor RRD*

Dear Sir:

I am writing as a concerned Catholic mother and as secretary of the St. Catherine's Alter and Rosary Society. My son Anthony and my daughter Anna attend your outdoor education programs at the Wilderness Center after school and have participated in the summer camping trips you have sponsored. Many of my friends' children from St Catherine's Parish also attend and they are behind me writing this letter. We feel that the Wilderness Center idea is a fine idea because it gives our children something productive and educational to do and keeps them out of trouble, which is important to parents of teenagers. But what we want to know is why your recreation director, Mr. Walker and your assistant director, Miss Beam as well as two maintenance workers and the girl who is the snack bar waitress all come from the Church of the Tabernacle. We know for a fact that these people invite our children to their church groups and even Sunday school. Miss Beam asked my daughter if she was "saved"! The parents of St Catherine's Parish call that religious bias and even though there aren't as many Catholics who go to the Wilderness Center as Protestants, we understood that the RRD was trying to help people, not to force them under influence of holy rollers!

The Catholic parents of St Catherine's Parish are asking that our civil rights of religious freedom be given to our children. Leave religion out of your outdoor education program and also whom you hire to work there. Can't a Catholic girl serve hot dogs and cokes as well as a Church of the Tabernacle girl?

Sincerely Yours,

Sophie Bershenski

In-Basket Item No. #5  
**Message from Donna**

**DATE:** July 14th **TIME:** 1:00 p.m.

**TO:** Michael

**FROM:** Deputy Verne Adams

Derkins County Sheriff's Office

**PHONE:** ( 638-2202 )

**Telephoned**  **Please Phone**

**Please Call**  **Will Call Again**

**Came by to See You**  **Returned Your Call**

**MESSAGE:** Chief believes some teenagers are having beer parties in a secluded location near the nature center. He wants to plant some young "detectives" among the kids, thought we could use the 4-H members who are building that nature trail. Let him know what you think.

## IN-BASKET ITEM NO. #6

Vietnamese-American Alliance  
2131 9th Street - Apt. 4F  
Maytown, Oklahoma 71010

Michael G. Marzella, Executive Director  
Rural Development District  
120 E. State Street  
Maytown, Calvin

Dear Sir:

As a member of a minority group with the same struggles, hopes, and frustrations as any other minority group, I find it difficult not to resent the fact that Vietnamese have been ignored by such organizations as yours. True, we are much fewer in number than the Black minority or the Hispanic minority, but nevertheless, we daily suffer indignities which the Rural Rehabilitation District is, in theory, attempting to eradicate. Our neglect goes even deeper. Not one man or woman of Vietnamese background has ever been employed by RRD even though many Asian families are below the income level set by your organization as criteria for hiring. Not a single Vietnamese pre-schooler has been admitted to your Headstart Program, nor has any real attempt been made to make our children feel welcome at your recreation centers.

To favor any one minority group over another is to fail in your purpose, as I see it. Your occupation would be greatly appreciated in the next month when children are preparing to return to school. Vietnamese children have often been the target of ethnic slurs and vicious ethnic "jokes." We all know how cruel children can be. Perhaps RRD could influence the educators of Maytown to shoulder their duty and see that this kind of discrimination be put to a stop. Vietnamese are going to be a part of this community for a long time, and we want some change now!

Sincerely yours,

Cho-Chun "Chuckie" Lui

## IN-BASKET ITEM NO. #7

Author: Stan Kennedy  
Date: 7/12/03 9:35 AM  
Priority: Highest  
To: Michael Marzella  
Subject: Free Stuff (sort of)

Michael,

Joe Bickett came in to see me today and offered us some of the equipment from his organic herb farm that folded last fall. Said he needed an answer by Monday. Naturally he wants to use it as a tax write-off. We could use the equipment to groom the baseball fields, and build trails around the lake. Margie Leffleman would like the small greenhouse for her Head Start class. I don't know if you want to deal with Bickett, of course. Whatever you decide, I told him it would come officially from you.

Stan

\*\*\*\*\*

Mr. Stan Kennedy, CPA  
Finance Director  
Rural Rehabilitation District  
120 E. State Street  
Maytown, Calvin 71010  
voice: 581-780-1862, 800-772-0939 fax: 703-780-4378  
e-mail: stanman@rrd.org  
homepage: <http://www.rrd.org>

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IN-BASKET ITEM NO. #8

# Maytown Daily Dog

Maytown, Oklahoma - **Sunday July 15, 2003** - Daily \$.50,  
Sunday \$1.00

## LETTERS TO THE EDITOR

Editor, Maytown Daily Dog:

It is my unfortunate duty as a citizen of Maytown, a city of unusual integrity, to alert the good people who make this their home that once again, we have been plundered by one of the devious, greedy organizations who ask our money in the name of Christian charity and then line their own pockets, neglecting those they are alleged to be helping. Such an organization is the RRD, yet another attempt by the government to pacify the underprivileged and allow our consciences to rest while the true plight of the poverty stricken and alienated minority is muffled by the backslapping of self-satisfied administrators of so-called "programs." True, it is a government-supported organization and therefore gleans our money through taxes; however we are still in the end, being fleeced of our charitable contributions.

We are not so naive as to miss the fact that the federal government spends wastefully, particularly on such "worthwhile" schemes as RRD. What has RRD done with this bountiful gift of Maytown taxpayers' hard-earned money? Has it built teenage centers that would be the pride of this community with every possible piece of equipment and physical facility? Has it provided new classrooms for environmental education and hired the finest, best-qualified teachers? Has it even drawn from our local supply of qualified men to make its administrators; men who know and understand the problems to be faced in Maytown? The answer is no, to all points. A brief visit to the Nature Center will reveal that they have been converted from older buildings, probably long since condemned, such as the old Derkins grade school, and are supplied with makeshift equipment and questionable people as staff.

Certainly the children should get a better place of learning than a remodeled barn or the unused corners of Jefferson Junior High. And who are they hiring to assist these children in learning? Not my wife, for example, a college graduate with two years of elementary school experience. No, citizens, the assistant at the Hayloft Nature Center is a woman who has a high school education and had been on welfare before she was hired. Her lack of qualifications is certainly no fault of hers, but they do give RRD an opportunity to pay a much smaller salary to her than they would to my wife. All this is run, not by a local man, but an import from Davidson, Oklahoma with a fancy education, which they thought, would look good in the job because of his ethnicity.

Surely he has no personal interest in Maytown. True, the assistant directors are local men, or at least they've lived here for a few years. Of course one is too busy at cocktail parties to take time to understand those not in his social set. His wife, by the way, never dressed better.

The usual method of milking our tax dollars is through kickbacks from local contractors and wholesale suppliers. I do not have the information at this time to indicate exactly how it is being done, but what we must conclude is that large amounts of Government money are not finding their way to the rural groups RRD is supposed to serve, but to the pockets of RRD administrators. Neighbors of Maytown, are we again too apathetic to root out these spoilers of tax money? Wake up and write your Congressman!

Abe Stein, CPA, MS, Ph.D.

IN-BASKET ITEM NO. #9

**State Farm Insurance****Watson Insurance, Co.  
Maytown, Oklahoma***Don Watson, Agent-Owner*

July 19, 2003

Michael Marzella,  
Executive Director  
Rural Development District  
120 E. State Street  
Maytown, Calvin

Dear Michael:

JoAnn and I were so pleased that you and Juanita could make it to our Fourth of July Barn Dance this year. It has become a real tradition for us in the past seven years and we were so disappointed last summer when you had to be out of town. JoAnn was terribly impressed with all you said about the workings of the RRD. She is very big on "causes," you know, and has really taken RRD to heart since the Fourth. I might add that you and Stan Kennedy make quite a team!

Stan informs me that there is an opening on the Advisory Board of RRD beginning in September. I needn't tell you that JoAnn sees that as an ideal way for her to help share in the projects that RRD is accomplishing so well. Of course, her associations with other leading civic groups, etc., could provide a terrific liaison with other county residents who take their civic duties seriously and make RRD all the more effective.

Stan may have already discussed this with you. I'm sure Linda has put the bug in his ear since she and JoAnn are inseparable tennis partners. Let me know how you think that Advisory Board position is shaping up. You probably have a lot of well qualified people in mind, but it never hurts to put in a plug for the little woman. She has an awful lot of influence as I discovered during two successful County Board campaigns.

Sincerely,

Don Watson

## IN-BASKET ITEM NO. #10

Rural Route  
1Razorback Road  
Maytown, Calvin  
July 18, 2003

Dear Mr. Marzella,

I feel obliged to write to you concerning my niece, Miss Season Dillion. One of your staff members at the Wilderness Center, Bob Besix, who is one of the big shots there, has taken liberties with Miss Dillion and now she finds she is going to have a baby. She has worked at the Wilderness Center for five months as a trail guide, and though she's in charge of a group she isn't much more than a teenager herself. Is this the kind of man you are trusting teenagers with who would take advantage of a young girl after the Center is closed? I realize that it takes two and Season is not all that innocent, but she said she loved him and now he says that it was probably one of the boys who went on one of those weekend trips. Season has turned nineteen and wouldn't be fooling around with those younger boys, even if some of them do look older.

Mr. Marzella, you know that things ain't always easy for us, even when you do get a job. Well Season's mother is sick and can't work and her husband is long gone. If Season can't work with a baby coming, I don't know what they'll do, as there are four other children younger in the family. Lord knows I can't take them all in with my husband only getting unemployment money. Her mother wouldn't write to you but I believe that something should be done, and right now about Bob Besix messing around with young girls. You make it clear to him that he has to support that baby.

Yours truly,

Wanda Schneider



## VITA

Candidate: Robert T. Jones

Permanent Mailing Address: P.O. Box 122  
Wellborn, TX 77881-0122

Degree: Doctor of Philosophy

Major Subject: Agricultural Education

Biographical Personal Data: Born in Memphis, Tennessee  
October 4, 1974 to Robert and Sylvia Jones.

Education: Graduated Westfield High School,  
Houston, Texas, in 1993; received  
B.S. degree in Agricultural  
Development from Texas A&M  
University, College Station, Texas,  
in 1998; received M.S. degree in  
Agricultural Education from  
Texas A&M University in May, 2003;  
received Ph.D. degree in Leadership  
Education from Texas A&M University in  
August, 2004.

Professional Experience: Senior Network Engineer  
Computing & Information Services  
Texas A&M University, 2002-

Global IP Engineering Manager  
VTK (UK) Ltd.  
Egham, Surry, UK, 2000-2002

Communications Engineer  
Shell Oil Company  
Houston, Texas, 1998-2000

Global Systems Engineering Manager  
British Telecommunications, plc.  
London, UK, 1996-1998