

COUNSELING STUDENTS' TECHNOLOGICAL COMPETENCE

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Technology has a profound influence on how business, education, entertainment, and interpersonal communications are conducted. Mental health professionals have been exploring how technology can support and enhance client care since the 1960s. In the last decade the influence of technology in the practice of counseling has increased dramatically. As the use of technology increased, so did the expectations for counselor preparation programs to include technology instruction. In 1999, the Association for Counselor Education and Supervision (ACES) developed the *Technical Competencies for Counselor Education Students: Recommended Guidelines for Program Development*. This study examines the technological competence of counseling students at one southwestern university based on the ACES recommendations.

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CHAPTER 1

COUNSELING STUDENTS' TECHNOLOGICAL COMPETENCE

Introduction

Technology has a profound influence on how business, education, entertainment, and interpersonal communications are conducted. Technology is perhaps the greatest tool to facilitate movement toward a global community, wherein the Internet allows individuals to connect in ways unimaginable fifty years ago (Bowman & Bowman, 1998; Granello, 2000; Sussman, 2000; Thomas, 1999). In brief, the Internet, which was once thought a passing fad has become an integral part of daily life and communication for millions of individuals around the world.

The Internet was created by the military as a means to disseminate information and to foster collaboration among and between researchers (Bowman & Bowman, 1998; Granello, 2000; Sampson, Kolodinsky, & Greeno, 1997). Today, the information highway is traveled by millions of people on a daily basis and is the fastest growing tool for information dissemination, business ventures, and personal communication. From 1998 to 2002, private and public pages grew from 2,636,000 to 8,712,000 (On-line Computer Library Center). Individuals utilize technology to locate information, pay bills, shop, send gifts, make travel reservations, listen to music, watch movies, seek employment, find a new home/apartment, locate old friends, find new friends, play games, and send pictures of their children or latest vacation to family and friends around the globe.

Rapid advancements in technology and the speed at which consumers embraced the Internet has created challenges for both consumers and providers. Being able to

interact with others around the globe instantly with minimal limits has long been considered a benefit of the web (Heinlen, Welfel, Richmond, & Rak, 2003). Increased accessibility has facilitated a rapid increase in the volume and variety of products and services offered on-line. Unfortunately, this same structure also makes regulation of services practically impossible. *Buyer beware* is the caveat which applies to the Internet and the varied quality of on-line services and products, also extends to consumers of information posted on the web. Identifying the author and the author's credentials is only one of the ways in which individuals become discerning Internet consumers (National Education Association, 2002; Ormondroyd, 2001).

Delivery of education is also changing as a result of technological advancement. Technology-assisted word-processing, record keeping, information dissemination, and communication related tasks are common practice. Scholars have embraced utilizing the web to work collaboratively with colleagues from around the world, to conduct research, and to publish (Rowand, 2000; Smerdon & Cronen, 2000; Thomas, M., 1999). Many educators are utilizing PowerPoint and multimedia programs to enhance the delivery of material in physical and virtual classrooms. In addition, the Internet provides educational institutions an opportunity to offer courses to students regardless of geographical location and to solve the eternal challenge of adequate physical space (i.e., classrooms, offices, and parking) (Altekruse & Brew, 2000; Jencius, 1999; Leary, 2000; Lee, 2000). Professionals from various disciplines meet continuing education requirements via on-line educational offerings. As a result, individuals, private companies, corporations, and academic institutions have reduced their travel budgets in favor of virtual education.

Medical and mental health providers reported finding technology a helpful tool in the delivery of services (Maheu, 2000; Nickelson & Stamm, 1998). Initially mental health professionals utilized technology to perform assessment, vocational guidance, and administrative tasks (Bowman & Bowman, 1998; Granello, 2000; Myrick & Sabella, 1995). While some explored technology-assisted therapy in the 1980s, many rejected this approach due to the limitations of this delivery method. However, the 1990's saw renewed interest as Internet accessibility and software programs improved and currently several thousand mental health providers are on-line (Bloom & Walz, 2000). Many of these providers utilize the Internet for colleague/client communication, marketing, and information dissemination tasks. In addition to traditional services, some providers offer limited services on-line via email and chat rooms and several hundred providers offer on-line services exclusively (Heinlen, et al., 2003).

Debate regarding the appropriateness of technology-assisted therapy began in the sixties and continues to this day. Primary areas of concern include the process of protecting client confidentiality; providing appropriate screening, diagnosis, and treatment; and maintaining the standards of the profession (Bowman & Bowman, 1998; Bloom & Walz, 2000; Engels, Caulum, & Sampson, 1984; Morrissey, 1997; Sussman, 2000). It seems that it is only a matter of time before technological advancements will resolve some of these limitations (i.e., security, identification, nonverbal cues). It is anticipated that the number of on-line providers will significantly increase with the next generation of software. However, technological advancement will not provide solutions to all the limitations of technology-assisted counseling. Mental health professionals from all disciplines will need to continue conducting research regarding the effectiveness of

on-line service delivery, licensure, diversity issues, professional development, and regulation of the profession.

In response to the increasing number of providers offering services on-line and despite the continued debate of the appropriateness of technology-assisted therapy, professional associations developed standards of practice to guide practitioners in their implementation of technology (American Counseling Association, 1999; American Psychological Association, 1996; National Board of Certified Counselors, 1997; National Career Development Association, 1997). The standards address ethical issues of utilizing technology *in any counseling related task* including, therapy, record keeping, email communication, transfer of records, Internet research, and dissemination of information via a web page (Maheu, 1999; Morrissey, 1997).

Even with published standards of practice researchers have discovered that numerous individuals are offering on-line services that do not have appropriate counseling credentials and are falsely identifying themselves as certified counselors (Heinlen, et al., 2003). It has been proposed that improved regulation of on-line services would provide protection for consumers and the profession. However, due to the nature of the Internet structure it is currently almost impossible to regulate on-line providers (Hughes, 2002). Therefore, exploration of the impact of these issues on consumers and their confidence in the counseling profession appears imperative. It is important that counselors and their professional associations take a proactive role in shaping the future of technology-assisted counseling (Casey, 1998; DuMez, 2000; Hughes, 2002; Love, 2000; Myers & Gibson, 1999; Sampson, et al., 1997; Wall, 2000). "We must be the translators of technology. Rather than resisting technology, we need to be the

leaders who embrace it and use it to share our values, not only with our students and colleagues but with the global society” (Thomas, M., 1999, p. 1).

Statement of the Problem

Technology impacts some facet of counseling whether practitioners offer services on-line or not. Studies in the last few years have identified how counselors are utilizing technology in their counseling related tasks (Cabaniss; 2002; Hines, 2002). Counselors report a lack of education as the primary limitation in utilizing technology. Ethical codes require counselors to offer services only after acquiring appropriate instruction (American Counseling Association, 1999; American Psychological Association, 1996; National Board of Certified Counselors, 1997; National Career Development Association, 1997). Therefore, it appears imperative that counselor education programs provide instruction regarding technology and the practice of counseling (Cabaniss, 2002; Harris- Bowsbey, 2000; Hines, 2002; Kalb, 2001; Quinn, Hohenshill, & Fortune, 2002; Sampson, et al., 1997).

How technically competent are counseling students? Myers and Gibson (1999) found that counselor educators and students have a high level of technological competence. However, the participants of this study included 62 counselor educators and 22 students. In addition to the small number of student respondents, participants were recruited through a counseling listserv. As it is likely that study participants are interested in the utilization of technology, results may overestimate the technological competence of counseling students and educators.

Need for Study

Utilization of technology in the delivery of counseling services is expected to increase as software and hardware advancements resolve some of the initial concerns of technology-assisted therapy. However, even with resolution of these concerns (i.e., nonverbal cues, security, etc), certain issues require attention from professional counselors and their organizations. Mental health professionals are needed to conduct research, establish protocols, and to be proactive in regulation of practice (Casey, 1998; Hughes, 2002; Maheu, 1999; Myers & Gibson, 1999; Sampson, et al., 1997; Thomas, 1999; Wall, 2000).

Practitioners and researchers have reported lack of adequate instruction as one of the greatest limitations in the appropriate and effective use of technology in counseling (Cabaniss, 2002; Hines, 2002; McFadden, 2000; Stone & Turba 1999). Education should include utilization of appropriate hardware and software programs, as well as understanding ethical and legal implications of technology-assisted counseling.

Programs vary in their implementation of technical instruction (Edwards, Portman, Bethea, 2002; Hines, 2002; Quinn, et al., 2002). Some programs have incorporated proficiency requirements and technology-assisted instruction, while others report minimal to no implementation of technology. One of the cited concerns of implementation is the impact that adding technical skills coursework might have on counseling programs. An additional concern is the reported limited technological competence of faculty members. However, the technological competence of counseling students is unclear. Future studies may find that students are proficient in utilizing technology, especially as the generation who grew up with technology enters graduate

school (Traub, 1997). If students are found technically competent, it may be more effective for educators to focus on application and professional issues of technology-assisted counseling rather than on basic computer skills. It may be more effective to provide technical instruction for faculty members rather than adding coursework for students.

Purpose of the Study

This study utilized a written questionnaire to examine counseling students technological competence in the word processing, spreadsheets, database, presentation programs, utilization of the Internet for communication and research, web page development, counseling related software, as well as ethical and legal issues of technology-assisted counseling.

Review of the Literature

The Army Ordnance Corps developed the first electronic digital computer in 1947. ENIAC (electronic numerical integrator and computer) was used to compute World War II ballistic firing tables (Granello, 2000; Weik, 1961). Computers were huge machines that utilized complex programming and were primarily owned by the military (OII, 2003). To facilitate communication links among and between researchers, the ARPANET (Advanced Research Projects Agency Network) was created. Email, FTP (file transfer protocol), and telenet programs were created to provide a means for researchers to share information, data files, and computer resources. The Internet is a result of military, academic, and commercial institutions joining ARPANET.

By the mid-sixties the first computer-assisted programs were designed to emulate therapeutic approaches including Rogerian (ELIZA), cognitive (PLATO), and cognitive

behavioral (MORTON) (Selmi, Klein, Greist, Johnson, & Harris, 1982; Wagman & Kerber, 1978; Weizenbaum, 1965). Psychologists were also exploring technology-assisted clinical assessments during this period that resulted in the development of a decision tree program called DIAGNO (Furlong & Hayden, 1993).

In the 1970s and 1980s increasing numbers of individuals and organizations (i.e., business, schools, libraries) were utilizing computers due to improved hardware and software applications and affordability (Granello, 2000; Sampson, et al., 1997). In spite of the criticism, increasing numbers of researchers and practitioners began to explore implementing technology into mental health care. Implementation of technology in the field of counseling began with administrative tasks, assessments, data analysis, and vocational guidance (Granello, 2000; Harris-Bowlsbey, 1983; Katz & Shatkin, 1983).

Computerized administration of career assessment instruments has become an important aspect in practice of career counseling (Brown, 2003; Harris-Bowlsby, 1998). Since the 1960s career counselors have explored the use of technology and in 1968 the Computerized Vocational Information System was introduced (Brown, 2003). Over the next 20 years additional programs were introduced including the Education and Career Exploration System, the Information System for Vocational Decision, CHOICES, CIS, DISCOVER, SIGI, and TGIS. Computer Assisted Career Guidance Systems (CACGS) allowed counselors to spend more time working with clients and less time administering and scoring assessments and maintaining occupational information. As CACGS systems evolved the number of counselors using technology in career counseling increased. Recent development has seen the expansion of CACGS via the Internet and CDROM. While some are uncomfortable with the use of technology in the practice of

counseling, others encourage counselors to prepare for the future by becoming technically competent (ACES, 1999).

The 1990s saw thousands of individuals embrace the Internet for professional and personal use. As a result, renewed interest in utilizing technology-assisted therapy significantly increased (Casey, 2000; Granello, 2000; Rust, 1995). Implementation of technology to support administrative, assessment, and vocational guidance tasks continued to grow. Human service organizations began creating web pages to disseminate association information and to promote the organization. Listservs, email, and chat rooms provide a means for professionals to work collaboratively with peers across the country and around the globe. Counselors also began utilizing these programs to communicate with clients regarding therapeutic and non-therapeutic issues.

Virtual counseling became a possibility with development of the Internet. As increasing numbers of mental health professionals began offering services on-line, the debate of the appropriateness of technology-assisted counseling intensified (Attridge, 2000; Bobby & Capone, 2000; Bloom & Walz, 2000; Granello, 2000; Grohol, 1998, Harriss-Bowlsbey, 2002; Hughes, 2002; Kalab 2001, Love, 2000; Sampson, et al., 1997; Sussman, 2000). Concerns included screening clients, building a therapeutic relationship, providing appropriate treatment, emergency care, duty to warn across state lines, client identification, maintaining confidentiality, utilizing assessments in a non-standardized environment, record keeping, licensure, and insurance coverage. In spite of these concerns, the last few years have seen an increase in counseling related sites from several hundred to several thousand. While many of these sites are primarily

utilized as marketing tools for traditional counseling services and information dissemination, several hundred offer on-line services exclusively (Heinlen, et al., 2003). It seems probable that as technology advances to include video/audio packages, improved security systems, pen-based computers with handwriting recognition, and smart cards that contain user identification, so will the number of counselors that offer services on-line.

Implications

Technology in counseling extends beyond the issues of on-line services. Integration of technology affects a multitude of counselor tasks. Establishing standards of practice, expectations of counselor preparation programs, professional development programs, and advocacy for legislative regulation of technology-based services are all issues that call for continued research and establishing policies for implementation (Morrissey, 1997).

Standards of Practice

In response to the increase of therapeutic services offered on-line, professional associations began the process of establishing standards to guide implementation of technology in counseling (American Counseling Association, 1999; American Psychological Association, 1996; National Board of Certified Counselors, 1997; National Career Development Association, 1997). Many professionals expressed concern that establishing a code of ethics and a standard of practice policy was inappropriate, as it implied endorsement of a practice for which there was no formal instruction, certification, or licensure (Bobby & Capone, 2000; Morrissey, 1997). Others believed

that not creating a standard of practice was shortsighted and a risk to potential clients and the integrity of the profession (Sampson, et al., 1997; Sussman, 2000).

Despite continued debate regarding appropriateness of technology-assisted therapy, professional associations began developing standards of practice to guide practitioners in their utilization of technology in the 1980's (Johnson, 1983). In subsequent years, professional associations published and continued to revise their respective standards of practice to reflect new technological developments (American Counseling Association, 1999; American Psychological Association, 1996; International Society for Mental Health On-line, 2000; National Board of Certified Counselors, 1997; National Career Development Association, 1997). These standards address ethical and legal issues of technology-assisted therapy, which include administrative tasks as well as utilizing the Internet as a delivery method.

In spite of these standards, researchers found numerous individuals offering on-line services without appropriate credentials and who falsely claimed to be certified counselors (Heinlen, et al., 2003). Unfortunately, it is almost impossible to currently regulate on-line counselors due to the nature of the Internet and the lack of legal legislation (Hughes, 2002). Regulation becomes even more difficult when individuals do not refer to themselves as counselors, or their work as counseling. The National Board of Certified Counselors' Ethical Standards for On-Line Counseling was used in a recent study to evaluate 136 web sites where practitioners offered technology-assisted therapy (Heinlen, et al., 2003). Researchers found inappropriate compliance in regard to issues of client safety, including obtaining parental permission for services for minors, emergency plans for at-risk clients, emergency contact procedures, and offering

treatment for issues that were inappropriate for on-line services. Maintaining appropriate security (i.e., encryption) and failure to notify clients of the limits of confidentiality were also found to be areas where compliance was low. An additional area of concern was stability of these practices as thirty-seven percent of the providers discontinued services during the study period. Researchers, educators, and counseling association leaders encourage further examination of the impact these issues have on consumers and their confidence in the counseling profession. Counselors are also encouraged to be proactive in determining how technology will be utilized in the delivery of counseling services, not only to protect clients, but also to protect the integrity of the profession (Heinlen, et al., 2003; Morrissey, 1997; Sussman, 2000; Thomas, M., 1999).

Professional Development

Remaining current in their field of practice can help professionals remain competitive and competent in the delivery of counseling services (American Counseling Association, 1999; Attridge, 2000; Casey, 1998; Leary, 2002). Unfortunately, many counselors appear to believe that the issue of technology-assisted counseling does not impact them if they are not offering on-line services. However, all counselors will be affected by technology-assisted mental health care due to the impact this new methodology has on the public perception of the profession (American Counseling Association, 1999; Heinlen, et al., 2003; Steenbarger & Smith, 1996). Counselors and/or individuals representing themselves as counselors, who do not interact with the public in a professional and ethical manner, may influence how the public views the profession as a whole.

Remaining current on the issues and conducting research on technology-assisted counseling is required if counselors wish to define how technology will be utilized in the profession (Hardesty & Utesch 1994; Heinlen, et al., 2003; McFadden, 2000; Morrissey, 1997). It is possible that professionals from other disciplines (e.g., managed care providers) may develop and impose standards on counselors, unless counselors take an active role in the process (Huang & Alessi, 1996). Therefore, it seems critical to identify how counselors utilize technology in their practice, conduct extensive research into this aspect of practice, actively participate in policy establishment, and incorporate appropriate instruction into counselor preparation programs (Bobby & Capone, 2000; Casey, 1998; Casey, 2000; Cabaniss, 2002; Davidson & Jackson, 1996; Galinsky, Schopler, & Abell, 1997; Stamm, 1998; Stone & Seabrooks, 2001).

Technology and Counselor Tasks

Cabaniss (2002) identified fifty-three tasks where in counselors utilize technology (see Table 1). Counselors reported that technology improved the quality and efficiency of conducting basic work tasks such as record keeping, billing, and communication. Study findings indicate that technology has become an integral tool in the practice of counseling and is expected to increase. As a result, preparation programs are encouraged to incorporate technology and to assist students in acquiring competence in utilizing technology in the practice of counseling (Cabaniss, 2002; D'Andrea, 1995; Hayes, 1999; Lundberg & Corbits, 1999; McFadden, 2000; Stevens & Lundberg, 1998; Stone & Turba, 1999). It appears that being technically competent will allow counselors to work more collaboratively with other mental health professionals. Conversely,

Table 1

Counseling Tasks and Computer Related Technology Tools

Internet based Computer Related Technology Tools	Potential Uses by Counselors
Electronic mail	Therapy, marketing screening client/therapist correspondence for scheduling; inter-session monitoring and post therapeutic follow-up; client records transfer; referrals; intake; homework; research; and professional collegiality (Bowman & Bowman 1998)
Websites/homepages	Marketing/advertising; information dissemination, and publications
Computer videoconferencing Bulleting board systems/listservs/newsgroups	Therapy, homework, referrals; and consultation Consultation; referrals; resources for information; and professional collegiality (Bowman & Bowman, 1998)
Computerized simulation Databases/FTP sites	Supervision and skills training Research; information resources for therapists; self-help libraries; client record transfers; and assessment and analyses
Chat rooms/electronic discussion groups	Group therapy; self-help; and support
Software	Skills training; self-help; and homework
<i>Cabaniss adapted information above from Sampson, Koldinsky, & Greeno, 1997, except where noted</i>	
Non-Internet-based CRT Tools	Potential Uses by Counselors
Spreadsheets	Record keeping; data organization; client information; and research
Word processors	Record keeping; correspondence; marketing; and research publication
Software	Skills training for the professional and clients; self-help information; marketing; office management; reference sources; and case notes

inadequately prepared counselors will be at a disadvantage in the job market, in providing client services, and in shaping the counseling profession of the future.

School Counselors and Technology

Utilization of technology in the field of education has moved at a rate that surpasses the application of technology in the field of counseling (Casey 2000; Hartman, 1999; Myrick & Sabella 1996). During the 1990s, the government committed billions of dollars to improve technology within school systems (Hines, 2002). Governmental funding and private sector donations provided schools with resources to acquire hardware and software programs as well as instruction and technical support. Increased implementation of technology in schools prompted professional educational organizations to research and establish standards defining technological skill sets for teachers and students (Hines, 2002; National Council for Accreditation of Teacher Education, 1997 & 2000). In 2000 the *National Educational Technology Standards for Teachers* and the *National Educational Technology Standards for Students* were adopted by the International Society for Technology in Education as a result of the National Educational Technology Standards Project research findings.

School counselors are expected to acquire competency in the utilization of technology in the performance of their work tasks. Technology increases accessibility to resources, dissemination of information, counseling interventions, and communicating with colleagues, teachers, students, and parents (Gerler; 1995; Stone & Turbs, 1999; Van Horn & Myrick, 2001). While counselors report understanding the needs and benefits of utilizing technology in their work, compliance is difficult due to lack of adequate technical education (Bluhm & Kishner, 1988; Owen & Weikel, 1999; Van Horn

& Myrick, 2001). While some instruction is provided on-site, employers are calling for teacher and counselor preparation programs to incorporate technological competence requirements (Cabaniss, 2002; Edwards, et al., 2002; McFadden, 2000; Owen & Weikel, 1999; Van Horn & Myrick, 2001).

Counselor Education Programs

To remain competitive and to prepare students for their professional lives, counselor preparation programs are encouraged to integrate technology into their curriculum (Bobby & Capone, 2000; Casey, 2000; Chandras, 2000; Davidson & Jackson, 1996; Galinsky, et al., 1997; Stamm, 1998). Educators are encouraged to utilize technology as a teaching and research tool and to prepare students to do the same in their professional endeavors (Fong, 1997).

Ethical standards require practitioners to acquire instruction in counseling techniques prior to offering service to clients. With today's litigious culture, counselors are held legally accountable for treatment provided (Sexton, 1998; Steenbarger & Smith, 1996). Therefore, it seems important that practitioners receive technical training in prior to using technical resources in their practice of counseling.

In 1999, the Association for Counselor Education and Supervision (ACES) adopted the *Guideline for On-line Instruction in Counselor Education*, which provides recommendations for implementing technology as an educational delivery method while maintaining program integrity. ACES also adopted *The Technical Competencies for Counselor Education Students: Recommended Guidelines for Program Development* (Appendix A) providing recommendations for technological competencies that all counseling students should meet by the completion of their masters level training,

regardless of expectations of practicing as a school counselor, college counselor, community counselor, or private practice practitioner.

These standards have been implemented in counselor education programs in varying degrees (Edwards, et al., 2002; Hines, 2002, Quinn, et al., 2002). Some programs have incorporated proficiency requirements and technology-assisted instruction, while others have taken no action. Since 1984 the University of Iowa has implemented a course in technology competence (Edwards, et al., 2002). This course initially dealt with basic computer skills and has evolved to include Internet skills for research, on-line services, as well as addressing ethical, legal, and research issues regarding technology-assisted counseling.

Through the 1999 Transforming School Counseling Implementation Grant, the Indiana State Universities School Counselor Program examined the specific skills school counselors should acquire before completion of masters level training (Hines, 2002). This study utilized the ACES' *Technical Competencies for Counselor Education Students: Recommended Guidelines for Program Development* (Appendix A) and Hartman's proposed competencies (Appendix B). At the conclusion of the study, the program adopted the *School Counseling Program Technology Proficiencies* (Appendix C). Development of a preadmission protocol requires incoming students to document mastery of basic technical skills in the areas of word processing/desktop publishing, spreadsheets/database, multimedia presentation, and electronic/Internet resources. Students who do not meet the standards are required to complete a technology course designed for school counselors.

Quinn, Hohenshil, and Fortune (2002) invited CACREP accredited programs to participate in a study of the implementation of technology in counselor education programs. Of 146 programs, only forty-four program representatives agreed to participate. Thirty-nine percent of responding programs reported implementing ACES' *Technical Competencies for Counselor Education Students*, twenty percent have not implemented, and thirty-six percent were considering implementation. Ninety-three percent reported utilizing video recording/playback systems and sixty-six percent utilize audio recordings/playback systems. Eighty percent utilize overhead projectors, seventy-five percent of faculty, and seventy percent of students utilize PowerPoint in class presentations. Programs reported implementation of other technology-based equipment such as scanners (seventy percent), CD ROMS (fifty percent), interactive satellite (forty-eight percent), digital cameras (forty-three percent), and thirty-two percent utilize laserdiscs. Responding programs reported use of technology for communication related tasks (email, listservs, chat rooms), information dissemination (department and faculty web pages), research, and publishing. Fifty-four percent of participating programs require students to read electronic journals and thirty-four percent require participation in chat rooms.

Counselor Educators

It is anticipated that implementation of technology into counselor preparation programs is inevitable (Baltimore, 2002; Cornell, 1999). As in counseling, technology-assisted education refers to more than on-line instruction. Technology also impacts the way in which educators deliver educational material including use of recorders, playback units, PowerPoint, desktop publishing, CD-ROMs, satellite feeds, cable

television, and utilizing the Internet as a research and publication tool (Cabaniss, 2002; Gale & Mckee, 2002; Hines, 2002; Johnson & Sampson, 1985; McFadden, 2000; Quinn, et al., 2002). One of the initial challenges of implementing technology into counselor preparation programs may be identification of funding to purchase, upgrade, and maintain equipment. Implementing technology-assisted instruction will also require a paradigm shift regarding delivery of educational material from traditional to technology-enhanced classrooms while maintaining program standards.

Researchers have reported one of the greatest limitations for implementing technology-assisted training is the technological competence of faculty members (Baggerly, 2002; Chandras, 2000; Hines, 2002; Jencius, 1999; McFadden, 2000). Technological competence requires more than proficiency with hardware and software applications. It also includes understanding how technology impacts the practice of both education and counseling. Educators are charged with not only teaching students how to be discerning and ethical users of technology, but also to model the same practice (Casey, 2000; Clark & Stone, 2002). However, in light of current technical limitations of counselor educators, the ACES standards may have put programs at a disadvantage (Jencius, 1999). "By singling out counselor education students and not all counselor educators, the burden may rest on the student and not the program to develop these competencies" (p. 1). If faculty members do not have the needed skills and instruction is not provided, it will be difficult to implement technology into the curriculum. As a result, students may not acquire the proficiency levels that are recommended, which in turn will impact the counseling profession of the future.

Counselor Education Students

According to recent studies one of the greatest limitations of appropriate utilization of technology in counseling related tasks is inadequate education and the lack of technical proficiency (Cabaniss, 2002; Quinn, et al., 2002; Sampson, et al., 1997). As a result of these reports, counselor education programs have been encouraged to provide instruction in the use of technology in counseling.

Since the late 1990's educational associations have adopted standards that define skill sets for teachers and students (Hines, 2002; National Council for Accreditation of Teacher Education, 1997 & 2000). School districts across the country have adopted technology competency standards for students. Eighty-six percent of undergraduate students are avid users of the Internet and eight-five percent own their own computer (Jones, 2002). It is anticipated that as current undergraduates enter graduate school, their competency level will exceed the proficiency levels of faculty members (Traub, 1997).

Identifying student technological competence maybe important in determining how to implement technology into counselor education programs. Myers and Gibson (1999) found that counselor educators and students have a high level of technological competence. However, participants of this study included 62 counselor educators and 22 students. In addition to the small number of student respondents, participants were recruited through a counseling listserv. As it is likely that study participants are interested in the utilization of technology, results may overestimate the technological competence of counseling students and educators. Additional studies which examine the technical competencies of students may identify that coursework which focuses on

technical packages designed for counseling related tasks (i.e., DSM diagnosis, career assessments, etc), virtual interaction techniques, as well as ethical and legal issues of technology assisted counseling maybe more appropriate than basic skill instruction.

Instrumentation

According to the ACES' (1999) *Technical Competencies for Counselor Education Students: Recommended Guidelines for Program Development*, master's level counseling students should be proficient in utilizing, word processing, spreadsheet, statistical, database, and presentation software. In relation to the Internet, students should be skilled in web page development, utilization of e-mail programs, technology-assisted assessments, video conferencing, and on-line information/product resources. Graduating students should be discerning consumers of Internet information and be prepared to assist clients in the appropriate use of Internet resources. ACES' also recommends that students understand the benefits and challenges of technology-assisted counseling as well as the legal and ethical issues of this service modality.

Research of various assessments designed to measure the technical competencies of students and/or educators were identified. Numerous self-assessments that utilize a Likert scale were located. Portfolio assessments appeared to be the next most frequently utilized assessment. This form of assessment requires students to produce completed documents utilizing various types of software to demonstrate proficiency. According to Crawford and Toyama (2002) very few assessments are being utilized to test for technical competencies. In their report to the United States Department of Education, only two instruments were identified as measuring the broadest range of technology competencies while being appropriate for large-scale assessment. These

assessments are the *Kansas Technology Proficiency Examination* and the *North Carolina Test of Computer Skills*. Both of these assessments include multiple-choice questions and a performance component. The State Board of Education for Kansas and North Carolina were contacted. The purpose of this study was described along with a request for a copy their perspective instruments. The *Kansas Technology Proficiency Examination* was not available as it was created solely as an on-line assessment. While the *North Carolina Test of Computer Skills* is also an on-line assessment, a printed version of the question bank was available for review.

North Carolina teachers and curriculum experts developed the *North Carolina Test of Computer Skills* as part of the Quality Assurance Program, which established computer proficiency requirements for graduates (North Carolina State Board of Education, 2003). "The items were field tested over four years to refine the items and the scoring rubrics" (p. 3). The multiple-choice portion takes approximately ninety minutes and measures technical knowledge of various hardware and software programs. The sixty-minute performance test examines keyboarding, word-processing, database, and spreadsheet skills.

Issues in Standard Setting

Numerous approaches may be used to establish scoring standards for assessments. Relative, norm referencing, or grading on a curve is widely utilized in higher education. This approach compares the scores of each student in the group to determine the assessment score. Thus one's score is determined not solely on individual performance, but also on the performance of others in the group (Center for Teaching and Learning, 1991; Regents of the University of Minnesota, 2003; Smith,

1994). Absolute, or criterion referenced standard measure levels of knowledge and/or skills against predetermined performance standard (i.e., 100-90=A, 89-80 = B, 79-70=C, 69-60 =D, below 60 = F). A criterion standard allows measurement of competence of the individual without regard to the performance of others (Glaser, 1963).

While both of these systems have been utilized for many years, especially in academic settings, the validity of these methods of standard setting to demonstrate competency have been challenged (Glass, 1978; Johnson, Squires, Whitney, 2002). In normative systems the score reflects the groups performance as a whole on the instrument and not reflect skill competence. One method of criterion referenced standards traditionally established passing at 70% without regard to individual exam items. Meaning that the scoring standard does not reflect difficulty levels of individual items or the guess factor.

A second criterion referenced approach involves utilizing experts of the discipline to establish the minimal level of competency, or cut-off point, for the assessment (Angoff, 1971; Glass, 1978; Hambleton, 1998; Johnson, et. al. 2002). Angoff (1971) of the Educational Testing Service introduced an item based approach for determining a cut-off score that would more accurately represent skill competency. This approach is a multi-step process where experts of the discipline examine assessment items and predict how an individual who is competent in the field will perform. This complex process concludes with “the judges” establishing a passing rate for competency (Angoff, 1971; Hambleton, 1998, Johnson, et al., 2002.) Limitations include the complexity of the process; the selection and training of the experts; and the inconsistency of the experts’ conceptualization. Other challenges include the difficulty of recruiting experts

that have remained current in all areas of their field and who are willing to contribute the time required for this approach (Biddle, 1993).

CHAPTER 2

METHODS AND PROCEDURES

Counselor education programs are under increasing demand to implement technology-enhanced instruction and to provide students with instruction in technology-assisted counseling. While studies have identified ways counselors are utilizing technology in their practice, it appears that research has not been conducted to determine the technological competence of counseling students. To complete traditional course requirements, graduate students seem to have acquired basic skills such as creating documents with word processing programs and basic email tasks. However, it is unclear how proficient graduate students are in utilizing such research related programs (i.e., databases, statistical programs), presentation programs, presentation equipment, web page programs, synchronous Internet programs (i.e., chat rooms, video conferencing, and instant messenger). Also unknown is students knowledge regarding ethical and legal implications of utilizing technology to conduct counseling related tasks. As undergraduates have had greater experience in utilizing technology, it is expected that they will have greater competence with technology related tasks than graduate students (Jones, 2002; Quinn, 2002). The purpose of this study was to assess counseling students' technical competence.

Research Questions

1. What is the technological competence of counseling students?
2. Is there a difference in technological competence between beginning and advanced students?
3. Is there a difference in technological competence of students of different ages?

4. Do students in the school-counseling track have a higher level of technological competence than students enrolled in college/university or community counseling track?

Research Hypotheses

Hypothesis 1. Beginning and advanced counseling students will have equal technologically competence.

Hypothesis 2. Students will be equally competent in their technology skill level regardless of chronological age.

Hypothesis 3. Students enrolled in the school counseling track will have equal competence as students enrolled in the college/university or community track.

Survey Instrument Development

The guidelines for survey design provided by Fink and Kosecoff (1998) and Gillham (2000) were utilized in the developing the questionnaire. Section one contains demographic information including, program enrollment, age, gender, and ethnicity. Section two consists of twelve yes/no questions concerning technology experiences such as distance learning courses, web page design, and course related instruction concerning technology assisted counseling.

Section three of the questionnaire asked students to indicate how often they perform ten technology-based tasks. Based on the research conducted, a five-point Likert scale was chosen for this section (Fink, 1995; Fink & Kosecoff, 1998; Gillham, 2000; NCS Pearson, 1995; Thomas, S., 1999). To provide clarity for respondents, the scale is defined as N=Never, Y=Yearly (perform task once or twice a year), M=Monthly

(perform the task once or twice a month), W=Weekly (perform the task every week), and D=Daily (perform the task daily).

Section four contains fifty-two items addressing competencies specified by the ACES' (1999) *Technical Competencies for Counselor Education Students: Recommended Guidelines for Program Development*. The ACES' guidelines were compared to the *North Carolina Test of Computer Skills (NCTCS)* test bank. An adapted version of the NCTCS was created, as the instrument did not contain questions concerning web page development and counseling specific issues. Permission to utilize a portion of the NCTCS was requested and granted by the North Carolina School Board.

The NCTCS' questions that correspond with the ACES' guidelines were utilized to create the following items (a) 1 through 8 - word-processing skills, (b) 9 through 15 - spreadsheets, (c) 16 through 20 – databases, and (d) 21 through 28 – Internet. The balance of the questions were created to address the remaining ACES' competencies including presentation software (29–32), web development (33-40), computerized statistical package (41), and software programs developed for counseling (42-44). These questions were constructed based the principal researcher's experience in utilizing presentation software, as a Webmaster, and definitions of technical terms provided by Whatis.com (2003). The literature review for this study provided the basis for the questions addressing the ethical, legal (45-49), and treatment (50-52) issues presented by technology-assisted counseling.

Once the survey was developed, the researcher sought input from individuals who are known as experts in the utilization of technology in counseling. These individuals

are well known presenters on technology and counseling issues at state and national counseling conferences. Each has numerous journal and book publications and is active in professional counseling organizations concerning technical competencies for counselors. These individuals are also active researchers and counselor educators. Changes were made to improve the content validity of the instrument based on the recommendations of these individuals.

Data Collection Procedures

This study was conducted at one southwestern university of 30,000 students located in a large metropolitan area. Eligible participants were students enrolled and attending classes in a counseling preparation program during the Spring 2003 semester. Participants included doctoral and masters level students, as well as undergraduate students taking courses for a counseling minor. The principal researcher made arrangements with faculty to attend available classes to administer the instrument. Students were asked to anonymously complete the twenty-minute survey during class periods the last two weeks of the semester.

Definition of Terms

Technical competence is defined as proficiency in utilizing processing, spreadsheets, presentation, web design, Internet, and database programs.

Data Analysis

Analysis of the data was conducted with the SPSS 11 program utilizing the descriptive, Analysis of Variance, Tukey, and Cronbach's Alpha formulae.

CHAPTER 3
RESULTS AND DISCUSSION

Results

Participants

Of 318 students registered for classes for the Spring 2003 semester, one hundred and six were unavailable to participate in the study because they were not attending classes on campus or class time was not available for data collection. Students not attending classes included those who were registered for dissertation or web courses only. Of the 212 possible participants, 171 students completed the survey. Participants included 14 undergraduates taking courses toward a counseling minor, 132 masters level students, and 25 doctoral students (see Table 2).

Table 2
Educational Status

	Frequency	Percent
Undergraduate	14	8.2
Masters	132	77.2
Doctoral	25	14.6
Total	171	100.0

Of the 132 master's level students, 89 reported enrollment in the community track, 38 school counseling track, and 4 in the college/university track (one was unreported) (see Table 3). Of the 25 doctoral students, specialization was reported as play therapy (10), group (4), biofeedback (2), couple (2), adult/adolescent (2), career (1), and four were unreported (see Table 4).

Table 3
Master's Tracks

	Frequency	Percent
Community	89	52.0
College/University	4	2.3
School Counseling	38	22.2
Masters Total	131	76.6
Non Masters	40	23.4
Total	171	100.0

Table 4
Doctoral Specialties

	Frequency	Percent
Biofeedback	2	1.2
Career	1	.6
Group	4	2.3
Couple	2	1.2
Play	10	5.8
Adult & Adolescent	2	1.2
Not reported	4	2.3
Total	25	14.6
Non Doctoral	146	85.4
Total	171	100.0

At the time of the study, participants were enrolled in the following: undergraduate courses (14), beginning master's program (40), mid-program (72), concluding master's program (25), beginning doctoral program (11), and concluding doctoral studies (9).

Table 5
Program Level

	Frequency	Percent
Undergraduate	14	8.2
Beginning Masters	40	23.4
Mid-Masters	72	42.0
End Masters	25	14.7
Beginning Doctoral	11	6.4
End Doctoral	9	5.3
Total	171	100.0

Thirty-two males and 138 females participated in the study (one respondent did not indicate gender).

Table 6
Gender

	Frequency	Percent
Male	32	18.7
Female	138	80.7
Unreported	1	.6
Total	171	100.0

Participants' ages ranged from 16 – 65 with breakouts as follows 18-25 years of age (53), 26-30 years (33), 31-35 years (40), 36-40 years (12), 41-45 years (16), 46-50 years (10), and 51 or above (6). Of the 171 participants, ethnicity was reported as African-American (10), Asian (14), Caucasian (130), Hispanic (10), Native American (2) and Other (3).

Table 7
Ethnicity

	Frequency	Percent
African American	10	5.8
Asian	14	8.2
Caucasian	130	76.0
Hispanic	10	5.8
Native American	2	1.2
Other	3	1.8
Non-report	2	1.2
Total	171	100.0

Participation In Technically Based Activities

Section two of the survey asked study participants to identify the frequency of their usage or participation in various technically based activities. Of the 171 participating students 52% stated that they had taken a course via satellite and 55.6% had taken a course via the Internet. Students were asked if they would take another course via these modalities and 40.9% reported that they would take another course via satellite and 52.6% reported that they would take another course via the Internet.

The 171 participants were asked if ethical and legal issues of technology assisted counseling had been discussed in at least one of their counseling courses. Eighty-three percent had discussed ethical issues and 75.4% discussed legal issues in class. Discussion of on-line treatment issues was reported by 64.9% of study participants. Only 36.3% reported understanding how to evaluate the validity of information located on the Internet.

Section three continued exploration of how often students participate in web based activities such as communicating via email, listservs, chatrooms, personal web pages, and/or use of the Internet for research. While a large percentage of participants report utilizing email daily, very few appear to participate on email based discussion lists or chatrooms (see Table 7). Participants reported, “surfing the web” on a daily basis (49.1%) and 35.7% utilize the web for research on a weekly basis. Only 18.7% have created their own web pages.

Table 8

Participation in Internet Based Activities

	Never	Yearly	Monthly	Weekly	Daily	No response
E-Mail	2	3	0	18	144	4
Listservs	92	34	13	14	15	3
Chatrooms (class)	122	26	10	4	6	2
Chatrooms (personal)	123	22	16	7	2	2
Surf the Web	5	1	14	65	84	2
As Research Tool	10	11	65	61	20	4

Assessment of Technical Competencies

The survey concludes with an eight section, 52-item multiple-choice technical competency questionnaire. The raw scores were converted into percentage of correct answers and then a frequency analysis was executed. Of the 171 participants 19 scored between 80 - 89%, 57 between 70 - 79%, 52 between 60- 69%, and 43 below 59% (see Table 9).

Table 9
Overall Raw Score

	Frequency	Percent
80 - 89%	19	11.1
70 - 79%	57	33.3
60 – 69%	52	30.4
59% and below	43	25.1
Total	171	100.0

Reliability Analysis

Utilizing Cronbach's alpha, the overall assessment was found to be reliable at .8381.

Table 10
Instrument Reliability Analysis

	Alpha*	N of Cases	N of Items
Overall Assessment	.8381	171	52

* Preferred .80 Acceptable to .50

Hypothesis

One. Beginning and advanced counseling students will be equally technologically competent. An Analysis of Variance with a .05 level of significance found that there was no significant difference (.988) between competency scores and students' educational status (i.e., undergraduate, masters, or doctoral). The null hypothesis is accepted.

Two. Students will be equally competent in their technology skill level regardless of chronological age. An Analysis of Variance with a .05 level of significance found that there was no significant difference (.187) between competency scores and chronological age. The null hypothesis is accepted.

Three. Students enrolled in the school counseling track will be equally competent as students enrolled in the college/university or community. An Analysis of Variance with a .05 level of significance found that there was no significant difference (.352) between competency scores and track enrollment. The null hypothesis is accepted.

Discussion

Implications of Results

The goal of this study was to explore the technical competence of counseling students. Are counseling students technically competent? Utilizing a score standard of 80%, only 11.1% of the participants are technically competent. This means that 11.1% of the participants are proficient in utilizing word processing, spreadsheets, presentation, web design, Internet, and database programs.

If predictions found in the literature are correct, counselors may need to become technically competent whether or not they practice on-line. As a result of the movement of promoting technical proficiency in school system, it appears even more pressing that

school counselors become technical competent. According to NCATE (1997) school counselors who are not technically competent will lose marketability in the future.

Findings of this study, combined with feedback received from study participants, appear to support the position that acquiring technical competency requires accessing additional instruction. How can this need for instruction be addressed? As most universities have technology courses already in place, it seems unnecessary to include basic training within a counselor preparation program. Students might be asked to demonstrate technical competency prior to, or at the time of admission. Demonstration of technical competence could be accomplished via assessment, performance portfolio, or a combination of the two.

Programs may want to develop a course that focuses specifically on technology and counseling. However, it may be more effective to incorporate technology issues into established coursework. For example, in career development courses, inclusion of software utilized in career counseling could be reviewed within the course. Additionally, each class could be designed to include the recommended competencies such as use of presentation software, e-mail/chat rooms, and audio/video equipment. Instructors may wish to incorporate in all their courses information on the utilization of the Internet as a communication and research tool, including the use of various on-line resources, evaluation of the quality of on-line resources, and utilization of video conferencing. As with any counseling issue, addressing the ethical and legal issues of technology assisted counseling can be discussed in each course offered.

Limitations of the Study

This is a preliminary study and may not be generalizable as it is based on a sample from one university in the southwest.

Participation was on a voluntary basis. Students may have been less likely to participate if they were not comfortable with technology. Participants expressed frustration as the assessment was scheduled the last two weeks of the semester. Students reported that it was an unwelcome distraction from preparing for finals and completion of final projects.

Additional research and instrument development is needed. In the interest of attracting participants, the instrument was reduced to minimize the time commitment required. However, the small numbers within several of the sub-sections may be a factor in their respective low reliability scores. Additional items may provide a more accurate picture of the individual's skill/knowledge base. It is unclear if a multiple-choice inventory combined with a performance assessment would provide a more accurate assessment of competency. Continued research of this issue would be helpful.

Recommendations

The first recommendation would be to continue instrument development. Conducting the study at various universities and programs might be useful in providing a better representative sample of counseling students. Continued exploration of how various programs are addressing the issue of technical competence might also be helpful in understanding the needs of counseling students for technical training. In addition, identifying how various institutions are addressing this issue could provide

helpful information for other counselor education programs who might be considering implementing technical training for their students.

APPENDIX A

TECHNICAL COMPETENCIES FOR COUNSELOR EDUCATION STUDENTS:
RECOMMENDED GUIDELINES FOR PROGRAM DEVELOPMENT

Technical Competencies for Counselor Education Students:
Recommended Guidelines for Program Development
ACES Technology Interest Network (1999)

At the completion of a counselor education program, students should:

1. Be able to use productivity software to develop web pages, group presentations, letters, and reports.
2. Be able to use such audiovisual equipment as video recorders, audio recorders, projection equipment, video conferencing equipment, and playback units.
3. Be able to use computerized statistical packages.
4. Be able to use computerized testing, diagnostic, and career decision-making programs with clients.
5. Be able to use email.
6. Be able to help clients search for various types of counseling-related information via the Internet, including information about careers, employment opportunities, educational & training opportunities, financial assistance/scholarships, treatment procedures, and social and personal information.
7. Be able to subscribe, participate in, and sign off counseling related listservs.
8. Be able to access and use counseling related CD-ROM databases.
9. Be knowledgeable of the legal and ethical codes that relate to counseling services via the Internet.
10. Be knowledgeable of the strengths and weaknesses of counseling services provided via the Internet.
11. Be able to use the Internet for finding and using continuing education opportunities in counseling.
12. Be able to evaluate the quality of Internet information.

Endorsed by ACES Executive Council, April, 1999

APPENDIX B

TEN SUGGESTED COMPETENCIES FOR SCHOOL COUNSELORS

Ten Suggested Competencies for School Counselors Hartman, 1999

1. Possess basic computer-literacy skills. School counselors must know how to use a computer, computer peripherals (for example, printer, CD-ROMs, scanners, modems), and computer-application software, including word processing, spreadsheets, and presentation software. They also must be proficient in either a PC/Windows or a Macintosh platform, knowing how to access files, install software, and use on-line help menus.
2. Understand and be conversant in the current and emerging state of technology in education. Guidance professionals must have a general framework of knowledge on how technology is and is not affecting students, teachers, families, and their communities (especially low-income and minority). Specifically, we should expect school counselors to be familiar with state and national technology initiatives, quantitative and qualitative research on the use of technology in and out of schools, pedagogical issues and concerns raised by the use of computers, instructional-intervention methods made possible by computers, social and cultural inequities in access and use, and the current literature on issues affecting educational technology.
3. Comprehend and employ all major Internet components in guidance activities. The Internet will soon become the major communication tool available to schools and families. School counselors, then, must know how to incorporate such Internet tools in their work, from the World Wide Web, e-mail, mailing lists, chat rooms, and newsgroups and bulletin boards, to file transfer protocol (FTP), gophers, Telnet, and video-conferencing. They should know how to use the Internet to access professional and academic information, exhibit proper "netiquette" while on-line, and be able to locate and communicate with other school counselors worldwide. Counselors also should possess the skills and knowledge needed to create or participate in Internet forums, Internet projects, and distance-learning activities. They must learn how to contribute to the design, construct, and maintenance of their department's Internet Web page, as well as a personal home page. Most important, school counselors must be able to use technology to harness and gather resources for students and their families.
4. Articulate the implications and opportunities of technology. Counselors will have to examine and discuss how technology will change various aspects of their current duties and responsibilities, as well as the ways they have traditionally worked with students, parents, and colleagues. The paradigm shift occurring in the society at large will increasingly result in counselors' becoming more of the navigator, as opposed to the pilot, in the student-counselor relationship. As the navigator, counselors will have to know when and when not to use technology with their constituents, and how to help those constituents properly interpret and apply information gained through this new medium.

5. Act as an educated and objective consumer of technology. Technology is constantly changing. Newer and faster computers are being sold each year. Thousands of new software programs are being developed and marketed to schools as the “best” product to meet their students’ needs. So school counselors must learn how to objectively and systematically analyze the features, functions, and benefits of new products before they are purchased with departmental funds. They need, also, to be aware of software that will lessen the time spent on administrative tasks and permit them to spend more time working with students and families.
6. Grasp the ethical and legal implications of technology. Although we don’t yet know with certainty their full dimensions in the field, the ethical and legal implications of technology represent an area in which school counselors should be well versed. Current ethical standards for counseling must be examined and discussed to determine their applicability within the emerging technological environment. Legal experts should be consulted to ascertain that new guidelines might be needed when working within this emerging environment.
7. Construct group and “virtual” guidance activities using technology. Synchronous and asynchronous on-line activities that help students exercise judgment, develop values, and analyze and evaluate information and opinions should be implemented by school counselors. Likewise, they should design and place on their schools’ guidance Web pages Web-based activities for families, with a focus on how parents and other family members can assist a child’s academic, career, and social and personal development.
8. Use relational databases to monitor and articulate student progress. The use of data in planning and evaluating the effectiveness of an entire school and of its guidance department is critical. Collecting and analyzing the data should be a team effort, with input from the instructional staff, administrators, and parents. As a key member of this team counselors need to be knowledgeable and proficient in software that collects the aggregated and disaggregated data needed to review, monitor, and improve performance, specifically in the areas of student achievement, attendance, enrollment, discipline, socioeconomic status, mobility rate, language, dropout rate, graduation rate, college scholarships, postsecondary options, and standardized-test participation and results. Moreover, counselors should help make the data more available and understandable for parents, perhaps by including access to personal information on the Web.
9. Contribute to the development of their schools’ or districts’ technology plans. As schools develop and revise their written technology plans, counselors must have the technical know-how to present clearly the rationale behind various equipment and training requests. They must understand the language and the various components of a technology plan, be able to review and critique sample school-based technology plans, and knows how to develop an effective technology component for their guidance departments.

10. Identify national, state, and private funding for technology. An estimated \$5.2 billion or more will be spent on educational technology in fiscal 1999-2000, with 45 percent of the funding coming from the federal and state governments (25 percent and 20 percent, respectively) on a competitive basis. Districts pay for about 20 percent, and private sources account for approximately 15 percent of technology spending. All told, there is an unprecedented amount of money available to school counselors, if they are taught how to identify sources and submit effective proposals.

APPENDIX C

SCHOOL COUNSELING PROGRAM TECHNOLOGY PROFICIENCIES

School Counseling Program Technology Proficiencies
Hines 2002

1. Be a knowledgeable consumer and skilled, effective, and efficient user of computers, technology and the Internet.
2. Be knowledgeable and effective teacher and facilitator for teachers, students, and parents concerning educational and career technology resources
3. Be familiar with trends in the use of technology in education and their impact upon student academic achievement levels and social, educational, and career development; and intelligently contribute to development of a school wide technology plan.
4. Be able to use a wide variety of technology resources, including Internet tools appropriate software, and digit cameras, in the development, implementation, and evaluation of counseling and guidance activities.
5. Be able to develop short and long-term technology plans for the counseling department that provide students and families access to guidance and counseling services, and, articulate the opportunities, as well as the ethical and legal implications of technology as a counseling and guidance delivery tool.
6. Be able to design, create, and evaluate an effective, interactive Internet site for a counseling a guidance program.
7. Objectively evaluate counseling and guidance software and articulate software needs and plans to school technology professionals and commercial vendors.
8. Understand the ethical and legal implications of technology, including issues of equity and access and the implications of the digital divide upon students, families, and communities.
9. Effectively use technology, including relational databases, spreadsheets and the internet, that allows the analysis of student achievement and related data; and how, to use technology to support the change needed to raise student achievement levels.
10. Effectively use technology as a tool in advocacy efforts and the procurement of funds and resources.

APPENDIX D
TECHNICAL COMPETENCIES SURVEY

Technical Competencies Survey

I am enrolled as: Undergraduate Masters Doctoral My Gender: Male Female

My masters' track is Agency College/University School Counseling

My doctoral specialty is Biofeedback Career Group Couple Play School

My age: 18-25 26-30 31-35 36-40 41-45 46-50 51+

Ethnicity: African-American Asian Caucasian Hispanic Native American Other

Please respond to the following questions.

1. I have taken a counseling class via satellite. Yes No
2. I have taken a counseling class via the Internet. Yes No
3. I would take another counseling class via satellite. Yes No
4. I would take another counseling class via the Internet. Yes No
5. In class, we have discussed the ethical issues of utilizing technology in counseling. Yes No
6. In class, we have discussed the legal issues of utilizing technology in counseling. Yes No
7. In class, we have discussed treatment issues of on-line counseling. Yes No
8. In class, we have discussed how to evaluate the validity of Internet information. Yes No
9. What search engine(s) do you normally utilize? _____
10. What is your favorite research database? _____
11. I created my own web page. Yes No. If yes, which program did you use _____

Please indicate how often you perform the following tasks.

- N = Never
- Y = Yearly (perform task once or twice a year)
- M = Monthly (perform the task once or twice a month)
- W = Weekly (perform the task every week)
- D = Daily (perform the task daily)

1. Communicate via email.	N	Y	M	W	D
2. Participate on email discussion lists (listservs).	N	Y	M	W	D
3. Participate in chatrooms for class or professional purposes.	N	Y	M	W	D
4. Participate in chatrooms for personal purposes.	N	Y	M	W	D
5. Participate in on-line threaded discussions.	N	Y	M	W	D
6. Surf the web.	N	Y	M	W	D
7. Download music from the web.	N	Y	M	W	D
8. Conduct research on the web.	N	Y	M	W	D
9. Create CDs (music or text)	N	Y	M	W	D
10. Download data from the Internet	N	Y	M	W	D

Please circle the best response for each item.

1. When the cursor gets to the end of a line in a word processing program, what is the best way to move the cursor to the next line?
 - a. Press the escape key
 - b. Just keep typing
 - c. Press the return/enter key
 - d. Press the tab key.
2. Which of the following is used to indent text within a document?
 - a. Tabbing
 - b. Spacing
 - c. Sorting
 - d. Closing
3. What is a common term for a picture that can be pasted into a document?
 - a. Graphic
 - b. Clipboard
 - c. Paintbrush
 - d. Subscript
4. Which of the following statements about character formatting is true?
 - a. Character formatting refers to the appearance of text on the page
 - b. Character formatting refers to changing the default side margins
 - c. Headers and footers are examples of character formatting
 - d. Printing is an example of character formatting
5. The word processing feature that forces every line to end evenly at the right margin is called
 - a. Right justification
 - b. Left justification
 - c. Centering
 - d. Left margin
6. Repetitive text, such as your name and date, that you want printed at the top of each page of document can best be created with a
 - a. Header
 - b. Footer
 - c. Search and replace
 - d. Print preview
7. Text formatting that aligns the first line of a paragraph at the left margin, but the remaining lines are indented is known as
 - a. First line indent
 - b. Hanging indent
 - c. Horizontally centered
 - d. Left aligned text
8. Desktop publishing is a more sophisticated form of which of the following types of software?
 - a. Database
 - b. Graphing
 - c. Word processing
 - d. Browsing
9. In planning a personal expense allowance, the best type of software to use is
 - a. Database
 - b. Desktop publishing
 - c. Spreadsheet
 - d. Word processing
10. To format a range of cells in a spreadsheet to the nearest cent, using currency, set the number of decimal places to
 - a. Four
 - b. One
 - c. Three
 - d. Two
11. Which of these are examples of math functions used in spreadsheets?
 - a. And, or, Not
 - b. Copy, erase
 - c. Format, Range
 - d. Sum, Avg
12. In the spreadsheet formula $C7*(A9-A1)$, which math operation will calculate first?
 - a. Addition
 - b. Division
 - c. Multiplication
 - d. Subtraction
13. Data presented in the traditional spreadsheet can be illustrated by using:
 - a. Charts
 - b. Databases
 - c. Print shop
 - d. Word processor
14. You need to illustrate the demographics of students in the counseling program with data and graphics. You would use which of the following software applications?
 - a. Spreadsheet and statistical
 - b. Spreadsheet and database
 - c. Spreadsheet and graphics
 - d. Clipart and drawing

15. How are data organized in a spreadsheet?
- Lines and spaces
 - Layers and planes
 - Height and width
 - Rows and columns
16. Software used to organize large amounts of data is:
- Programming
 - Spreadsheet
 - Word Processing
 - Database.
17. All of the following are examples of electronic databases except which one?
- A physical collection of music CDs
 - A collection of survey responses
 - Computerized student information
 - Online catalog
18. To put data in a particular order what operation would you perform?
- Search
 - Retrieve
 - Sort
 - Quest
19. Doing research by using an on-line database instead of a printed set of similar information offers which advantage?
- Better charges
 - Easier to understand tables
 - Easier to read information
 - More current information
20. Which of these searches would result in the *greatest* number of matches.
- +Bermuda +quadrangle
 - Bermuda quadrangle
 - “Bermuda quadrangle”
21. A utility that locates resources by hunting for keywords and phrases is called a
- Navigator
 - Researcher
 - Search Engine
 - Yahoo
22. A _____ is a program that visits web sites and read their pages and other information in order to create entries for a search engine index.
- Web Searcher
 - Spider
 - Hotbot
 - Text editor
23. An online service that connects you to the Internet is a?
- Portal Service Company
 - Internet Service Provider
 - Gateway Service Insurer
 - Internet Connection Service
24. A software application such as Netscape or Explorer is what?
- Bookmark
 - Browser
 - Word Processor
 - Electronic file
25. Which pair of terms shows how E-mail and BBSs are related to each other?
- Mail and fax
 - Letters and announcements
 - Letters and packages
 - Ground and airmail
26. Documents included in an email are commonly called what?
- Extension
 - Posting
 - Link
 - Attachment
27. Synchronous communication over the Internet through an online service generally occurs via which of the following.
- Bulletin Board
 - Email
 - Chatroom
 - Listserve
28. What is the Internet slang word for the unwritten rules of Internet courtesy
- Internet Courtesy
 - Virtual Manners
 - Code 725
 - Netiquette
29. Which of the following is a presentation software?
- Quark
 - Powerpoint
 - CrossTalk
 - Frontpage
30. Which of the following is not presentation software
- Macromedia Director
 - Microsoft PowerPoint
 - Dreamweaver
 - Lotus FreeLance Graphics

31. To print handouts that include the slide presentation and lines for notes you would
- Select notes page from the print menu.
 - Select outline view from the print menu box.
 - Select handouts and set the number of slides per page to 3 from the print menu.
32. How do you include an animated graphic in a presentation?
- From the tool bar, click on Insert Picture and select the desired graphic from the list.
 - From the tool bar, click on Insert Movie and select the desired graphic from the list.
 - From the tool bar, click on Insert Picture, select the desired graphic, then select custom animation to animate the graphic.
33. HTML is
- Programming code for Pascal.
 - The language used to create documents on the World Wide Web.
 - Programming code for email.
34. URL stands for
- Uniform Response Language
 - Undifferentiated Resource Locator
 - Uniform Resource Locator
 - Unconditional Response Locator
35. Two valid extensions for a web graphic
- .txt; .tif
 - .bmp; .pct
 - .jpg; .gif
 - .ppt; .html
36. Which of the following are web development tools?
- Internet Explorer and Netscape
 - Dreamweaver and Netscape Composer
 - Frontpage and PowerPoint
 - Frontpage and Netscape
37. The http:// in <http://www.unt.edu/catalogs/catsched.htm> stands for
- Domain
 - Host
 - Protocol
 - Directory
38. www.unt.edu in <http://www.unt.edu/catalogs/catsched.htm> indicates the
- Domain
 - Host
 - Protocol
 - Directory
39. <http://www.acca.org> The extension of this web address indicates that this site is operated by
- Non-profit organization
 - Government agency
 - Academic institution
 - Network access group
40. Which of the following are critical in evaluating a web page?
- Authors Credentials
 - Intended Audience
 - Support for cited information
 - Physical Contact Information
 - All of the above
41. SPSS is a software program utilized to assess
- Personality Disorders
 - Career Choices
 - Statistical Calculations
 - Chemical Addiction
42. Select the computerized programs utilized in career planning
- Career Planner
 - Choices
 - Sigi Plus
 - B and C
43. Software to aid therapists in DSM-IV diagnosis of AXIS I disorders is called
- PsycManager
 - DTREE
 - Clinical Manager
 - Diagnosis Manager
44. CU-SeeMe serves a similar purpose to IRC
- True
 - False
45. Copyrighted software distributed free of charge on a trial basis.
- Shareware
 - Freeware
 - Probeware
 - Testware

46. A ____ is a set of related programs, located at a network gateway server that protects the resources of a private network from users from other networks.

- a. Server
- b. Virus protection program
- c. Router
- d. Firewall

47. A destructive computer code disguised as a useful piece of software.

- a. Bomb
- b. Trojan Horse
- c. Virus
- d. Worm

48. Encryption refers to

- a. Firewalls
- b. Anti virus programs
- c. Text Security
- d. Passwords

49. What is the issue that is cited as the biggest issue for online counseling?

- a. Security
- b. Payment
- c. Geography
- d. Training

50. The ethical guidelines for technology assisted counseling adopted by ACA and NBCC address which of the following

- a. Boundaries of competence.
- b. Intake Procedures
- c. Treatment Strategies
- d. A & C only
- e. All of the above.

51. Video conferencing addresses which of the following

- a. Security
- b. Treatment Strategies
- c. Lack of visual cues
- d. Boundaries of Competence

52. If a course is listed on the Internet as certified continuing education credits, it will apply to all certifications and licensure boards.

- a. True
- b. False

REFERENCES

- Angoff, W. H. (1971) Scales, norms, and equivalent scores. In R. L. Thorndike (Ed.), *Educational measurement* (2nd ed. pp 508-600). Washington, DC: American Counsel on Education
- Alterkruse, M. K. & Brew, L. (2000). Using the web for distance learning. In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp.129-141). Alexandria, VA: American Counseling Association.
- American Counseling Association (1999). *Ethical standards for Internet on-line counseling*. Retrieved February 15, 2003, from <http://www.counseling.org/resources/internet.htm>
- American Psychological Association (1996). *Services by telephone, teleconferencing and Internet*. Retrieved February 15, 2003, from <http://www.apa.org/ethics/stmnt01.html>
- Association for Counselor Education and Supervision (April, 1999). *Technical competencies for counselor education students: Recommended guidelines for program development*. Retrieved January 15, 2003, from <http://www.acesonline.net/competencies.htm>
- Association for Counselor Education and Supervision (May, 1999). *Guidelines for online instruction in counselor education*. Retrieved January 15, 2003, from <http://filebox.vt.edu/users/thohen/THOHEN/acesweb>
- Attridge, W. C. (2000). *Ethical considerations for Internet counseling*. Retrieved December 20, 2002, from Counseling and Personnel Services Clearing House database.

- Baggerly, J. (2002). Practical technological applications to promote pedagogical principles and active learning in counselor education. *Journal of Technology in Counseling, 2*(2). Retrieved January 22, 2003, from http://jtc.colstate.edu/vol2_2/baggerly/baggerly.htm
- Baltimore, M. L. (2002). Recent trends in advancing technology use in counselor education. *Journal of Technology in Counseling, 2*(2). Retrieved January 22, 2003, from http://jtc.colstate.edu/vol2_2/editor.htm
- Biddle, R. E. (1993). How to set cutoff scores for knowledge tests used in promotion, training, certification, and licensing. *Public Personnel Manager, 22*. Retrieved June 15, 2003, from <http://www.biddle.com/resources/articles/cutoff.pdf>
- Bloom, J., & Waltz, G. (2000). *Cybercounseling and cyberlearning: Strategies and resources for the millennium*. Alexandria, VA: American Counseling Association.
- Bluhm, H. P., & Kishner, S. (1988). The concerns and attitudes of school counselors towards computers. *The School Counselor, 36*, 47-53.
- Bobby, C. L., & Capone, L. (2000). *Understanding the implications of distance learning fro accreditation and licensure of counselor preparation programs*. Retrieved February 22, 2003, from <http://riccass.uncg.edu/digest/2000-06.html>
- Bowman, R. L., & Bowman, V. E. (1998). Live on the electronic frontier: The application of technology to group work. *Journal for Specialists in Group Work, 23*, 428-445.
- Brown, D. (2003). *Career information, career counseling, and career development*. Boston, MA: Allyn and Bacon.

- Cabaniss, K. (2002). Computer related technology use by counselors in the new millennium: A Delphi study. *Journal of Technology in Counseling*, 2(2). Retrieved February 22, 2003, from http://jtc.colstate.edu/vol2_2/cabaniss.htm
- Casey, J. A., (1998). Technology: A force for social action. In c. C., Lee & G. R. Walz (Eds.), *Social action: A mandate for counselors* (pp. 199-211). Alexandria, VA: American Counseling Association.
- Casey, J. A. (2000). Managing technology wisely: A new counselor competency. In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp.17-28). Alexandria, VA: American Counseling Association.
- Center for Teaching and Learning (1991). Grading systems. University of North Carolina at Chapel Hill. Retrieved June 16, 2003, from <http://ctl.unc.edu/fyc10.html>
- Chandras, K. V., (2000). Technology-enhanced counselor training: Essential technical competencies. *Journal of Instructional Psychology*, 27(4), 224-227.
- Clark, M.A., & Stone, C. B. (2002). Clicking with students: using online assignments in counselor education courses. *Journal of Technology in Counseling*. Retrieved March 10, 2003 from http://jtc.colstate.edu/Vol2_2/clarkstone.htm.
- Cornell, R. (1999). The onrush of technology in education: The professor's new dilemma. *Educational Technology*, 39(3), 60-64.
- Crawford, V. M., & Toyama, Y. (2002). *Assessing the educational technology proficiency of students and educators: A review of current policy, practice, and research – A final report*. Retrieved March 20, 2003 from http://www.sri.com/policy/ctl/pdfs/Task2_FinalReport3.pdf

- D'Andrea, M. (1995). Using computer technology to promote multicultural awareness among elementary school-age students. *Elementary School guidance and Counseling, 30*, 45-54.
- Davidson, C. T., & Jackson, M. L. (September, 1996). The web we weave: Using the Internet for counseling research. *CTOnline, 39(3)*. Retrieved January 15, 2003, from <http://www.conseling.org/ctonline/archieves/web2.htm>
- DuMez, E., (2002). Cyberpaths to ethical competence. In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp. 379-416). Alexandria, VA: American Counseling Association.
- Edwards, Y. V., Portman, T. A., & Bethea, J. (2002). Counseling student computer competency skills: Effects of technology course in training. *Journal of Technology in Counseling, 2(2)*. Retrieved February 23, 2003, from http://jtc.colstate.edu/V2_2/edwards.htm
- Engels, D. W., Caulum, D., & Sampson, D. E., (1984). Computers in counselor education: An ethical perspective. *Counselor Education and Supervision, 24*, 193-203.
- Fink, A. (1995). *How to analyze survey data*. Thousand Oaks, CA: Sage.
- Fink, A., & Kosecoff, J. (1998). *How to conduct surveys: A step-by-step guide*. Thousand Oaks, CA: Sage.
- Fong, M. L. (1997). Presidential address: making professional development a priority. *Counselor Education and Supervision, 37(2)*, 82-88.
- Furlong, M. J., & Hayden, D. C., (1993). Computer-assisted training of the DSMIII-R in counselor education. *Counselor Education and Supervision, 32(4)*, 298-310.

- Gale, A. U., & Mckee, E. C. (2002). An information literate approach to the Internet for counselors. *Journal of Technology in Counseling, 2*(2). Retrieved January, 22, 2003, from http://jtc.colstate.edu/vol2_2/gale.htm
- Galinsky, M. J., Schopler, J. H., & Abell, M. D. (1997). Connecting group members through telephone and computer groups. *Health and Social Work, 22*(3), 181-188.
- Gerler, E., Jr. (1995). Advancing elementary and middle school counseling through computer technology. *Elementary School Guidance and Counseling, 30*, 8-15.
- Gillham, B. (2000). *Developing a questionnaire*. New York: Continuum.
- Glaser, R. (1963). Instructional technology and the measurement of learning outcomes. *American Psychologist, 18*, 519-521.
- Glass, G. V. (1978). Standards and criteria. *Journal of Educational Measurement, 15*, 237-261.
- Granello, P. F. (2000). Historical context: The relationship of computer technologies and counseling. In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp.3-15). Alexandria, VA: American Counseling Association.
- Grohol, J. M. (1998). Future-clinical directions: Professional development, pathology, and psychotherapy on-line. In J. Gackenbach (Ed.) *Psychology and the Internet: Intrapersonal, interpersonal, and transpersonal implications*. (pp. 111-140). San Diego, CA: Academic Press.
- Hambleton, R. K. (1998). Setting performance standards on achievement tests: Meeting the requirements of title I. In L. Hansche (Ed.), *Handbook for the development of performance standards* (pp. 87-114). Washington, D. C.: U.S. Department of Education and the Counsel of Chief State School Officers.

- Hardesty, G., & Utesch, W. (1994). *Counselors and computers: A survey of compatibility and use*. Retrieved December 20, 2002, from ERIC database.
- Harris-Bowlsbey, J. H. (1983). *The computer information and the decider. The Counseling psychologist, 11*, 9-14.
- Harris-Bowlsbey, J. H. (2000). The Internet: Blessing of bane for the counseling profession. In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp. 39-49). In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp. 39-49). Alexandria, VA: American Counseling Association.
- Hartman, K. E. (1999). Technology and the school counselor. *Education Week*. Retrieved December 20, 2002, from <http://edweek.com/ew/1998/09hart.h18>.
- Hayes, B. G. (1999). Where's the data: Is multimedia instruction effective in training counselors. *Journal of Technology in Counseling, 1*(1). Retrieved January 20, 2003, from http://jtc.colstate.edu/vol1_1/multimedia.htm.
- Heinlen, K. T., Welfel, E. R., Richmond, E. N., & Rak, C. F. (2003). The scope of webcounseling: A survey of services and compliance with NBCC standards for the ethical practice of webcounseling. *Journal of Counseling and Development 81*(1), 61-69.
- Hines, P. L. (2002). Student technology competencies for school counseling programs. *Journal of Technology in Counseling, 2*(2). Retrieved February 23, 2002, from http://jtc.colstate.edu/vol2_2/hines/hines.htm.
- Huang, M., & Alessi, N. (1996). The Internet and the future of psychiatry. *American Journal of Psychiatry, 153*(7), 861-869.

- Hughes, R. S. (2002). Cybercounseling and Regulations: Quagmire or Quest? In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp. 321-338). Alexandria, VA: American Counseling Association. (pp. 321-338).
- International Association of Educational and Vocational Guidance (1999). *Declaration of counselor qualification standards*. Retrieved February 20, 2003, from <http://www.iaevg.org/English/English-About.html#Standards>.
- International Society for Mental Health Online (2000). *Suggested principles for the online provision of mental health services*. Retrieved February 20, 2003, from <http://www.ismho.org/suggestions.html>
- International Society for Technology in Education National Educational Technology Standards Project (2000). *Standards for students*. Retrieved January 15, 2003, from <http://cnets.iste.org/index2.html>.
- Jencius, M. (1999). *Technology-enhanced instruction: Developing your digital vision*. Retrieved February 23, 2003, from http://cybercounsel.uncg.edu/articals/jencius_Cyber_aca.htm
- Johnson, C. S. (March, 1983). Computer assisted counseling: Computer assisted guidance. Paper presented at the Annual Convention of the American Personnel and Guidance Association, Washington, DC.
- Johnson, C. S., & Sampson, J. P. (1985). Training counselors to use computers. *Journal of Career Development, 12*, 118-128.
- Johnson, R. R., Squires, J. R., Whitney, D. (2002). Setting the standard for passing professional certification examinations. Association for Investment Management

and Research. Retrieved June 16, 2003, from
www.fma.org/FMAOnline/certifications.pdf

Jones, S. (2002). The Internet goes to college. *Pew Internet and American Life Project*. Retrieved February 15, 2003, from www.pewinternet.org

Kalb, C. (2001, January 22). Seeing a virtual shrink. *Newsweek*, 137(4), 54-56.

Katz, M. R., & Shatkin, L. (1983). Characteristics of computer-assisted guidance. *The Counseling Psychologist*, 11, 9-14.

Leary, P. S. (2000). Technology and the continuing education of professional counselors. In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp.291-302). Alexandria, VA: American Counseling Association.

Lee, C. C. (2000). Cybercounseling and empowerment: Bridging the digital divide. In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp.85-94). Alexandria, VA: American Counseling Association.

Love, J. S. (2000). Cybercounseling v.cyberpolice. In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp.339-360). Alexandria, VA: American Counseling Association.

Lundberg, D. J., & Cobitz, C. I. (1999). Use of technology in counseling assessment: A survey of practices, views, and outlook. *Journal of Technology in Counseling*, 1(1). Retrieved January 20, 2003, from
http://jtc.colstate.edu/vol1_1/assessment.htm.

- Maheu, M. (1999). Telehealth: Re-tooling psychology for the 21st century. *Telehealthnet*. Retrieved February 10, 2003 from <http://telehealth.net/articles/article2.html>
- Maheu, M. (2000). Telehealth: The furthering of psychology as a profession. *Telehealthnet*. Retrieved February 10, 2003, from <http://telehealth.net/articles/further.html>
- McFadden, J. (2000). Computer-mediated technology and transcultural counselor education. *Journal of Technology in Counseling*, 1(2). Retrieved January, 23, 2003, from http://jtc.colstate.edu/vol1_2/transcult.html
- Morrissey, M. (1997). NBCC webcounseling standards unleash intense debate. *CTOnline*. Retrieved January 15, 2003, from www.counseling.org/CTOline/archives/ct1197/webcounseling.htm
- Myers, H. E., & Gibson, D. M. (2000). *Technology competence in counselor education: Results of a national survey*. Retrieved January 15, 2003, from the ERIC Clearinghouse database.
- Myrick, R. D., & Sabella, R. A. (1995). Cyberspace: New place for counselor supervision. *Elementary School Guidance & Counseling*, 30(1), 35-44.
- National Board of Certified Counselors (1997). *The practice of Internet counseling*. Retrieved January 20, 2003, from <http://www.nbcc.org/ethics/webethics.htm>
- National Career Development Association, (1997). *Guidelines for the use of the Internet for provision of career information and planning services*. Retrieved February 23, 2003, from <http://ncda.org/about/poinet.html>.

National Council for Accreditation of Teacher Education (1997). *Technology and the new professional teacher: Preparing for the 21st century classroom*. Retrieved February 23, 2003, from <http://ncate.org/accred/projects/tech/tech-21.htm>

National Council for Accreditation of Teacher Education (2000). *NCATE 2000's Technology Expectations*. Retrieved February 23, 2003, from <http://www.catalise.org/news.html>.

National Education Association (2002). *Technology in schools*. Retrieved March 10, 2003 from <http://www.nea.org/technology/>.

NCS Pearson, (1995). Choosing the right survey scale. Retrieved February 2, 2003, from <http://www.ncspearson.com/research-notes/95-03.htm>.

Nickelson, D. W., & Stamm, B. H. (1998). Telehealth: Emerging opportunities for psychology. *TelehealthNet*. Retrieved February 23, 2003, from <http://telehealth.net/articles/emerging.html>

North Carolina State Board of Education (2003). *Tests of computer skills*. Retrieved March 20, 2003, from <http://www.ncpublicschools.org/testing>

OII (2003). *Introduction to the web*. Retrieved February 10, 2003, from <http://oii.org/cyberu/html/webintro.htm>

Online Computer Library Center. *Technology statistics*. Retrieved February 10, 2003, from <http://wcp.oclc.org>

Ormondroyd, J. (2001). *Critically analyzing information resources*. Cornell University Library. Retrieved March 10, 2003 from <http://www.library.cornell.edu/okuref/research/skill26.htm>.

Owen, D., & Weikel, W. (1999). Computer utilization by school counselors. *Professional School Counseling*, 2, 179-182.

- Quinn, A. C., Hohenshil, T., & Fortune, J. (2002). Utilization of technology in CACREP approved counselor education programs. *Journal of Technology in Counseling*, 2(2). Retrieved January 22, 2003, from http://jtc.colstate.edu/vol2_2/quinn/quinn.htm.
- Regents of the University of Minnesota, Twin Cities (2003). Grading systems. Center for Teaching and learning University of Minnesota . Retrieved June 16, 2003, from <http://www1.umn.edu/ohr/teachlearn/MinnCon/grading1.html>
- Rowand, C. (2000). Teacher use of computers and the Internet in public schools. *National Center for Education Statistics*. Retrieved March 4, 2003, from <http://nces.ed.gov/pubinfo.asp?pubid=2000090>).
- Rust, E. B. (1995). Applications of the International Counselor Network for elementary and middle school counseling. *Elementary School Guidance & Counseling*, 30(1), 16-25.
- Sampson, J. P., Kolodinsky, R. W., & Greeno, B. (1997). Counseling on the information highway: Future possibilities and potential problems. *Journal of Counseling and Development*, 75(3), 203-212.
- Selmi, P. M., Klein, M. H., Greist, J. H., Johnson, J. H., & Harris, W. G. (1982). An investigation of computer-assisted cognitive-behavior therapy in the treatment of depression. *Behavior Research Methods and Instrumentation*, 14, 181-185.
- Sexton, T. L. (1998). Reconstructing counselor education: Supervision, teaching, and clinical training revisited. *Counselor Education and Supervision*. 38(1,) 2-4.
- Smerdon, B, & Cronen, S. (2000). Teachers' tools for the 21st century: A report on teachers' use of technology. National Center or Educational Statistics. Retrieved March 4, 2003, from <http://nces.ed.gov/pubinfo.asp?pubid=2000102>.

- Smith, G. (1994). *Statistical reasoning* (3rd ed.) United States: McGraw-Hill.
- Stamm, B. H. (1998). Clinical applications of telehealth in mental health care. *Professional Psychology: Research and Practice*, 26(6). Retrieved February 10, 2003, from <http://www.apa.org/journals/pro/pro296536.html>.
- Steenbarger, B., & Smith, H. (1996). Assessing the quality of counseling services: Developing accountable helping systems. *Journal of Counseling and Development*, 75 (2), 145-150.
- Stevens, D. T., & Lundberg, D. J. (1998). The emergence of the Internet: Enhancing career counseling education and services. *Journal of Career Development*, 24, 195-208.
- Stone, C. B., & Turba, R. (1999). School counselors using technology for advocacy. *Journal of Technology in Counseling*, 1(1), Retrieved February 23, 2003, from http://jtc.colstate.edu/vol1_1/advocacy.htm.
- Stone, C. B., & Seabrooks, J. (2001). Virtual teaming among pre-service professionals in school counseling, special education, and social work services. *Journal of Technology in Counseling*, 1(2). Retrieved February 10, 2003, from http://jtc.colstate.edu/vol1_2/teaming.htm
- Sussman, R. J. (2000). Counseling over the Internet: Benefits and challenges in the use of new technologies. Retrieved February 23, 2003, from <http://cybercounsel.uncg.edu/book/manuscripts/internetcounseling.htm>
- Thomas, M. B. (1999). Presidential address: Advocating for meaningful linkages to our global future. *Counselor Education & Supervision*, 38(3), 131-141.
- Thomas, S. J. (1999). *Designing surveys that work!* Thousand Oaks, CA: Corwin.
- Traub, J. (1997, October 20). Drive-thru U. *New Yorker*, p. 115.

- Van Horn, S. M., & Myrick, R. D. (2001). Computer technology and the 21st century school counselor. *Professional School Counseling, 5*(2).
- Wagman, M., & Kerber, K. W. (1978). *Dilemma Counseling System*. Minneapolis: Control Data Corporation.
- Wall, J. E., (2000). Technology-delivered assessment: Power, problems, and promise. In J. W. Bloom & G. R. Walz (Eds.), *Cybercounseling and cyberlearning: Strategies and resources for the millennium* (pp. 237-251). Alexandria, VA: American Counseling Association.
- Weik, M. H. (1961). The ENIAC story. *The Journal of the American Ordnance Association*. Retrieved April 8, 2003, from <http://ftp.arl.mil/~mike/comphist/eniac-story.html>
- Weizenbaum, J. (1965). ELIZA: A computer program for the study of natural communication between man and machine. *Communication of the Association for Computer Machine, 9*, 36-45. (Versions of ELIZA can be found at <http://manifestation.com.h.sabren.com/neurotoys/eliza.php3> & <http://www.ai.ijs.si/eliza/eliza.html>).
- Whatis.com (2003). On-line technical definitions. Retrieved March 20, 2003 from <http://whatis.techtarget.com/>