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Addressing the Technology Gap in Counselor Education: Identification of Characteristics in Students that Affect Learning in College Classrooms

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Abstract

As advancements in technology continue to revolutionize the field of counseling, certain populations of students still encounter difficulties incorporating technology in the classroom. Non-traditional students, many who possesses years of professional experience, struggle academically due to a lack of technological expertise and knowledge. Low technological expertise potentially decreases students' self-efficacy, enjoyment, and performance (Baturay & Bay, 2010). Consequently, it is imperative that counselor educators use a variety of strategies with non-traditional students struggling with technology. Thus, the purpose of this article is to propose guidelines encompassing self-efficacy, the evolution of technology and competencies required for assisting students in the classroom.

Keywords

Addressing the Technology Gap in Counselor Education: Identification of Characteristics in Students that Affect Learning in College Classrooms

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As advancements in technology continue to revolutionize the field of counseling, certain populations of students still encounter difficulties incorporating technology in the classroom. Non-traditional students, many who possesses years of professional experience, struggle academically due to a lack of technological expertise and knowledge. Low technological expertise potentially decreases students' self-efficacy, enjoyment, and performance (Baturay & Bay, 2010). Consequently, it is imperative that counselor educators use a variety of strategies with non-traditional students struggling with technology. Thus, the purpose of this article is to propose guidelines encompassing self-efficacy, the evolution of technology and competencies required for assisting students in the classroom.

Keywords: Technology, counselor education, self-efficacy, technology gap, non-traditional students

The integration of technology within traditional college classrooms has increased substantially over the last century (Baggerly, 2002). Despite this increased integration, limited research exists that explores the effect of technology on counselor education students. This lack of research leaves unanswered questions regarding the effectiveness of technology to enhance training in counselor preparation programs (Granello & Wheaton, 2003). According to Wantz et al. (2003) an achievement gap exists among counselors-in-training. Specifically, gaps between technologically advanced students and ones who lack procedural skills with computers, software, and other contemporary tools are more commonplace in today's classrooms. Web-based education, once thought of as science fiction, is rapidly becoming the norm in graduate programs (Baturay & Bay, 2010). Commensurate with the rapidly changing technology, students have evolved dramatically as well (Ketelhut & Nelson, 2010). Terms such as multimedia technology, virtual environments and computer supported learning resonate with the modern student (Gomez, Wu, & Passerini, 2010).

However, not all students are familiar and respond to contemporary mediums of education. Bridging this technology gap is especially difficult in counseling courses, as many students are resistant to change (Kenny, 2008). Resistance to change may stem from the traditional/face-to-face methods used in counseling courses. For instance, many

students are accustomed to taking their time and writing information on topics as a lecture unravels (Greenidge & Daire, 2007). In contemporary classrooms, this physical writing component is sometimes missing. The following example illustrates the absence of physical writing and a traditional method in a classroom setting. Take the professor who completes presentations beforehand and e-mails it out before class or prints it off and gives to students during the lecture. In either scenario, a student accustomed to having hands on, personal involvement with note taking no longer has that option (Greenidge & Daire, 2007). Thus, some students feel removed physically from contemporary classroom methods and prefer traditional procedures.

Historically, differences between students existed naturally and instructors adjusted class instruction to accommodate for disparities (Stinson, 2006). However, large technological discrepancies between students adversely affect instructors, curricula and programs (Blackmore, Tantum, & Van Deurzen, 2008). For instance, instructors experience pressure from some students to incorporate technology in the classroom. Nevertheless, instructors sometimes feel uneasy gearing classes towards advanced students and potentially neglecting ones who struggle with technology (Baranchik & Cherkas, 2002).

There are a number of problematic characteristics germane to students who are resistant to technological advancements. If students begin to struggle, instructors must be able to identify problem behaviors immediately (Berger, 2004). Lewis and Coursol (2003) found five fundamental characteristics of students who struggle with technology. These types of students, operationally defined as nontraditional, have a number of identifying characteristics. Lewis and Coursol asserted that these students come from older generations, have a rudimentary understanding of contemporary tools, refuse to use technology, are easily frustrated with technology, and possess low to moderate technical skills. Nontraditional students, for the purposes of this article, refer to individuals possessing all of the qualities stated by Lewis and Coursol.

As nontraditional students increasingly enter or reenter colleges and universities, professors must be aware of the intra-generational differences in technological abilities. Lewis and Coursol (2003) suggested instructors are overlooking struggling students in the classroom. Continuously neglecting the technology gap can potentially lead to adversely affecting the integrity of counselor education programs. In our article, we acknowledge the problem of the technology gap and discuss strategies addressing this concern within counselor education programs. Thus, the main topics of this article include the following topics: (a) the evolution of technology in the classroom, (b) self-efficacy, stress and anxiety's effects on struggling students' abilities, and (c) strategies for addressing the technology gap.

Evolution of Technology in the Classroom

As Gomez et al. (2010) indicated, the classroom is a continuously changing environment. Prior to the new millennium, it was commonplace for instructors to write on chalkboards and speak from the front of a classroom as students took notes onto a sheet of paper. In contemporary classroom environments, instructors and students engage in a completely different educational experience. For instance, chalkboards are now whiteboards, and PowerPoint presentations displayed onto an overhead screen accompany educators' lectures. Students continue to take notes; however,

the medium has changed as some students utilize mobile computers (laptops) in class (Baggerly, 2002; Hayes, 1999).

Similar to the changes in instructor and student methods, technological advances have modified the environment of the classroom as well. Undergraduate and graduate courses now transcend the physical boundaries of the classroom setting (Ebner, Lienhardt, Rohs, & Meyer, 2010). For example, most programs now offer classes with an online component. A mixed mode classroom environment involves some face-to-face class sessions and some online class meetings. Ebner et al. suggested that this sort of technology allows instructors and students to take learning beyond the classroom setting. They further stated that technology (i.e. on-line classes and microblogs) support informal learning beyond the classroom. Additionally, there are educational programs entirely online, which offer limited, if any, face-to-face instruction (Hayes, 1999). Examples of these programs include those at The University of Phoenix and Capella University (Leech & Holcomb, 2004). These technologically enhanced programs/courses allow students from multiple locations to be in a class simultaneously. As a result, technological advances have increased students' opportunities to engage in educational experiences (Gomez et al., 2010). For example, Renfro-Michel, O'Halloran, and Delaney (2010) asserted technological advances actually increased students' grades and work in a counselor education course.

Evolution of Technology in Counselor Education

Counselor education courses involving face-to-face classroom instruction have also benefited from a variety of technological advancements (Kenny, 2008).

From multimedia presentations to incorporating social media (e.g., movies) into classrooms, technology has enhanced beginning counselors' learning (Adams, 2006; Hayes, 2008a; Hayes, 2008b). In counselor education, technology has had a tremendous impact on the direction of experiential courses (Hayes & Robinson, 2000; Hayes, Taub, Robinson, & Sivo, 2003). For example, counseling students have benefited from live supervision via video conferences in practicum and internship classes (Flamez, Smith, Devlin, Richard, & Luther, 2008). Furthermore, technological advancements such as electronic portfolios increase counseling students' ability to obtain gainful employment. By using technology to extend beyond the physical classroom environment, counseling students have opportunities that facilitate learning experiences (Greenidge & Daire, 2007). For instance, handheld computers allow counseling students to manage clients, schedule appointments, and keep track of clients' short and long-term goals (McGlothlin, Jencius, & Page, 2008).

Technology, however, is not simply limited to increasing student learning (Hayden, Poynton, & Sabella, 2008). With increasing demands on both instructors' and students' time, communication between both parties is poor at times (Poling, 1994). In order to remedy this problem between instructors and students, email communication is an effective supplement to in-person communication (Chandras, 2000). Additionally, many students use online library search engines when collecting information for research papers, research critiques and dissertations (Onwuegbuzi & Jiao, 1998). Thus, technology has advanced learning with counselor education students in and beyond the classroom environment (Hamilton, Larsen, McDowell, & Brown, 2008).

With the advancements in technology increasing at such an intensive rate, professional groups have become involved to insure that instructors and students utilize the tools well (Baturay & Bay, 2010). The Association for Counselor Education and Supervision (ACES) Technology Interest Group is one such organization that understands the importance of technology in counseling. Recently the group advocated for technological competencies in counselor education programs. In response to growing concerns regarding technology, ACES created 12 technology competencies that are expectations for both counselor educators and counselors-in-training (ACES Technology Interest Group, 2007; Chandras, 2000). In developing technological competencies, ACES acknowledges that technology affects counselor education programs in the class and in the field (i.e., practicum, internship). In order to address the needs of students, ACES (2007) suggested three primary concentrations for adapting technological advancements within counselor education programs. These concentrations compliment the teaching goals that are commonly associated with counselor educators, such as research, practice and teaching (Hayes, 2008b; Hayes & Robinson, 2000). By incorporating technological advancements, both students and instructors now have the opportunity to learn within a variety of educational settings. Thus, technology presents many new educational opportunities.

The Technology Gap

Within counselor education, similar to other academic programs, there has been an increase in the use of technology in the classroom (Hayes, 2008a; Hayes, 2008b). A partial explanation behind the expansion of technology is due to the increase of younger educators entering the field of academia (Ketelhut & Nelson, 2010). According to Hayes (1999) younger instructors have the knowledge and interest necessary to utilize contemporary methods (technology) in the classroom. Conversely, similar to non-traditional students, older educators are more likely to be hesitant with incorporating technology in the classroom (Chandras, 2000). Chandras further stated that the hesitation felt by older instructors lends credence to the notion that the technology gap is partially generational. However, despite the existence of this technological gap in counselor education, students favor the use of technology in class (Hayes et al., 2003).

Hayes and Robinson (2000) claimed that the majority of students in counseling programs greatly appreciate the usage of technology in the class. Gomez et al. (2010) corroborated Hayes and Robinson's findings, as they suggested several implications from using technology. First, they suggested that students perceive technology as adding value to their education. Second, students reported that they enjoy learning more. Third, students experienced higher-level outcomes due, in part, to their appreciation of the instructor incorporating technology into class curricula.

Taking the preceding into consideration, a number of counselor educators currently use technology regularly in the classroom. For example, Quinn, Hohenshil, and Fortune (2002) concluded that 65 percent of the counselor education programs they surveyed utilized some form of technology during class. Their study looked at 44 counselor education programs accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). According to Flamez et al. (2008), methods of instruction in counselor education traditionally relied on

role-plays, didactic training, and self-evaluation. Technology allocates to students novel methods that can enhance traditional methods of learning. However, not all students enjoy or endorse the use of technology in counselor education (Hayes, 2008a). For instance, some students with low technological self-efficacy feel frustration or anxiety with classes incorporating a high degree of technology (Bandura, 2009). Thus, it is imperative that counselor educators become aware of technology sources that assist in improving students' ability in the classroom (Renfro-Michel, O'Hallaran, & Delaney, 2010).

Anxiety and Stress

Anxiety and stress are factors that developing counselors encounter, either academically, socially, or both (Gladding, 2009). Understanding how to deal with these factors productively and positively can enhance the therapeutic skills of counselors in training. Additionally, learning how to have a healthy balance /well-being aids in being a productive counselor and avoiding burnout (Hill, 2009). Unfortunately, a number of nontraditional students encounter undue amounts of stress due to having a lack of technological skills (Lewis & Coursol, 2003). Excessive stress potentially leads to poor performance in the classroom, workplace, and social arena (Bandura, 1997). Counselor education programs, with an emphasis on counselor wellness and strength, at times, overlook students struggling with remedial technology skills.

Although counselor education programs are excellent in enhancing or improving self-awareness, there is always room for improvement, especially in regards to technology. As stated earlier, some form of technology is incorporated into the curriculum in most programs (Quinn et al., 2002). Continuously neglecting the

development of technological skills, while simultaneously calling for those abilities in class, potentially sends mixed messages to students. For example, instructors may claim they do not place a high priority for technological skills in their classes. This claim, coupled with the hands-on nature of the profession, leads some students to feel as if it is unnecessary to improve their technological abilities (Hayden et al., 2008). Yet in class, many of the activities incorporate some knowledge of technology to enhance learning (Flamez et al., 2008). Thus, counselor educators may explicitly claim one position, while actually implementing another.

Students with low technological self-efficacy who experience mixed messages may not know how to deal effectively with them. Due to this ineffectiveness, students' sense of personal capability may decline when working with others on class activities that require technological skills. If a student's sense of personal capability lowers poor academic functioning can occur (Martin, 2004). As Baturay and Bay (2010) stated, web-based technologies are becoming more mainstream in contemporary graduate programs. Because technology is rapidly becoming the norm rather than the exception, students lacking technological skills may begin to feel inadequate. Students who suffer from feelings of inadequacy in the classroom are not only affected themselves, but others around them (i.e., other students) are affected (Bandura, 2001). Furthermore, students with negative feelings such as inadequacy can experience a high degree of anxiety and stress (Bandura, 2005). Stress then affects students when working with others on projects that require the involvement of technology (Mckay, Atkins, Hawkins, Brown & Lynn, 2003). Thus, anxiety may occur, and coupled with other factors, a student's ability to be

productive in the classroom may be impacted.

Onwuegbuzie and Jiao (1998) cited a previous study conducted by Onwuegbuzi in 1997 which explored library anxiety and the effects that it may have on students in higher education. Onwuegbuzi and Jiao (1998), stated "Students who are unable to write a research proposal adequately tend to have high levels of anxiety associated with lack of perceived competence in using the library and the mechanical equipment and lack of knowledge of the library" (p. 236). Similarly, when students with low technology self-efficacy attempt to utilize contemporary tools for research purposes, anxiety and stress may increase (Onwuegbuzi & Jiao, 1998). This increase in anxiety and stress may result in students struggling with completing educational assignments. As stated by Gomez et al. (2010), one of the reasons behind utilizing instructional technology is that it aids in facilitating learning. However, some students struggle with technology and their belief in their capability declines as well. These internal struggles with technological self-efficacy may occur repeatedly, despite the student having knowledge regarding the subject area (Bandura, 2009).

Effects on Student Self Efficacy

Consequences arising from the technology gap include fellow students critically analyzing the ability of struggling students. The effects of a critical analysis by peers potentially affect students' personal beliefs about their capability and skills (Bandura, 2008). Students' negative self-beliefs reflect social evaluations by peers that label the struggling student as substandard (Bandura, 1989). Students who struggle receive the implied message (i.e., other students) that their efforts and struggles to understand technology are futile. Bandura (1997) stated that social evaluations have a powerful influence on how a person assesses his or her self. Without positive social support, students struggling with technology may feel isolated and personally relegate themselves to a lower position in the classroom (i.e., always the one asking for assistance in regards to technology).

In modern classroom settings, the environment plays a critical role in the interpersonal and professional development of students. *Social Cognitive Theory* (SCT; Bandura, 1986) labeled this interactional phenomenon *reciprocal determinism*. SCT affirms that there is a triadic interaction effect between *cognition* (interpersonal thoughts), *behavior*, and *environment*. A bi-directional influence exists between the three (cognition, behavior, and environment), as each affects the other in varying magnitudes. Bandura (1997) postulated that:

> Efficacious people are quick to take advantage of opportunity structures and figure out ways to circumvent institutional constraints or change them by collective action. Conversely, inefficacious people are less apt to exploit the enabling opportunities provided by the social system and are easily discouraged by institutional impediments. (p. 6)

Relating SCT to counselor education, nontraditional students may understand the concepts discussed in the classroom. However, in regards to technology, the same students, though intellectually efficient, may receive a negative label and deemed inefficacious. These students are unable to take opportunities from the triadic interactions and utilize them to their benefit. Thus, the classroom, instructor and students provide an environment that influences the student's

self- efficacy positively or negatively (Bandura, 1997).

Strategies to Address the Technology Gap

Over the last several decades, there has been a technological boom in the traditional classroom on all educational levels (Baggerly, 2002). Students as young as preschool age learn to play, work, and communicate using a computer (Ketelhut & Nelson, 2010). Therefore, when these students advance to college, they have a greater understanding of how to utilize a number of technological resources. Nontraditional students, on the other hand, did not have the opportunity to be involved in the technological boom during their school experiences (Baggerly, 2002). Nevertheless, the expectations for nontraditional students are to perform at the same level as their younger peers in courses saturated with the use of technology (Baily, 2009). In order for nontraditional students to compensate for the lack of technology experience, remediation programs need implementation in classroom settings.

The development of remediation programs with a focus on how to use technology in an educational setting can provide support for students who are struggling. These remediation courses assist instructors with identifying students who are more likely to have issues with technology, as well as with other achievement gap problems occurring in the classroom (Norman, Ault, Bentz, & Meskimen, 2001). An example of a remediation program is a basic skills class, such as using PowerPoint, creating hyperlinks, and accessing the internet.

One way to address the technology gap involves creating a prosocial learning environment. Facilitating a warm, caring environment empowers students to learn and process their experiences within the educational environment (Cornelius-White, 2005). Students who feel empowered to learn may develop a number of positive attributes. For example, students may express greater confidence in their capabilities, as well as demonstrate a willingness to learn about innovations utilized within the classroom (Schunk & Meece, 2005). Without the integration of a prosocial learning environment, students' personal beliefs and skills may deteriorate exponentially, making recovery from the technology gap a greater challenge (Mckay et al., 2003). Thus, it is critically important to have technology assessments and technology workshops readily available for students.

Assessments

Assessments are a vital resource for identifying deficiencies or strengths in a specific subject or field (Creswell, 2002). Students struggling with technology have direct and indirect effects on the way their peers perform in the classroom (Bandura, 2001). However, assuming that a student has trouble with technology may not be enough to suggest entrance into a remediation program. A possible strategy to alleviate this dilemma is to provide students with an assessment or questionnaire that can gauge their level of technological competency. Hayes (1999, 2008a) cited Morrell (1992) when discussing the use of a Computer-Assisted Instruction (CAI) Survey for Students, to assess student aptitude concerning the use of technology in the classroom. We created an assessment specifically for counselor education students adapted directly from the twelve Technology Competencies created by the ACES Technology Interest Group (Appendix A). These assessments assist with increasing both students' and instructors'

awareness of individuals who have difficulty using technology.

Workshops

Aside from remediation programs, possible interventions for students struggling with the use of technology include technology workshops and support groups. Technology workshops appeal to different types of people, ranging from senior citizens to CEOs. In these workshops, instructors introduce participants to a variety of computer applications, such as software and internet usage. Workshop strategies help students because most of the technology (software, websites and search engines) is not user friendly. For individuals who have had little experience using software in the past, this guidance is necessary (Seals, Clanton, Argawal, Doswell & Thomas, 2008). Technology workshops provide an educational learning opportunity for students to become more knowledgeable and proficient with technology. These workshops are at a number of universities, in the technology office, technical support, and student services. In some institutions, a graduate student or student-worker conducts the workshops. Counselor educators can support students by giving them extra credit for attending workshops.

Case Illustration

Diana (pseudonym) is an extremely talkative 50 year old married mother of four children. She recently chose to shift careers after working 20 years as an elementary school teacher. She returned to college in hopes of attaining a master's degree in the field of mental health counseling. During her first semester, she enrolled in two classes. The classes included Introduction to Counseling and Counseling Theory. Both classes emphasized group work, culminating in large group projects. During the first few weeks, Diana feels confronted by the differences in her current program in comparison to her college experience more than 20 years earlier. Her instructors utilized Microsoft PowerPoint as one of their main teaching tools, often emailing their presentations to students the night before class. Diana had an email account; however, she used it infrequently to communicate with others. Additionally, she found that sending and downloading attachments was a difficult task for her. Subsequently, she often found herself asking for the assistance from her children.

The Gap

As Diana brainstormed with her group members, she was hesitant to become involved with anything that required designing PowerPoint presentations. She watched as peers added video and sound to presentations, as well as formatting slides so that they were aesthetically pleasing to the audience. She experimented with the program before and was able to complete basic formatting, as well as adding pictures. However, animation was something entirely new to her. She began to depend on her peers for the technical parts of the presentations and mainly contributed by providing content and research. Beyond presentations, Diana also found that she had difficulty navigating the library website when searching for journal articles and books for her research papers. She often asked for help from her children again, which she found embarrassing.

Anxiety and Stress

Gradually, Diana began to withdraw from her schoolwork and became less active in class. She attended classes and took notes. However, in regards to writing papers and

participating in the development of group projects, she would do the least amount of work needed to complete the assignment. The technology was overwhelming for her and she had difficulty asking for help. She was used to being very independent and this dependency on others was frustrating and anxiety provoking for her.

Strategies

Diana's counseling theory professor, Dr. Holmes (pseudonym), began to notice the difference in her work ethic. He approached her after class and inquired about the change. She explained that she was having a difficult time grasping the use of technology, which made her feel inferior to her peers. He proposed that she come to his office, during office hours, and complete a technology competency awareness questionnaire (Appendix A) to pinpoint her level of difficulty. She agreed and she completed the quiz with a score of 34 out of 80 possible points. This signified that she truly struggled with technology and was in need of assistance.

Together they reviewed the quiz and found that, although she felt confident using basic software like Microsoft Word and a variety of internet search engines, her understanding of technology did not extend beyond this basic level. Dr. Holmes suggested that Diana attend a workshop that the school provided on basic information utilizing technology in everyday life circumstances. By acknowledging and pinpointing her struggles, Diana's professor was able to provide resources for her that she needed to develop greater competence in utilizing technology. Furthermore, the instructor served as a support system to help guide her through the process of attaining her degree.

Discussion

In order to prepare students to be future counselors, counselor educators must ensure that students are fully engaged in the learning process (Hayes, 2008a). If a student is experiencing low technological self-efficacy, then instructors have a responsibility to insure that students obtain the best education possible. Instructors can provide this education by supplying resources to build technological skills. If trends in the use of technology continue at the same rate as this past century, counselor education will need to continue to evolve into a more technologically driven environment (Hamilton et al., 2008). Therefore, safeguards should be in place in order to protect students who need supplementary assistance when navigating the technologically advanced classroom.

The ACES Technology Interest Network (2007) suggested technology competencies for both counselors and counselor educators. These technology competencies offer guidelines of suggested skills for future counselors and counselor educators in order to learn before entering the field. Limited research exists exploring the technology gap in the counselor education classroom. As such, counselor education needs additional research to explore the factors needed to assist struggling students. Potential areas of exploration include individual factors related to culture, generational gap, an individual's socioeconomic standing and the influence of gender roles (Castillo & Kempner, 2008). This research may assist with further identifying groups of individuals who fall within the technology gap and help these individuals obtain assistance to develop their technology competency.

References

Adams, C. (2006). Powerpoint, habits of mind, and classroom culture. *Journal of Curriculum Studies, 38*, 389–411.

Association for Counselor Education and Supervision Technology Interest Network. (2007). *Technical competencies for counselor education: Recommended guidelines for program development*. Retrieved from http://files.changemywebsite.com/774116/doc/2007_aces_technology_competencies.pdf

Baggerly, J. (2002). Practical technological applications to promote pedagogical principles and active learning in counselor education. *Journal of Technology in Counseling, 2*(2). Retrieved from http://jtc.colstate.edu/Vol2_2/baggerly/baggerly.html

Baily, C. (2009) Reverse intergenerational learning: A missed opportunity? *AI and Society, 23*, 111-115.

Bandura, A. (1989). Social cognitive theory. In R. Vasta (Ed.), Annals of child development. Vol. 6. *Six Theories of child development* (p. 1-60). Greenwich, CT. JAI Press.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: W. H. Freeman and Company.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1-26.

Bandura, A. (2005). Adolescent development from an agentic perspective. In F. Urdan & F. Pajares (Eds.), *Self-efficacy beliefs of adolescents* (pp. 1-43). Charlotte, NC; Information Age Publishing.

Bandura, A. (2008). An agentic perspective on positive psychology. In S.J. Lopez (Series Ed.). *Positive psychology: Exploring the best in people.* Vol.1. (p. 167-196). Westport, CT: Greenwood Publishing Company.

Bandura, A. (2009). Social cognitive theory of mass communications. In J. Bryant and M.B. Oliver's (Eds.). *Media effects: Advancements in theory and research* (2nd ed., pp. 99-124). Mahwah, NJ. Lawrence Erlbaum.

Baranchik, A., & Cherkas, B., (2002). Identifying gaps in mathematics preparation that contribute to ethnic, gender, and American/foreign differences in pre-calculus performance. *The Journal of Negro Education, 71*, 253-268.

Baturay, M.H., & Bay, O.M. (2010). The effects of problem-based learning on theclassroom community perceptions and achievement of web-based education students. *Computers & Education, 55,* 43-52.

Berger, T. (2004). Computer-based technological applications in psychotherapy training. *Journal of Clinical Psychology, 6*, 301-315.

Blackmore, C., Tantum, D., & Van Deurzen, E. (2008). Evaluation of e-learning outcomes: Experience from an online psychotherapy education programme. *Open Learning, 23*, 185–201.

Castillo L.G., & Kempner, K.P. (2008). Online career counseling with Mexican American adolescents. *Journal of Technology in Counseling, 5,* Retrieved from http://jtc.colstate.edu/Vol5_1/Castillo.htm

Chandras, K. (2000). Technology-enhanced counselor training: Essential technical

competencies. *Journal of Instructional Psychology, 27*, 224-227.

Cornelius-White, J. H. D. (2005). Teaching person-centered multicultural counseling: Collaborative endeavors to transcend resistance and increase awareness. *Journal of Humanistic Counseling, Education and Development*, *44*, 225-239.

Creswell, J.W. (2002). *Educational research: Planning, conducting and evaluating quantitative and qualitative research*. Upper Saddle River, New Jersey: Pearson Inc.

Ebner, M., Lienhardt, C., Rohs, M., & Meyer, I. (2010). Microblogs in higher education: A chance
to facilitate informal and process-oriented learning? *Computers & Education, 55*, 92-100.

Flamez, B. Smith, R.L., Devlin, J.M., Ricard, R., & Luther, M.S. (2008). Learning styles and instructional preferences: A comparison of an online and traditional counseling course. *Journal of Technology in Counseling, 5*. Retrieved from http://jtc.colstate.edu/Vol5_1/Flamez.htm

Gladding, S. (2009). *Counseling: A comprehensive profession* (6th ed.). Upper Saddle River, NJ: Pearson.

Gomez, E.A., Wu, D., & Passerini, K. (2010). Computer-supported team based learning: The impact of motivation, enjoyment and team contributions on learning outcomes. *Computers & Education, 55,* 378-390.

Granello, P. F., & Wheaton, J. E. 2003. Development of a CD-ROM for Computer Aided Instruction and Research. In G. R. Walz & J. W. Bloom (Eds.)*, Cybercounseling and cyberlearning encore: Beginning and advanced strategies and resources* (pp. 275-286). Greensboro: ERIC Counseling and Student Services Clearinghouse.

Greenridge, W.L., & Daire, A.P. (2007). The application of gaming technology in counselor education programs. *Journal of Technology in Counseling 4*. Retrieved from http://jtc.colstate.edu/Vol4_1/Daire2/Daire2.htm

Hamilton, J., Larsen, S.M., McDowell, B.A., & Brown, S. (2008). Using online technology for student support services. *Journal of Technology in Counseling, 5*. Retrieved from http://jtc.colstate.edu/Vol5_1/Hamilton.htm

Hayden, L., Poynton, T.A., & Sabella, R.A. (2008). School counselor's use of technology within the ASCA national model's delivery system. *Journal of Technology in Counseling, 5*(1). Retrieved from http://jtc.colstate.edu/Vol5_1/Hayden.htm

Hayes, B.G. (1999). Where's the data: Is multimedia instruction effective in training counselors. *Journal of Technology in Counseling, 1*. Retrieved from http://jtc.colstate.edu/vol1_1/multimedia.htm

Hayes, B.G. (2008a). The use of multimedia in counselor education: A creative teaching strategy. *Journal of Creativity in Mental Health, 3*, 243- 253.

Hayes, B.G. (2008b). Counselor education: Integration of teaching strategies. *Journal of Technology in Counseling, 5*. Retrieved from http://jtc.colstate.edu/Vol5_1/Hayes.htm

Hayes, B. G., & Robinson, E. H., III (2000). Assessing counselor education student's attitudes toward computers and multimedia instruction. *Journal of Humanistic Education and Development, 38*, 132-141.

Hayes, B. G., Taub, G. E., Robinson, E. H., III, & Sivo, S. A. (2003). An empirical investigation of the efficacy of multimedia instruction in counseling skill development. *Counselor Education & Supervision, 42*, 177-188.

Hill, C.E. (2009). *Helping skills: Facilitating exploration, insight, and action.* (3rd ed.). Washington, DC: American Psychological Association.

Ketelhut, D.J., & Nelson, B.C. (2010). Designing for real-world scientific inquiry in virtual environments. *Educational Research, 52*, 151-167.

Kenny, M. (2008). Using technology to educate graduate counseling students on child maltreatment. *Journal of Technology in Counseling, 5*. Retrieved from http://jtc.colstate.edu/Vol5_1/Kenny.htm

Leech, L.L., & Holcomb, J.M. (2004). Leveling the playing field: The development of a distance education program in rehabilitation counseling. *Assistive Technology*, *16*, 135-143.

Lewis, J., & Coursol, D. (2003). Counselor preparation for a cyberworld: Curriculum design and development. *Cybercounseling and Cyberlearning: An Encore*, 19-34

Martin, J. (2004). Self-regulated learning, social cognitive theory, and agency. *Educational Psychologist, 39*, 135–145.

McGlothlin, J., Jencius, M., & Page, B. J. (2008). Self-produced counseling applications for handheld computers. *Journal of Technology in Counseling, 5*. Retrieved from http://jtc.colstate.edu/Vol5_1/McGlothlin.htm

Mckay, M.M., Atkins, M.S., Hawkins, T., Brown C., & Lynn, C.J. (2003). Inner city African- American parental involvement in children's schooling: Racial socialization and social support from the parent community. *American Journal of Community Psychology, 32*(1/2), 107-114.

Morrell, P. D. (1992). The effects of computer-assisted instruction and students' achievement in high school biology. *School Science and Mathematics, 92*(4), 177-181.

Norman, O., Ault, C.R., Bentz, B., & Meskimen, L. (2001). The Black-White ``Achievement Gap" as a perennial challenge of urban science education: A sociocultural and historical overview with implications for research and practice. *Journal of Research in Science Teaching*, *38*, 1101-1114.

Onwuegbuzi, A.J., & Jiao, Q.G. (1998). The relationship between library anxiety and learning styles among graduate students: Implications for library instruction. *Library and Information Science Research*, *20*, 235-249.

Poling, D.J. (1994). Email as an effective teaching supplement. *Educational Technology, 34*(5), 53-55.

Quinn, A.C., Hohenshil, T.H., & Fortune, J. (2002). Utilization of technology in CACREP approved counselor education programs. *Journal of Technology in Counseling, 2*(2). Retrieved August 24, 2009 from http://jtc.colstate.edu

Renfro-Michel, E.L., O'Halloran, K.C., & Delaney, M.E. (2010). Using technology to enhance adult learning in the counselor education classroom. *Adultspan Journal, 9* (1), 14-25.

Seals, C.D., Clanton, K., Argawal, R., Doswell, F., & Thomas, C.M. (2008). Lifelong learning: Becoming computer savvy at a later age. *Educational Gerontology*, *3*, 1055–1069.

Schunk, D.H. & Meece, J.L. (2005). Self-efficacy development in adolescences. In F. Urdan & F. Pajares (Eds.), *Self-efficacy beliefs of adolescents* (pp. 71-96). Charlotte, NC; Information Age Publishing.

Stinson, D.W. (2006). African American male adolescents, schooling (and mathematics): Deficiency, rejection, and achievement. *Review of Educational Research, 76*, 477-506.

Wantz, R.A., Tromski,D.M., Mortsof, C. J., Yoztheimer, G., Brill, S. & Cole, A. (2003).
Incorporating distance learning in counselor education programs: A research study.
Cybercounseling and Cyberlearning: An encore, 327-344.

Appendix A

Technology Competency Quiz

Developed in part from the ACES Technology Competencies for Counselor Education:
Recommended Guidelines for Program Development (ACES Technology Interest Group, 2007)

Take the following survey of your current technology competencies, rating the following items
on this scale:
1 = Not Competent
2 = Somewhat Competent
3 = Competent
4 = Extremely Competent

1 2 3 4   1. I know how to turn on the computer.

1 2 3 4   2. I am familiar with and can use Microsoft word.

1 2 3 4   3. I am familiar with and can use Microsoft PowerPoint.

1 2 3 4   4. I know how to open a pdf file.

1 2 3 4   5. I have an email account and I am able to send, receive, and respond to emails.

1 2 3 4   6. I can attach a file to an email.

1 2 3 4   7. I know how to access a website link provided within a PowerPoint
presentation.

1 2 3 4   8. I can find scholarly articles through online search engines.

1 2 3 4   9. I am familiar with counseling related listservs and know how to subscribe,
participate in, and sign off of them.

1 2 3 4   10. I can use software to develop a web page.

1 2 3 4   11. I can use software to develop a group presentation.

1 2 3 4   12. I know how to use audiovisual equipment such as video recorders, audio
recorders, projection equipment, video conferencing equipment, and playback
units.

1 2 3 4   13. I know how to use computerized statistical software.

1 2 3 4   14. I am familiar with and can use computerized testing, diagnostic, and career decision-making programs with clients.

1 2 3 4   15. I know how 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.

1 2 3 4   16. I know how to access and use counseling related CD-ROM databases.

1 2 3 4   17. I have knowledge of the legal and ethical codes which relate to counseling services via the internet.

1 2 3 4   18. I am familiar with the strengths and weaknesses of counseling services provided via the Internet.

1 2 3 4   19. I know how to use the internet for finding and using continuing education opportunities in counseling.

1 2 3 4   20. I know how to evaluate the quality of information obtained from the internet.

Total Score: _____ out of 80

65-80   Technology Master- you are one with technology!

55-64   Technologically savvy-you feel competent in most aspects of technology with some room for growth.

40-55   On the fence of accepting technology-you feel competent in some areas, but could benefit from additional training to enhance your competence in technology.

0-39   Technologically challenged-HELP!-you could benefit from extensive training in the use of technology.

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