

DENTON COUNTY BUSINESS COMMUNITY PERCEPTIONS OF VIRTUAL  
EDUCATION FOR WORKFORCE DEVELOPMENT

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A THESIS

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BY

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## DEDICATION

Dedicated with love and gratitude to the memory of my parents, Joe and Irene Sager, who taught me that learning is a life long process and education is everlasting.

To my husband Bruce, for 30 years of patience and understanding, and specifically for his assistance and unwavering support as I pursued this goal.

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## ABSTRACT

### DENTON COUNTY BUSINESS COMMUNITY PERCEPTIONS OF VIRTUAL EDUCATION FOR WORKFORCE DEVELOPMENT

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Businesses in Denton County, Texas, are unable to secure the educated workforce necessary to meet present and future employment demands. The focus of this exploratory, qualitative study was to identify perceptions of virtual education as it relates to workforce development. A customized, self-administered, open-ended questionnaire was sent to a non-randomized sample of volunteers. Respondents' answers were compiled, analyzed, and reported. The following 5 themes were identified: 1) diversity of training and education for workforce development, 2) positive perceptions and attitudes toward virtual-based education, 3) necessity of job-specific training, 4) willingness of collaboration between entities, and 5) a need for customized education and training.

Overall, each respondent perceived the requirements for development of training and education programs in their specific company to be unique. From the analysis of data, strong support is offered for collaboration between entities in Denton County in developing curricula using virtual technology.

Business and industry provide the means for employment and thus the mechanisms for financial survival of individuals and families. All stakeholders in a community are dependent on one another and together create a synergistic environment. The key to the sustenance of the community as a whole is economic development and the employment opportunities it creates. These factors, combined with the urgency expressed by businesses for a workforce trained to meet the requirements of the 21<sup>st</sup> century indicates a potential market for virtual education in Denton County.

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## CHAPTER I

### INTRODUCTION

Virtual education follows the direction of distance education, but due to available technology, virtual education reaches far beyond the limitations of traditional distance learning. The Texas Higher Education Coordinating Board reported that in fall of 1997 approximately 40,000 students participated in distance learning from 100 Texas institutions. In addition, 7 university health science centers and 67 of the 75 community and technical colleges offered some form of instruction via telecommunication (Price, 1998). The term virtual education is derived from the phenomenon of "virtual reality." It is defined as a "computer simulation of a real or imaginary system that enables a user to perform operations on the simulated system and shows the effects in real time" (Soukhanov, 1996)

To link computers together, the Internet uses phone lines, fiber-optic cables, satellite link-ups, and other

electronic media (Atieh, 1998). The Internet assures dramatic changes in the way society learns, teaches, and interacts (Ryder & Wilson, 1996). Researchers at RAND, a nonprofit institution implementing research and development for policy and decision making, concluded that information technologies, including the Internet and the World Wide Web, have the potential to significantly decrease the overall cost of education. Expenditures were lowered in part by reducing the number of teachers needed, while decreasing the time it takes learners to acquire skills. In addition, technology offered the ability of colleges and universities to serve additional students transforming both the methods and the products of teaching in a cost-effective manner (McArthur & Matthew, 1997).

It is expected that, regardless of the position traditional institutions of education adopt, the demand for virtual-based education will grow significantly, most probably exponentially over the next 10 years. Virtual education brings individualized programs to accommodate different learning styles and abilities. In addition, it is convenient to both students and faculties with access to

learning any time at any location. The original industrial revolution brought uniform, mass-produced outputs; the modern industrial revolution permits production to be suited to the requirements of each consumer (Massey & Zimsky, 1996).

At the 1995 meeting of the Western Governors Association, the participating members determined that it was imperative to the well-being of their states and the nation to have a post-secondary education system that responds to the needs of the rapidly changing economy. At this meeting, the governors agreed that limited state budgets and growing student populations make it increasingly difficult to answer educational needs. They determined that a joint venture, between states, using new information technologies, could reach a larger group of students and meet imposed statutes along with state and federal regulations. From this conference, the idea of a western virtual university was conceived. A joint agreement included establishing an entity to finance and implement a plan. This plan took into consideration design criteria to insure that the institution would be "market-oriented,

independent, client-centered, degree granting, accredited, competency-based, non-teaching, high-quality, cost effective, regional, and quickly initiated" (Western Governors University, 1998).

In 1996, the new virtual university called the Western Governors University was created. The first two degree and certificate programs were offered to students in 1998. By the year 1999, 15 additional programs were expected to be available (Western Governors University, 1998).

Although part of the Western Governors Association, California decided not to participate in the program. California determined they had resources and a higher education system, including research institutions, that the Western Governors Association could not hope to match in the near future. They, therefore, opted to form their own virtual university, the California Virtual University (Western Governors University, 1998).

One unique component of the Western Governors University is the ability to draw on the teaching faculty from dozens of institutions. Included in the university plan are courses designed by businesses. Both business and

institutional offerings are published into one comprehensive course catalog. Emphasis was placed on identifying promising new programs in partnership with educational institutions, corporations, and other providers (Western Governors University, 1998). According to a 1997 study released by the U. S. Department of Education, in the academic year 1994-1995, 33% of colleges and universities in the United States offered distance education, and another quarter planned to offer course within the next three years.

Business and industry leaders expressed concern about finding workers sufficiently trained, or able to be trained, to meet the requirements of new increasingly competitive occupations which demand a higher degree of efficiency and productivity from workers (Isaacson & Brown, 1997). To meet the shortages in qualified personnel and to keep pace with skill-obsolescence, training and education must be re-engineered to facilitate more expedient ways to distribute necessary education (Chute, Hancock, & Balthazar, 1991).



In an attempt to address the need for workforce development, the 76<sup>th</sup> Texas Legislature considered enabling legislation relating to the operation and continuation of the Smart Jobs Fund Program. This federal and state grant program is a workforce development incentive program developed to enhance employment opportunities and to meet the needs of existing and new industries in this state (Texas Senate Bill 423, 1999). Partnering legislation, offered as House Bill 1079, defines a provider as someone who provides employment related training. Included in the definition are employers, community-based organizations, public and private schools, technical schools, community colleges, universities and other institutions as defined in Section 132.001, Education Code (Texas House Bill 1079, 1999). According to the Texas Department of Commerce in their Biennial Report, The Smart Jobs program alone offered \$7.7 million in start-up funds for training or retraining Texans in the 1994-95 biennium. The majority of applications demonstrated a high demand for employer driven, customized training (Arnett, 1995, p. 3).

One goal of the Texas Workforce Commission is for Texas to meet the needs of businesses by providing workers with education and skills training. This strengthens employability and enhances the level of living, while producing a highly skilled and productive workforce (Texas House Bill 1863, 1995).

In another program, the Governor of Texas provided 2 years of funding for the EnterTech project. This was a collaborative effort between business, education and community organizations. Interactive, computer-based training is the delivery component for this undertaking. The target population is under-employed people, including welfare recipients, high school dropouts, teen parents, and displaced workers. The project is a program specifically for entry-level positions in Texas technology industries. By coordinating partners in industries and stakeholders in the community, and creating job training programs that are based on the needs of industry and delivered to a large number of people, change can be effected. The training teaches transferable skills and knowledge through the use of simulated work environments (EnterTech Project, 1999).

The reality is that Texas must utilize every resource and tap existing educational strengths in order to train a workforce that can compete in a global market (Texas Comptroller of Public Accounts, 1995).

### Statement of Problem

Denton County is a political sub-division of the state of Texas (see Appendix A). Like other Texas counties, Denton County requires an educated and skilled workforce. With a booming economy, Texas businesses, including Denton County businesses and industries, must compete globally for employees. Currently many businesses are unable to secure the trained workforce necessary to meet present and future needs. One key to addressing this economic necessity is the education and training of people who already reside in the community (Sharp, 1998b). Two accredited universities are located in Denton County, Texas Woman's University and the University of North Texas. In addition, North Central Texas College offers classes in Denton County. However, Denton County does not enjoy the benefits of a community college district.

Education, delivered in a flexible, cost-effective manner, regardless of geographic location or time constraints, is one solution to the challenge of providing post-secondary education to Denton County residents. Virtual education is designed for people whose residency, work demands, physical or social conditions, including personal circumstances, impede their access to traditional post-secondary education (Atieh, 1998).

Virtual education, for the populace, is a new concept in Texas. In order for it to be a feasible alternative for workforce training, it must be understood and accepted by both community leaders and business employers. Cooperative efforts of these leaders in developing workforce training programs is essential as businesses become more automated and require a higher level of skills. Perceptions regarding the viability of virtual education to fulfill a need in Denton County are fundamental to the success of virtual workforce development programs.

### Statement of Purpose

The focus of this exploratory, qualitative study was to identify perceptions and attitudes toward virtual education. Emphasis was placed on virtual education as it relates to workforce training and development.

The approach to this descriptive research was qualitative in nature within a framework of human ecology. Areas for investigation included current methods of training and education offered by business and industry. Other areas were the willingness of the business community to collaborate in the development of programs specific to training needs and whether the business community perceives a market potential for virtual education in Denton County.

### Research Questions

The following questions guided this study:

1. What methods do Denton County businesses currently employ for training and educating personnel?
2. What areas are suitable to implement virtual technology for workforce training and education?

3. What is the market potential for utilization of virtual technology for workforce training and education?

4. How willing is the Denton County business community to collaborate in developing programs specific to its needs?

5. What resources do Denton County businesses have available to facilitate the use of virtual education for workforce development?

6. Is there a relationship between the total number of employees in a company and the attitudes expressed toward the use of virtual technology for training and education?

#### Definition of Terms

Distance education: process of providing instruction when students and instructors are separated by physical distance and technology (Willis, 1995).

Distance learning: defined by the United States Distance Learning Association as, "the delivery of education or training through electronically mediated instruction including satellite, video, audio graphic,

computer, multimedia technology, and other forms of learning at a distance" (Atieh, 1998, p.10)

Electronic mail: messages sent and received between microcomputers or terminals electronically via telecommunication links (Soukhanov, 1996).

Internet or Net: "a set of computers linked together over phone lines, fiber-optic cables, satellite linkups, or other media" (Atieh, 1998, p.13).

Listserv: a commercial mailing list manager used for data (Microsoft Bookshelf Computer and Internet Dictionary, 1997).

Online: connected to a computer network. Accessible via a computer or computer networks (Soukhanov, 1996).

Virtual education: derived from the phenomenon of "virtual reality"; a "computer simulation of a real or imaginary system that enables a user to perform operations on the simulated system and shows the effects in realtime" (Soukhanov, 1996).

Western Governors Association: an organization consisting of the governors of 18 western states, two

Pacific-flag territories and one commonwealth (Western Governors University, 1998).

Western Governors University: the first virtual university to combine the distance education courses of traditional colleges and universities with courses designed by corporations. It uses technology to reach students wherever they are, unconstrained by geography. All courses are published into one comprehensive course catalog (Western Governors University, 1998).

Workforce education: "articulated career-path programs and the constituent courses of those programs that lead to initial or continuing licensing or certification or associate degree-level accreditation" (Texas House Bill 3173, 1999).

Workforce training: "high quality, applications oriented education and training services designed to improve workplace skills and knowledge for the enhancement of careers and lifelong learning (Maddox, 1999).

World Wide Web: an information server on the Internet composed of interconnected sites and files, obtainable with



a program that accesses and displays available files (Soukhanov, 1996).

Workforce development: education or training leading to employment either through studying academic subjects or leaning job-related skills (Texas Comptroller of Public Accounts, 1995).

#### Delimitations

This study was limited to responses by Human Resource Directors of Denton County businesses. These businesses were located in both rural and urban regions of the county. A total of 60 (n=60) businesses were identified from two sources. In 1999, the Denton County Budget Office identified the top businesses in terms of number of employees. In a report entitled Major Employers of Denton County, employers with 400 or more employees as of June 1998 were included (Denton County Budget Office, 1999). Additional businesses were identified through participation in the 1998 North Texas Conference on Business, Industry, and Economic Development. This conference is held annually in Denton County and is hosted by Texas State

Representative Solomons and Denton County Commissioner Jacobs (Solomons & Jacobs, 1998).

### Summary

The purpose for this study was to gain an understanding of the Denton County business community's perceptions regarding the viability of using virtual education for workforce development. An expansion of current methods of training is necessary due to the exorbitant growth and the number of new, relocating, and expanding businesses in Denton County. The trained workforce necessary to meet present and future employment needs is unavailable. The study explored current methods of training and education to discover which areas of development are suitable to incorporate virtual technology for education and training. Trends, themes, or patterns, along with the feasibility of using virtual technology for workforce development were explored. The findings in this study could assist both businesses and educators regarding the market potential for education and training via virtual

technology. In addition, possible partnerships between business and educational institutions were identified.

## CHAPTER II

### REVIEW OF LITERATURE

This project investigated the perceptions of a sample of Denton County business professionals regarding virtual education as it relates to workforce development. Emphasis was placed on education and training via virtual education. This review of literature was composed of three subtopics: (a) theoretical framework, (b) workforce development and training, and (c) virtual education.

#### Theoretical Framework

According to Bubolz and Sontag (1993), "Human ecology is concerned with interaction and interdependence of humans (as individuals, groups, and societies) with the environment" (p. 421). Interaction is "a process whereby a change or action in one part of the ecosystem induces a change in another part" (Bubolz & Sontag, p. 430). An important concept within the human ecology theory is adaptation. Adaptation is not simply adjustment by an

individual to the environment, but also modification of the environment to reach desired outcomes. Adaptation is a necessary process for growth, and learning is a fundamental part of the process. Communication is the process by which meaning and information are constructed and transferred between individuals and other systems in the environment (Bubolz & Sontag, 1993). Another human ecology concept is technology, including transformation of matter, energy, and information in the development of techniques that increase the ability to adapt and survive. When doing analysis, the level, nature, and use of technology in the environment must be taken into account (Bubolz & Sontag, 1993).

These concepts are all related to education. "Central to effective teaching is breathing life into concepts and building on what the learner already knows" (Henderson, 1994). R. E. Kennedy, CEO of Union Carbide stated, "The leaders all agree that the problems and solutions for education are complex and are linked to every other social and economic issue" (McFarland, Senn, & Childress, 1994, p. 275).

Virtual education is not necessarily defined or confined within a human ecology paradigm. However, the core concepts and assumptions of human ecology theory offer a conceptual framework for study of this phenomenon. The perception of the business community regarding virtual education as a viable alternative to traditional methods of workforce development is essential. Business and industry provide the vehicles for employment and, thus, financial sustenance for the citizenry. The community as a whole will obtain a higher quality of life as a result of greater employment for a larger share of residents. Denton County, as a macrosystem, requires an educated and trained workforce to sustain the community as a whole. The county is a synergistic entity. It is comprised of integrated components, which when combined form a separate entity rather than simply being the sum of the parts. Denton County is comprised of individuals; local entities, such as school districts, institutions of higher learning, and cities; and the business community, along with state and national influences. The combination of these elements creates a unique environment. It is within this context

that the use of virtual education for workforce training and business' requirement for a trained workforce come together. Employees will benefit from increased wages and salaries from the new "skilled" positions, career advancement opportunities, and long-term earning potential. Business will benefit from having a more highly skilled workforce to meet the standards required for new and existing positions.

#### Workforce Training and Development

An anticipated shortage of qualified workers for jobs in the 21<sup>st</sup> century is not unique to Texas or to Denton County. Former State Comptroller J. Sharp explained that national and international corporate executives seeking to relocate in Texas predictably ask how many 18 to 21 year olds reside in the state and their average education and skill level (Sharp, 1998a). In Texas, one of the most prevalent barriers to successful employment is the lack of job skills.

In 1996, the federal Department of Health and Human Services Administration established a Temporary Assistance for Needy Families program (TANF) to replace the Aid to Families with Dependent Children (AFDC) program. In Texas, the average TANF recipient is a single mother, aged 20 to 30 years, with one or two children. Most have had some work experience within the last 2 years. Approximately two-thirds of the recipients have either a high school degree or a General Education Diploma (G.E.D). During the years of 1997 to 2000, more than 59,000 TANF beneficiaries will be removed from the welfare system (Jackson, 1998).

It is estimated that in the United States as many as 50 million workers have to be retrained as competition among employers to attract new workers and retrain current ones increases (Aslanian, 1994). According to Isaacson and Brown (1997), "Retraining programs will be developed by prospective employers, by governmental units, or by cooperative action of both and will become a significant educational effort" (p. 10).

A world class, customer-driven, workforce training system supported by the advent of various job training



avenues, including virtual education, is essential. The system must be capable of providing Texas citizens with the skills necessary to perform expertly in high performance work organizations which are competitive in the global economy (Texas Comptroller of Public Accounts, 1995). Sharp (1998b) stated that "Texas' next economic boom will likely be based on human resources, rather than natural resources. That's if we are able to produce the smartest, best-trained workers in the world" (p. 2). In an effort to meet this goal, Collin County Community College District and the McKinney Economic Development Corporation have collaborated with several mid-size businesses to form the McKinney Job Training Consortium. Through the Texas Workforce Commission's Texas Skills Development Fund, grant monies were secured for this project. Strategies were designed and implemented to train underskilled individuals (McKinney Job Training Consortium, 1998).

Partnerships between higher education and other entities are natural. Organizations view knowledge as a corporate asset and the key to future competitiveness. Faculty expertise and instructional experience along with

the ability to award credit and degrees, are the function of higher education (Chute & Gulliver, 1996). Denton County Commissioner Sandy Jacobs stated, "Maintaining a highly skilled workforce to offer our new employers has challenged our public schools, community colleges, and universities to create competitive academic programs that incorporate new communication technologies" (Jacobs, 1997).

#### Virtual Education

In June 1995, governors of 18 western states, including Texas, two Pacific-flag territories, and one commonwealth discussed ways to deliver affordable, high quality, practical education to serve the needs of today's Information Age citizens. The governors determined that through the use of technology, students and teachers could receive the valuable contact that is essential to the learning process while overcoming the inconvenience and expense of travelling to a campus. The members resolved that the well-being of the nation will depend heavily on a post-secondary education system responding to the needs of a changing economy and society. Dwindling budgets and

growing student populations are making the ability for institutions to respond increasingly difficult. The outcome of this conference was the formation of a Western Governors University. The Western Governors University, an institution without walls, collaborates with virtual education programs in Great Britain, Canada, Japan, and Mexico (Western Governors University, 1998).

The western governors join a growing group of experts who feel that all aspects of life, including education, are affected by the advances in computer and communication technology (Atieh, 1998). In recent years, there have been rapid developments of computer networks, dramatic improvements in the processing power of personal computers, and a striking progression in magnetic storage technology. These advances have made the computer a dynamic force in distance education by providing a means of overcoming time and distance to reach students (Gottschalk, 1996). Virtual classrooms include technologies such as electronic mail, data from listservs, chat rooms, and World Wide Web pages. One qualitative study determined that a "definitive community of learners emerged" from the population studied,

despite the lack of face-to-face contact due to the distance separation of the learners (Powers, 1997, p. 2) It was found that, even in those students who preferred traditional teaching methods rather than virtual classes, there was no notable difference in overall performance. Other studies showed that previous experience with computers was an important influence on the comfort level students felt with electronic learning (McCarthy-Tucker, 1997).

Virtual universities are much like the virtual corporations that many companies have begun to emulate. According to R. Heterick, Jr. (1995), President of Educom, a consortium of colleges and businesses dedicated to bringing together academe and technology, "Whatever the form, the virtual university will break the Industrial Age space-time block and have something to offer any one, at any time, in any place."

Several community colleges provide opportunities for a virtual education. Dallas County Community College District, as part of the Western Governors Conference, offers this service. Administrators at 2-year colleges feel

that they may lose students to commercial institutions who use technology at greatly reduced rates. Therefore, they must offer virtual options to remain competitive. It is believed that traditional colleges must use information technology to enhance academic productivity (Young, 1997).

According to the V. G. Young Institute at Texas A&M University, there are currently over 100,000,000 people online. It is estimated that this number will double within the next 6 months (Gilmartin, 1998). The concern for efficiency and the focus on the ever present bottom line is swiftly changing the nature of the workplace, including the technology necessary to compete in a global marketplace (Powers, 1998).

### Summary

The review of literature included three sub-topics: (a) theoretical framework, (b) workforce training and development, and (c) virtual education. The literature indicates that there is a serious shortage of qualified workers necessary to meet the needs of the workforce of the 21<sup>st</sup> century.

The core concepts and assumptions of human ecology theory offer a conceptual framework for this study. The interaction and interdependence of humans with the environment is basic to workforce development. Training and retraining of workers is becoming critical throughout the nation for successful competition in a global market place. The literature emphasizes the development in computer and communication technology. These advances affect all areas of life, including higher education, workforce training, and retraining of employees.

One avenue for addressing these needs is by embracing new technologies and expanding the role of virtual education for workforce training and development. Although the virtual education programs currently in existence are limited in scope, opportunities are expanding exponentially. Additional programs, regionally located, are beginning to offer curriculum leading to degrees and certifications solely utilizing virtual technology. The State of Texas is taking an active role in facilitating development of virtual education programs for workforce development.

Education must be responsive to the labor market and the needs of employers, as business is critical to the future of education. The perception of business leaders toward virtual education may be an indicator of the success of virtual education programs in a given community.

## CHAPTER III

### METHODOLOGY

This chapter describes the procedures used to identify perceptions of virtual education from a business perspective. Trends, themes, or patterns, along with current attitudes toward virtual education, were described in an effort to determine the market potential of virtual education in Denton County.

This was an exploratory study, using a qualitative approach to focus on emerging trends, themes, or patterns. Qualitative data produce results presented in everyday language without reliance on numbers to present the descriptions. Although important and comprehensive information regarding the topic area can be gathered with qualitative research, the results cannot be safely generalized to other settings (Brown & Cosby, 1999). Results were not predicted in advance but were developed from examination of the response data and perceived meanings gathered from the answers to the questions on the questionnaire.



### Population and Sample

The sample was a non-randomized volunteer population of 60 (n=60) Human Resource Directors representing both urban and rural Denton County employers. It was assumed that Human Resource Directors possess expertise in workforce training and development.

In the report Major Employers in Denton County, the Denton County Budget Office listed the 22 Denton County employers who employed 400 or more people as of June 1998. These companies were included in the sample (Denton County Budget Office, 1999). Additional volunteers for the sample were selected from businesses attending the annual North Texas Conference on Business, Industry, and Economic Development, hosted by Texas State Representative Solomons and Denton County Commissioner Jacobs (Solomons & Jacobs, 1998).

### Protection of Human Subjects

Approval of The Human Subjects Review Committee at Texas Woman's University was received before beginning the

research. Due to the nature of the study, there was no more than minimal risk of harm to the subjects. Responses were anonymous and kept confidential; a consent statement informed participants of procedures and their ability to withdraw from the study at any time. An explanation of the treatment of data was included in a cover letter accompanying the questionnaire (see Appendix B).

### Instrumentation

An instrument was customized to this project and designed to collect qualitative data that reflects the objectives of the study. The instrument (see Appendix C) was designed as a survey of open-ended questions. Open-ended questions were used to allow the respondent to provide their own answers. Questions were based on information gleaned from review of professional literature. Each survey question directly related to the overall research questions (see Appendix D). The survey was designed so that a participant could comfortably complete it in approximately 15 to 20 minutes. Respondents were

given an opportunity to add additional information they felt would be relevant.

### Pilot Test

For this study, 5 professionals, knowledgeable in workforce development, reviewed both the questionnaire and cover letter. All 5 participants completed the questionnaire. In addition, they offered feedback on the wording of each question. Their suggestions regarding clarity of the questions and general format were used to refine both the questionnaire and the cover letter. The data from this pilot test were not included in the final analysis.

### Procedures

A comprehensive cover letter (see Appendix B) was provided subjects to fulfill all requirements as designated by Human Subjects Review Committee for this study. This letter also explained the purpose of the research. It was sent to the 60 members of the target population. Enclosed with the cover letter was a self-administered questionnaire

(see Appendix C). Included was a self-addressed, stamped envelope for return of the questionnaire. A follow-up letter was mailed 1 week later (see Appendix E). This letter emphasized the importance of the project and thanked those who had already returned the questionnaire. The follow-up letter requested those who had not returned the questionnaire to do so as soon as possible. A post-card was sent 1 week later to remind subjects of the importance of returning the questionnaire (see Appendix F). Random telephone calls were made to the target population 3 weeks after the original letter and questionnaire were sent. When personal contact was made, some people asked that another questionnaire be faxed. If personal contact was not made, a message was left requesting return of the questionnaire. The researcher's telephone number was included for individual questions. An additional mailing was sent to the target population 1 week later. The mailing included the original cover letter (see Appendix B), the questionnaire (see Appendix C), and a self-addressed return envelope.

### Treatment of Data

Respondents' answers to the questionnaire were read multiple times and analyzed for trends, themes, or patterns that emerged from each question. To facilitate this, each returned questionnaire was assigned an alphabetical code for identification. Responses for each question were compiled from every returned questionnaire. All answers to the questions were highlighted, color coded, and tallied by frequency of common response. In addition, the demographic data were organized. Since no hypotheses were made at the beginning of the study, the data could be treated in a flexible manner, allowing trends, themes, or patterns to emerge from the responses.

Results from this single sample cannot be extended to a larger population. However, important information can be gleaned as it relates to the sample population. The results could prove beneficial when used as a basis for further research. Exploratory research is not intended to describe the larger population but is used to provide detailed

descriptions in the individual context (Brown & Cosby, 1999)

### Summary

The target population for this qualitative study was a non-randomized sample of 60 volunteers (n=60). The respondents remained anonymous, and answers were kept confidential. Open-ended questions were developed for a customized, self-administered questionnaire. The desired outcome of the study was to generate personal answers and yield descriptive data. The questionnaire was pilot tested to ensure an effective survey format. The questionnaire, along with a cover letter was sent to each member of the target population. Respondents' answers were compiled and analyzed. The study focused on developing trends, themes, or patterns regarding the potential, from a business perspective, for virtual education as a vehicle for workforce training in Denton County. The feedback received was intended to provide useful information for businesses, including governmental entities, and those involved in education.

## CHAPTER IV

### RESULTS

The purpose of this qualitative study was to identify current perceptions of Denton County businesses regarding the use of virtual education for workforce development. The use of a self-administered, open-ended questionnaire provided the method to assess perceptions and to identify trends, themes, or patterns. A description of the subjects who participated in the research is presented. Based on careful analysis of the data, the research findings are reported.

#### Description of the Sample

The research population included 60 (n=60) Human Resource Directors of Denton County employers. The employers were identified from a 1999 Denton County Budget Office report entitled Major Employers in Denton County. The report listed 22 companies who employed 400 or more people as of June 1998 (Denton County Budget Office, 1999).

Additional employers were identified from companies attending the annual 1998 North Texas Conference for Business, Industry, and Economic Development in Denton, Texas (Solomons & Jacobs, 1998). The total number of Human Resource Directors who returned the questionnaire was 20 for a response rate of 33%. Only one cover letter and questionnaire was returned by the postal office; it was assumed the other addresses were correct for the companies targeted. Demographic data included designation of the physical location of the organization, and the number of full-time and part-time employees. No descriptive demographics regarding the subjects' gender, age, or experience were obtained. Only the written responses from the 20 (33%) people who returned the questionnaire were used for data analysis and identification of trends, themes, or patterns.

The respondents indicated company locations in the following cities: Carrollton, Corinth, Denton, Fort Worth, Lake Dallas, Lewisville, and Little Elm. These cities represent both rural and urban regions of Denton County. The number of employees in the responding organizations



ranged from the largest (6000) to the smallest (21). A total of 25,870 employees were represented by businesses in the responses. While 10 respondents reported the employment of part-time workers, 9 reported only full-time workers. Only 1 respondent did not report any demographic data. The data describing the sample are presented in Table 1.

### Findings

Repeated cycles of reading and reviewing the responses on the questionnaire were performed, along with manual tabulation of recurring expressions. For identification, each returned questionnaire was assigned an alphabetical code. Responses for each question were compiled from returned questionnaires to facilitate the identification of trends, themes, or patterns as they occurred. The following research questions guided this study, including the data analysis:

1. What methods do Denton County businesses currently employ for training and educating personnel?
2. What areas are suitable to implement virtual technology for workforce training and education?

Table 1

Demographic Data -- Largest to Smallest Total Employees

Physical Location Of Business	Full-time Employees	Part-time Employees	Total Employees
Major Employers:			
Denton	2500	3500	6000
Lewisville	4066	0	4066
Carrollton	1239	2305	3544
Corinth	2100	0	2100
Denton	1678	0	1678
Denton	1441	45	1486
Denton	1070	82	1152
Denton	998	22	1020
Carrollton	1000	0	1000
Carrollton	1000	0	1000
Lewisville	567	60	627
Fort Worth	625	0	625
Denton	600	0	600
Lewisville	525	0	525
Non-major Employers:			
Lake Dallas	155	3	158
Denton	90	35	125
Little Elm	90	1	91
Denton	49	3	52
Denton	21	0	21
Totals:	19,814	6,056	25,870

Note.

Major Employer = more than 400 total employees.

Non-major Employers = less than 400 total employees.

Part-time = 20 hours or less per week.

Respondents not reporting demographic data = 1.

3. What is the market potential for utilization of virtual technology for workforce training and education?

4. How willing is the Denton County business community to collaborate in developing programs specific to its needs?

5. What resources do Denton County businesses have available to facilitate the use of virtual education for workforce development?

6. Is there a relationship between the total number of employees in a company and the attitudes expressed toward use of virtual technology for training and education?

This study was limited to employers in Denton County, Texas. The 1999 Denton County Budget Office report Major Employees of Denton County considered companies employing 400 people to be major employers (Denton County Budget Office, 1999). For this reason, all companies employing 400 or more were considered major employers. All representatives reporting less than 400 employees were considered non-major employers. Of the responding organizations, 12 reported 400 or more employees, 5

reported less than 400 employees, and 1 did not report the number of employees. The sample population represents 25,870 employees in Denton County.

The goal of this study was to discover perceptions of businesspersons toward using virtual education for workforce development. Virtual education is an emerging field with little historical information available on its use for training and education for workforce development. The perceptions of business toward this medium could assist in determining possible program directions for workforce training and education. Guided by the research questions the following 5 trends, themes, or patterns emerged: 1) the diversity of training and education for workforce development, 2) positive perceptions and attitudes toward virtual-based education, 3) the necessity of job-specific training, 4) willingness toward collaboration between entities, and 5) a need for customization of education and training.

## Diversity of Training and Education for Workforce Development

All respondents described methods for training and education of personnel. The following comments suggest the diversity in delivery of training and education among companies:

The software industry tends to shift on a regular basis. We fly our employees to the city that is holding the next class and pay top dollar.

Another opportunity for learning is virtual meetings of training and development partners across the company via satellite.

Intranet training is in its infancy stage and no one has really defined where it is going kinda [sic] typical for some corporate processes -- just start it and see where it goes!!??

Our faculty who participate in distance education receive extensive training in that arena.

The following methods of financing the costs of training were mentioned: tuition reimbursements for employees, grants available for distance learning, and specialized training classes paid for by using vendor coupons. Some respondents suggested types of programs, while others focused on the methods of delivery. The variation in data occurred, in part, due to the lack of

standardization in training programs and skill-set requirements. The diverse nature of the organizations participating in this study, by definition, requires different types of training programs. Although identifying features varied, similar patterns could be determined when the data were analyzed. Data could be categorized into three areas: traditional training, virtual-based training, and on-the-job training.

Both internal and external modes of training were revealed. There were 12 respondents who listed internal training, 7 mentioned the use of external training, and 6 who did not specify whether training was offered internally or externally.

Traditional training. A total of 13 respondents listed the use of traditional forms of training for employees. Methods included classroom instruction, self-study, written materials, books and videos, workshops and conferences, study groups, and staff meetings.

Virtual-based training. A total of 10 respondents reported using virtual-based training for employees. Several virtual methods were listed; computer based methods

were mentioned most often, including operating systems, word processing, spread sheets, and Microsoft, and other software training. Methods of delivery offered were: CD-ROM, World Wide Web-based instruction, training via satellite, and Intranet and Internet-based training.

On-the-job training. A total of 9 respondents stated use of some type of on-the-job training. The types included one-on-one training, staff meetings, and informal mentoring and peer/buddy systems.

#### Positive Perceptions and Attitudes toward Virtual-based Education

Demographic data were compared to responses on the questionnaire to determine if there was a relationship between the total number of employees in an organization and the overall attitudes expressed toward use of virtual technology for training and education. Both major and non-major employers currently offer training to their employees via virtual technology. In addition, they included suggestions for collaboration on designing programs using virtual technology for workforce development. These factors indicate positive perceptions

and attitudes toward the use of virtual technology for workforce development regardless of number employed. In addition, 5 respondents referred to distinctions that are more general. They made comments regarding the suitability of virtual education in the following areas: all training, many training areas, and all future training. Frequent positive responses indicated support for virtual education for workforce development.

#### Necessity of Job-specific Training

Without exception, all respondents indicated the business uses some form of training and education for employees and that the training offered is job-specific rather than for personal development. Respondents described areas where virtual education might be suited for this training. A total of 15 respondents communicated situations where training and education could be delivered successfully via virtual education. Some responses encompassed more than one category. Little consensus relating to particular titles of programs was found, but areas were identified as being job-specific. The suggestions proved to be as diverse as the organizations



represented in the study. Responses fell within two categories: technical areas and professional.

Technical. A total of 9 respondents mentioned technical areas such as particular operational set-ups, procedures, and improvement of assembly line operations. Technically specific computer software programs were reported as having potential. Also, included in this category were ISO 9000/9001 (International Organization for Standardization) training and OSHA (Occupational Safety and Health Administration) safety training.

Professional development. A total of 6 respondents reported virtual education would be a suitable vehicle for training in at least one of the following areas: management, sales and merchandising, marketing, administrative, supervisory and clerical staff training, team building and leadership training.

#### Willingness toward Collaboration between Entities

Collaboration between entities is supported for the development of virtual training and education programs. Of the respondents to the question regarding collaboration, 10 responded positively. While 6 respondents indicated that

they would be interested in forming partnerships with colleges and universities 4 others suggested specific possibilities for collaboration. In addition, 3 suggested training could be handled in-house. The remaining either did not respond to the question or expressed a concern or lack of knowledge regarding opportunities for collaboration. Following comments suggest a willingness for collaboration between entities:

There are 4-5 learning institutions within a 25-mile radius of the company and it would be a great joining of business knowledge and academia.

A partnership could be set up between the company and a local university, community college to develop courses using virtual training and education programs for this facility.

Collaborate with our professional development centers and university or school district.

Wide range of potential training partners with UNT, TWU and Community Colleges.

#### Need for Customization of Education and Training

Due to the unique requirements of individual businesses and industries, any training or education programs developed must be customized to company specifications. Throughout the responses, independent of

the questions, the need for training to be personalized for an individual company was noted. Policies and procedures also must be taken into consideration to be sure programs developed comply with the organization objectives.

### Summary of Findings

This chapter described the sample used for this research. The population sample was limited to businesses in Denton County, Texas. Human Resource Directors of these companies provided responses on a self-administered questionnaire. Findings were derived from multiple readings of the answers to the questions and categorizing the response data. Guided by the research questions, the following trends, themes, and patterns were discovered. Three categories of training and education for workforce development were predominant: traditional training, virtual based training, and on-the-job training. Without exception, all respondents indicated the business invests in some form of training and education for employees. The two categories identified as appropriate for the use of virtual education were technical training and professional development.

Positive perceptions and attitudes toward the use of virtual technology for training and education dominated the responses. Of the respondents, 50% suggested areas of possible collaboration with other entities including colleges and universities.

The majority of the responses emphasized that training must be tailored to organizational needs. Responses from 9 organizations indicated that the company was unique in its training and educational needs. This was attributed to differences in company policies and procedures along with the specialized nature of the industries represented.

From the analysis of data, strong support is offered for collaboration between entities in Denton County. Pertinent information for both businesses and educational institutions regarding workforce development is necessary if collaborative opportunities are to be pursued. Partnerships could be formed for the expressed purpose of developing training and education programs using virtual technology to meet the workforce development requirements of Denton County businesses.

## CHAPTER V

### SUMMARY, DISCUSSION, AND CONCLUSIONS

This qualitative study surveyed a sample population of organizations in Denton County, Texas, to explore the business community's perceptions of virtual education for workforce development. Chapter V presents findings of the study as guided by the research questions. The chapter then considers conclusions and implications of the research. Recommendations for further research are offered, and limitations of the study are considered.

The purpose of this study was to gain an understanding regarding the perceptions of business community members toward the use of virtual education for workforce training and development. The population sample was limited to businesses in Denton County, Texas. Open-ended questions were developed for a customized, self-administered questionnaire. The questionnaire, along with a cover letter, was sent to representatives of the target population. Respondents' answers were compiled and

analyzed. Trends, themes, and patterns were discovered from multiple readings of the respondents' responses to the questions.

### Relationship of Themes to Research Questions

Themes emerging from this study relate to the six research questions as follows:

1. What methods do Denton County businesses currently employ for training and educating personnel? The following theme relates to this research question: diversity of training and education for workforce development.

There is a diversity shown between delivery methods used for training and education of workforce development in the sample studied. Both internal and external modes of training were revealed. Traditional training, virtual-based training, and on-the-job training were the three categories of delivery uncovered in the analysis of the data.

2. What areas are suitable to implement virtual technology for workforce training and education? The following theme relates to this research question: necessity of job-specific training.

The essentiality of job-specific training when using virtual technology was a common pattern that emerged from the responses. Candidates for virtual training were: specific products knowledge, technical applications, safety training and improvement of assembly line operations. In addition it was suggested that management and leadership training and supervisory and clerical staff training could be taught with virtual technology.

3. What is the market potential for utilization of virtual technology for workforce training and education?

The following themes relate to this research question: (a) willingness toward collaboration between entities, (b) positive perceptions and attitudes toward virtual-based education, and (c) need for customization of education and training.

The willingness toward collaboration between entities for development of training and education programs, including those customized for a particular business indicates market potential. The positive perception and attitudes of businesses toward virtual-based education

suggested a business climate receptive to development of projects.

4) How willing is the Denton County business community to collaborate in developing programs specific to its needs? The following theme relates to this research question: willingness toward collaboration between entities.

An expressed willingness to collaborate between entities was exhibited in opportunities for joint ventures as described in the respondents' answers. The suggestions indicated that it could be a natural alliance to join business expertise and academia's knowledge in the development of programs.

5. What resources do Denton County businesses have available to facilitate the use of virtual education for workforce development? The following themes relate to this research question: (a) positive perceptions and attitudes toward virtual-based education, (b) willingness toward collaboration between entities, and (c) need for customization of education and training. A positive attitude toward virtual-based education and the willingness



to partnership with other entities sets the stage for unlimited possibilities for collaboration in workforce development programs. The expressed need for customization of programs could indicate that companies would bring forth current programs, along with ideas and suggestions for training and education to fit their specific needs. They could provide those policies and procedures that must be taken into consideration when developing programs. In addition, companies would bring technical and business knowledge, along with the information regarding requirements specific to the organization.

6. Is there a relationship between the total number of employees in a company and the attitudes expressed toward the use of virtual technology for training and education?

The following themes relate to this research question: (a) diversity of training and education for workforce development, and (b) positive perceptions and attitudes toward virtual-based education.

When demographic data were compared to responses it was discovered that both major and non-major employers currently offered diverse training to employees via virtual

technology. In general, a positive perception and attitude toward the use of virtual-based education, regardless of the size of the company, was discovered.

### Discussion of Findings

Analysis of the data offered insight into the training and education requirements of Denton County companies for workforce development. The perception of organizations toward training and education, including delivery by virtual technology, was positive. Five trends were identified: 1) the diversity of training and education for workforce development, 2) positive perceptions and attitudes toward virtual-based education, 3) the necessity of job-specific training, 4) willingness toward collaboration between entities, and 5) a need for customization of education and training.

#### Diversity of Training and Education for Workforce Development

Without exception, all organizations responded that the business is currently committed to developing the workforce through training and education for employees.

Traditional training, virtual-based training, and on-the-job training were the three categories uncovered in the analysis of the data.

The universality for use of training and education programs found in the business sample correlates with the inevitable requests from national and international corporate executives seeking to relocate to Texas. Inquirers explain it is imperative for them to receive information regarding average level of education and skills available in the existing workforce prior to their decision to relocate (Sharp, 1998a). The literature shows one of the most prevalent barriers to successful employment in Texas is the lack of job skills, indicting a need for training and education for existing residents. An example of this barrier is illustrated in the concern shown regarding employment of the more than 59,000 Texas recipients of the federal Temporary Assistance for Needy Families program (Jackson, 1998). These recipients, when removed from the welfare system, often have few job skills and, therefore, limited employability. One way to rectify this situation is for training and education to be provided by employers.

Various governmental programs, some in the form of grants, may supplement the expense of development and delivery of programs. The Smart Jobs program offered \$7.7 million in start-up funds for training or retraining Texans in the 1994-95 biennium. The majority of applications for this program demonstrated a high demand for employer driven, customized training (Arnett, B. 1995, p.3).

Training and education were used by all companies responding to this study supporting the importance business and industry leaders place on development of their workforce. The literature expresses the need for workers to be sufficiently trained to meet the higher degree of efficiency and productivity required from workers (Isaacson & Brown 1997).

#### Positive Perceptions and Attitudes toward Virtual-based Education

Perceptions and attitudes toward the use of virtual technology were positive, regardless of the number of persons employed. There was no indication from the study that the total number of employees in a company affected the attitudes of the respondents toward virtual education.

The responses reflecting current use or desire to use virtual technology for training and education came from both the non-major and major employers studied.

#### Necessity of Job-specific Training

The necessity of job-specific training when using virtual technology was a common pattern that emerged from the responses. Various possibilities were offered in the categories of technical training and professional development. Responses indicated that the training offered is job-specific rather than suggesting its purpose was for personal development or education not directly related to the job, such as dealing with stress in the workplace or financial planning for retirement. Educating employees regarding specific products, manufacturing techniques and technical applications were mentioned as candidates for virtual training. It was indicated that training in real time saves making costly mistakes and can improve quality and reduce training time. Many respondents indicated that training and education were limited to certain positions and were determined by the job level of the employee. The use of satellite, Internet, and Intranet by the businesses

is consistent with the trends in use of virtual technology for job training as discovered in the literature. The number of people currently skilled in computers facilitates the use of this method in the training of particular skills. In 1998, the V. G. Young Institute at Texas A&M University found that over 100,000,000 people were currently online; and the number was expected to double within the next 6 months (Gilmartin, 1998). This suggests that job-specific training via virtual technology is certainly feasible when skills and programs are in place.

#### Willingness toward Collaboration between Entities

The willingness of businesses to collaborate with other entities for workforce development indicates market potential for the development of virtual education programs. Collaboration and cooperation between entities is supported by the various steps the state of Texas has in place to develop and support programs for training and education of the workforce.

Texas must utilize every resource in order to train a workforce that can compete in a global market (Texas Comptroller of Public Accounts, 1995). This direction is

supported by the suggestions of various joint ventures as described in the respondents' answers. A total of 7 companies currently use external means for development of their workforce, which means they are including sources outside the organization to deliver training. In addition, 5 respondents suggested a wide range of potential partnerships between local community colleges and universities, indicating that it would be a natural alliance to join business expertise and academia's knowledge. Partnerships were suggested between company professional development centers and educational institutions by 2 respondents. A total of 9 respondents did not offer possibilities for collaboration. Of these, 2 expressed a lack of knowledge of what is available, 2 listed cost as the reason, and 2 stated that programs would be developed in-house.

Respondents in this study consistently reported the use of both internal and external resources for development of the workforce. This is compatible with the theoretical framework guiding this study. Adaptation is an integral part of the human ecology theory. It is the modification of

the environment to reach desired outcomes rather than simply an adjustment by the individual to the environment (Bubolz & Sontag, 1993). By using outside resources, businesses are adapting their environment to facilitate growth and learning. Another ecological concept is communication. Certainly meaning and information created and transferred between individuals and others is pertinent regardless if the transfer of knowledge is processed internally or delivered by an external source. The fact that the Collin County Community College District has collaborated with several businesses to form a job training consortium is compatible with these findings (McKinney Job Training Consortium, 1998). This is also consistent with the discoveries that led to the formation of the Western Governors University of which the Dallas County Community College District is a member. The founders emphasized identification and development of promising new programs in partnership with educational institutions and corporations for training and education (Western Governors University, 1998)



## Need for Customization of Education and Training

Training developed must be customized to organizational specifications. This trend is supported throughout the review of literature. One author likened customized training to a modern industrial revolution which permits production to be suited to the requirements of each consumer rather than the original industrial revolution which brought uniform mass-produced outputs (Massey & Zimsky, 1996). A desirable outcome often expressed in the literature regarding virtual education is the ability to individualize programs and effectively accommodate specialized requirements.

This desire for individualized methods of workforce development is illustrated in the responses of the sample businesses. Respondents reported numerous and varied training and education avenues currently being used in their organizations. Traditional training, computer-based training, and on-the-job training were methods consistently reported. Within these categories, many modes of delivery were identified. From responses received on the questionnaire, it would be plausible to assume that

business would agree that the design criteria for workforce partnership development could be the same as expressed by the Western Governors University: "market-oriented, independent, client-centered, degree-granting, accredited, competency-based, non-teaching, high-quality, cost effective, regional, and quickly initiated" (Western Governors University, 1998). Denton County businesses would have a possible exception to this criterion. From the responses, it appears there is support for universities and community colleges to develop programs and provide the required instruction for workforce development.

### Conclusions and Implications

Business and industry provide the means for employment and, thus, the mechanism for financial survival of individuals and families. Denton County as a synergistic entity is comprised of integrated components. Individuals, local entities, such as school districts, colleges and universities, cities, and the business community, along with state and national influences, provide the elements from which the fabric of the county is woven.

Without exception, all organizations in this study responded that business is committed to training and education for employees. This is an indicator that all participants in the sample study sufficiently value education and training to budget funds for these programs. The universal use of training and education and the various types of training and education programs found in the business sample correlate with the requests for businesses to collaborate with universities and colleges to develop programs.

All stakeholders in a community are dependent on one another and together create a unique environment. When businesses employ a larger share of residents, the community as a whole will enjoy a higher quality of life. This is shown in its benefits to employees and their families as they realize increased wages, career advancement opportunities, and long-term earning potential. In addition, as individuals become more highly skilled through education and training, businesses will benefit from employees who meet the standards required for successful competition in today's global economy.

The key to the sustenance of the community as a whole is economic development and the employment opportunities it creates. An integral part of attracting businesses to a region is the ability to provide an educated and trained workforce. In addition, it is essential that there be an established framework in the community to facilitate businesses in the successful training and retraining of their workforce.

The positive perceptions of business regarding virtual technology for workforce development are essential to the market viability of this mode for education delivery. Even though a trained workforce is critical to the success of an organization, the individual business must decide what methods will be used for that training and determine when and where to purchase the service.

Overall, perceptions and attitudes toward the use of virtual technology were positive. Respondents representing both major and non-major companies indicated suitable uses for virtual technology specific to their workforce development goals. The Denton County businesses sampled join a growing group of experts who feel that education is

affected by the advances in computer and communication technology (Atieh, 1998). The findings of this study clearly reveal that both training and education for workforce development and the delivery of programs by virtual technology are integral components of the Denton County businesses sampled. The understanding and acceptance of virtual education is essential if businesses are to be competitive in the current, global market.

The results of this study indicate that the current use of virtual technology is in job-specific areas where training is offered. The research identifies several areas where businesses are willing to share their resources with institutions of higher learning in order to design programs tailored to individual job positions. The identification of job categories will assist in program design. This willingness establishes a demand for the development of creative and resourceful programs to meet training requirements for the changing job market. With the growth of the information technology industry, new job categories that necessitate customized training and retraining of the existing workforce are being created.

Collaboration between entities is supported for the development of virtual training and education programs. The opportunities within the Denton County community for collaboration are limitless. Due to the effects of a global economy, businesses have extensive options for locating their facilities and hiring the necessary employees. Significant consideration must be given toward collaboration between academia and business in developing programs for training and retraining employees. Partnership is essential between these entities if they are to compete successfully in the 21<sup>st</sup> century marketplace.

This study indicates Denton County businesses advocate cooperation between various entities in the expansion of partnerships. A deciding factor for potential programs to be developed and marketed is the willingness of business to collaborate in the development of virtual-training programs. This remains constant whether the actual training is delivered in-house or is out-sourced. The responses reflect that a significant number of the Denton County business sample has already begun the process of purchasing knowledge outside the confines of their organizations. This

trend indicates a future market for businesses to continue utilizing outside sources for training and education.

The motivation for development of education and training programs is market driven. Businesses require personalized program packages. If they are willing to purchase these programs for delivery by virtual technology, then, due to supply and demand, the development of programs should flourish. All but 1 respondent in this study described possible situations they felt would be suitable for virtual education in workforce development. Although current virtual-education programs are limited in scope, the interest and participation of businesses in the development of programs afford opportunities for exponential expansion in this arena.

### Recommendations

#### Future Research

Several directions are appropriate for further research. First, the initial investment and cost required for virtual education was the most frequently expressed concern in this study. To address this challenge, common

training and education needs of the sample population could be investigated to identify similarities between companies. The results could determine the cost-effectiveness of developing programs for workforce development using virtual technology. With this knowledge, the market potential of programs could be effectively explored.

Second, the collaboration between entities needed to design programs could be challenged by the competitive nature of some businesses. An investigation could be undertaken to determine the requirements for a given educational institution to collaborate for workforce development with the private sector. Parameters regarding accessibility of developed programs could be set to protect participating parties. Possible areas for exploration include; legal constraints, methods to circumvent the cumbersome processes required by governmental agencies, and ways to expedite completion of programs. This could result in a strategic plan for partnerships between governmental agencies and the private sector.

Third, research could identify and coordinate programs for workforce development currently in existence between



universities and colleges and the private sector.

Determination of which programs currently using traditional methods of education could successfully be converted to virtual methods of delivery can be made. The financial viability of conversion and delivery could be examined. Methods of marketing the program in its new format also could be explored.

If this study were to be undertaken again, the following suggestions could assist in increasing its effectiveness. If an economic development-related organization in the county had sponsored this study, there may have been financial assistance available for postage and other expenses. If the sponsoring organization had an interest in the project, the visibility it would bring to the study might enhance the return rate of questionnaires. Instead of relying largely on mailed materials, follow up telephone calls to all members of the target population could be made in hopes of encouraging a higher return of questionnaires. In addition, a larger number of businesses could be included in the target population.

### Business and Education

The following business and education recommendations are made as a result of this study. Businesses could make contact with various entities in the educational community to investigate the possibilities for collaboration in creating programs for workforce development. Educational entities could take the opportunity for identifying resources and revenue by investigating the business community requirements for customized training programs. . In addition, through networking, representatives of educational facilities could better understand the needs of business and determine what directions are needed for further research.

### Governmental and Economic Agencies

This subject could become the focus of a sub-committee in each city's Chamber of Commerce and economic development department. Members could explore possible applications of virtual technology for training and retraining of local employees.

### Limitations

This was a qualitative, exploratory study relying on a purposeful sample. Time and resources prevented randomization. The results are limited to the responses received and cannot be generalized beyond the sample. The study relied on self-reported data, thus, opening the possibility for validity concerns.

The instrument used was created for this study. Although pilot tested, the questionnaire may have issues relating to interpretation of the questions by the sample population. In addition, the researcher relied on personal interpretation of data due to the qualitative methodology used in the study. Although the sample responses represented a significant number of employees, sampling and response rate was lower than desired, further limiting the generalizability of the study.

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## APPENDICES

## Appendix A

### Denton County Demographics

## DENTON COUNTY DEMOGRAPHICS

The following information is from the Denton County Budget in Brief, available on the official Denton County Internet Site at <http://www.co.denton.tx.us> (Budget in Brief, 1998).

- Denton County is a subdivision of the State of Texas. Covering 957.7 square miles, it is located in the Dallas/Fort Worth metroplex in the North region of the state.
- The 1998 population estimate is 373,850. Denton County ranks 9<sup>th</sup> in population in the state.
- Thirty-six officials are elected by a vote of the people. The county employs 1,218 persons.
- There are 39 incorporated cities or towns in the county and 17 independent school districts.
- The Tax Rate of \$.2487 is the lowest tax rate of the top 15 counties as ranked by population in Texas.
- The 1998-1999 county budget totaled \$71,183,637.

- In addition, according to the 1990 Census Denton County is the fastest growing county in the state and fifth fastest in the nation (Yak, 1997).

## Appendix B

Cover letter to Subjects

**Texas Woman's University**

**Denton County Business Community Perceptions of  
Virtual Education for Workforce Development**

May 5, 1999

Dear Participant:

As a Texas Woman's University Master's degree candidate I am conducting research as a component of my thesis. I am exploring Denton County business leaders opinions on workforce development. It is my hope this study can identify patterns and issues regarding workforce development, training and retraining that will be of assistance to the business community. To that end, the target population for this research project are leaders of Denton County businesses.

This study consists of a one-time commitment to respond to four questions, requiring an estimated 15 to 20 minutes of your time. Your participation in this study is voluntary, you may withdraw from the study at any time. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled.

I would appreciate your assisting me in this study. Your expertise is invaluable and your participation is important. No individual or company will be identified in the reported results of the research. Your responses are completely confidential. Anonymity will be carefully preserved. The questionnaire will be kept in a locked file cabinet and then destroyed. Upon completion of the study, you will be mailed the final report summary.

If you have any questions pertaining to this research or your rights as a subject, please do not hesitate to call either me or my major advisor, Dr. Lillian Chenoweth. Our numbers are provided at the bottom of this page. In addition, if you should have questions at a later date, or if you wish to report a concern, please contact the TWU Office of Research and Grants Administration at 940-898-3377.

Please complete the enclosed questionnaire. Included is an addressed, stamped envelope for the return of the questionnaire. Thank you for supporting this component of my master's thesis.

Sincerely,

Patricia Larson  
Master's Degree Candidate  
972-492-4771 Home  
972-492-0139 Office

Lillian Chenoweth, Ph.D.  
Research Advisor  
940-898-2685

Enclosures: Questionnaire  
Return Envelope

## Appendix C

### Questionnaire



## Questionnaire

### Denton County Business Community Perceptions of Virtual Education for Workforce Development

Thank you for participating in this research. As an expert in your field, the knowledge you bring to this study is invaluable. Your responses will be completely anonymous and treated as confidential information.

I understand that the return of this completed questionnaire constitutes my informed consent to act as a subject in this research.

Please complete the following:

#### DEMOGRAPHIC INFORMATION

Number of Employees:

Full time \_\_\_\_\_

Part time (20 hours per week or less) \_\_\_\_\_

Physical location of business \_\_\_\_\_  
(city or town)

#### INSTRUCTIONS

For the purpose of this questionnaire, please apply a broad definition of virtual education. Several programs may be included in your responses, for example, World Wide Web based programs, Internet based conferencing, self-study computer programs and other computer mediated forms of instruction.

**Questionnaire continues on reverse side.**

**Please answer the following questions. Attach an extra page, if you would like.**

1) What methods does your business currently utilize for training and education of employees?

2) Describe the training and education you offer to your employees via virtual technology.

3) In what areas would virtual education be suited for workforce training and education in your company?

4) How could your business collaborate in the development of virtual training and education programs specific to your needs? (for example, local community colleges customize training courses to meet explicit needs)

Thank you for your participation. Please return questionnaire in stamped envelope provided.  
Patricia Larson, 1629 Walker Place, Carrollton, Texas 75007

## Appendix D

### Relationship of Questionnaire Items to Research Questions

## Relationship of Questionnaire Items to Research Questions

Research Question	Questionnaire Item
1. What methods do Denton County businesses currently employ for training and educating personnel?	Open-ended #1
2. What areas are suitable to implement virtual technology for workforce training and education?	Open-ended # 2, #3
3. What is the market potential for utilization of virtual technology for workforce training and education?	Open-ended #2, #3, #4
4. How willing is the Denton County business community to collaborate in developing programs specific to its needs?	Open-ended #4
5. What resources do Denton County businesses have available to facilitate the use of virtual education for workforce development?	Open-ended #2, #4
6. Is there a relationship between the total number of employees in a company and the attitudes expressed toward use of virtual technology for training and education?	Demographic data from first page, Open-ended #2, #3, #4

## Appendix E

### Follow-up Letter

## **Texas Woman's University**

### ***Title of Study:***

### **Denton County Business Community Perceptions of Virtual Education for Workforce Development**

May 10, 1999

Dear Participant:

Recently I mailed you a letter and a questionnaire requesting your assistance in the completing my research study on Denton County Business Community Perceptions of Virtual Education for Workforce Development. If you have returned the questionnaire, thank you. If your response has not been mailed, I would appreciate your sending it as soon as possible.

This is a one-time commitment to respond to four questions and should take approximately 15 to 20 minutes. The contribution you make sharing your time and expertise is essential to my study. If you should have any questions, please feel free to call me at 972-492-4771. Thank you for your consideration.

Sincerely,

Patricia Larson  
Master's Degree Candidate  
1629 Walker Place  
Carrollton, Texas 75007

Lillian Chenoweth, Ph.D.  
Research Advisor

## Appendix F

Reminder Postcard

RE: Research Questionnaire

Recently a questionnaire was sent to you as part of a research project to discover Denton County Business Community Perceptions of Virtual Education for Workforce Development. If you have already completed the questionnaire and returned it to me, thank you for your commitment.

If you have not returned the questionnaire, please send it today. Your input is important to the completion of the study. If you have any questions, please call me at 972-492-4771.

Thank you.

Patricia Larson  
Master's Degree Candidate  
Texas Woman's University