PRINCIPLES OF GOOD PRACTICE IN DISTANCE EDUCATION
AND THEIR APPLICATION TO PROFESSIONAL EDUCATION AND
TRAINING IN PSYCHOLOGY

Report of the
Task Force on Distance Education and Training in Professional Psychology
American Psychological Association

June 2002

1 The opinions expressed, conclusions reached, and recommendations offered in this report are those of the Task Force members and are not to be interpreted as necessarily reflecting the endorsement as policy or otherwise of the American Psychological Association.
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SECTION I

INTRODUCTION

Background

Distance education programs abound in higher education, particularly in degree programs in undergraduate education, and in certificate and graduate programs in education and business. Currently, about 56% of all regionally-accredited colleges and universities offer courses or degree/certificate programs through distance education and learning models (CHEA 2002). Although individual courses or other forms of curriculum are offered through distance learning technology in most fields of study, including the professions, relatively few professional degree programs outside the fields of education and business are available through distance education. Exceptions to that are the nursing and social work professions, each of which have in their professional training accreditation standards provisions for distance learning (National League for Nursing Accreditation Commission, 1998-99 Winter; Council on Social Work Education, 2000).

Regional accrediting bodies have been working in concert with the Council of Higher Education Accreditation (CHEA) to develop guidelines in distance education for application to colleges and universities in general. From these efforts, in collaboration also with the Western Interstate Commission on Higher Education (WICHE), the Council of Regional Accrediting Commissions (2001) has summarized what it considers to be best practices for electronically offered degree and certificate programs. Other higher education associations also have offered policy guidance related to distance learning in an effort to develop “industry guidelines.” Examples exist in the American Association of University Professors (1999) statement on distance education, the Council of Graduate Schools (1998) policy statement on distance education, and the Institute for Higher Education Policy (2000) benchmarks for success in Internet-based distance education.
While several degree programs offered through distance education in professional areas of psychology are currently in effect, only one is currently accredited through the APA Committee on Accreditation (CoA). That is the doctoral program in clinical psychology offered by The Fielding Institute. Faculty of that institution have pioneered models of distance learning for many years (Rudestam and Schoenholtz, 2002). Other programs, even those already accredited through more traditional education models, may be reluctant to experiment with distance education without some guidance as to how to assess quality in a manner that the CoA and other credentialing organizations in psychology (e.g., the Association of State and Provincial Psychology Boards, the National Register for Health Service Providers in Psychology, etc.) would find acceptable. Although the Association of State and Provincial Psychology Boards (ASPPB) has expressed interest in guidelines pertaining to evaluating both foundational and continuing professional education offered through distance learning formats, principles for assessing quality in doctoral programs offered in professional psychology through distance education have simply not been developed.

Yet, there continues to be a demand for such programs among place-committed persons who wish to complete their professional education and training in psychology but are not residing in an area close to a campus-based program and for any number of reasons cannot move. Requests for information about opportunities to obtain doctoral degrees for professional practice through distance education models continue to be received, especially from those with master’s degrees in psychology or related areas who are providing psychological or other human services in rural, frontier, or off-shore communities. At the October 2000 Surgeon General’s Conference on Children’s Mental Health, participants highlighted the need for part-time, distance education programs of quality for upgrading professional credentials and continued professional education in new areas or roles within the health professions (e.g., re-training for primary care roles). Much the same rationale has been used in the APA’s initiatives of the past few years to develop guidelines for telehealth services in the practice of psychology (Jerome et al, 2000; Reed et al, 2000).

In summary, to address this demand and to remain abreast developments in quality assurance guidelines for distance education in other professions and higher education
institutions, an APA Task Force on Distance Education in Professional Psychology was authorized in February 2001 by the Board of Directors upon the recommendation of APA Recording Secretary, Ronald Levant, Ed.D., who was appointed to chair the task force. The Task Force was funded for one year (with a subsequent extension to complete its report). Its goal was to identify principles and address issues that can be used to guide the assessment and assurance of quality in distance education models applied to professional education and training in psychology.

The Task Force

Task force members and support staff are listed in Appendix A. They were selected to reflect appropriate diversity by gender, ethnicity, and professional background related to the task force goal. Of the latter, for example, there was representation from the former Telehealth Task Force, from universities and professional schools, service provider constituencies in rural and off-shore areas, and with CPE program experience. Task force membership included representation from the Board of Educational Affairs (BEA) and the Committee on Accreditation (CoA).

The task force has worked throughout its existence via teleconference and listserv communications, meeting as a full group only once for a two-day meeting in December 2001. Prior to that meeting, task force members worked in sub-groups to review the literature on distance education practice principles, with assistance of the Education Directorate, and to address particular issues of technology and pedagogy in distance education that could affect professional education and training in psychology through such means. The task force worked within the framework of the following definitions of terms.

Definitions

Three terms are relevant to work of the Task Force: distance education, electronically-mediated education, and distributed education. They are defined as follows:
• **Distance education** is defined as a formal educational process in which the majority of the instruction occurs when student and instructor are not in the same place. Instruction may be synchronous or asynchronous. Distance education may employ correspondence study, or audio, video, or computer technologies (Regional Accrediting Commissions).

• **Electronically-mediated education** covers a wide set of electronic applications and processes such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio- and videotape, satellite broadcast, interactive TV, and CD-ROM.

• **Distributed education** is the application of electronically-mediated instruction to students in traditional residential programs and programs or courses of instruction in which students and instructors are separated by time and/or distance (Levant).

**Distance Education in the Professions**

As noted above, distance education has been used primarily in degree programs in undergraduate education, and in certificate and graduate education in the professions of education and business. In the health and human services area, social work and nursing have begun to develop guidelines for distance education (Council of Social Work Education, 2000; National League for Nursing Accrediting Commission, 1998-99, Winter) and reports have appeared on the use of distance education in these fields (Forster & Rehner, 1998; Freddolino, 1998; Herdtner & Martzolf, 2001; Lewis & Kaas, 1998; Macy, Rooney, Hollister, & Freddolino, 2001; Petracchi, 2000; Potts & Kleinpeter, 2001). Other professional education applications of distance learning models have been reported for continuing medical education (Engel, Browne, Nyarango, & Akor, 1992), counseling (Hermanson, 1988), rehabilitation counseling (Eldredge, McNamara, Stensrud, Gilbride, Hendren, Siegfried, McFarlane, 1999; Jason, 2000; Kauppi, 1999; Smart, 1999), and behavioral analysis (Shook & Eyer, 1995).

In psychology, there is a paucity of literature on distance education models and little more on the use of electronically-mediated education (Hansen & Gladfelter, 1996; Rudestam & Newton, 1992, Stadtlander, 1998). There is a BEA Task Force on Technology in Education, but
is focus to date has been more on applications to undergraduate than to graduate and professional education. Indeed, professional psychology is at the early stages of engaging in either distance education or electronically-mediated education as defined above. From the perspective of the Task Force, further advancement in each of these areas of pedagogy will enable the profession to meet several challenges.

1. It would increase access to professional education and training among those for whom this is not currently available, e.g., to “place-committed” individuals located in isolated rural, frontier, and off-shore locations, as well as those who simply prefer this option. This will entail addressing a series of other challenges discussed below.

2. It would allow electronically-mediated education to be used as a resource to upgrade the quality of traditional residential programs. For example, instruction in didactic courses might be improved by using an on-line platform to post lecture notes which have hyperlinks to full-text journal articles. Another example: using chat rooms and electronic bulletin boards to help integrate the diverse training experiences of advanced students on their internships. This challenge would come under the heading of “distributed education,” as defined above, and in its most ambitious form would involve pedagogical efforts to match the goals of specific parts of the curriculum to the available and emerging technology.

3. It would allow application of the “best practices” in telehealth care to the challenge of providing clinical supervision of appropriate quality to place-committed students in remote locations (Kanz, 2001).

Purpose of this Document

The purpose of this document is to provide a report to the Board of Directors, and other interested APA governance groups or members of APA, about the current issues related to the use of distance education in professional education and training in psychology.
The report discusses principles and concepts based on the definitions of distance education presented and a review of the available literature, including the literature of regional and specialty accrediting bodies. “Principles for Distance Education: General,” outlines nine domains that speak to principles of best practice for programs considering distance education. “Quality Assessment and Assurance for Distance Education in Professional Psychology” examines issues associated with measures of quality in training programs, such as, assessment and evaluation of programs. Also, included in the report are appendixes that reference best practice principles endorsed by various accreditation commissions (Appendix B) and a discussion of the current status and capacity of the hardware and software technology used in the delivery of distance education (Appendix C).
SECTION II

PRINCIPLES OF GOOD PRACTICE IN DISTANCE EDUCATION

Introduction

While there are areas of divergence regarding the use of technology in psychological training and service provision, there appears to be consensus on several fronts. First, the increased use of technology in both psychological service and training is inevitable and is generally accepted in higher education circles (Jerome, et al., 2000; Maheu, 2001; Wong, 1999). Second, shifts in technology have the potential to dramatically impact the way in which education takes place, opening up many new opportunities (Gullahorn et al., 1998; IHEP, 1999b; Oblinger, Barone, & Hawkins, 2001; Sattem et. al., 2000). Further, technology itself is neither inherently good nor bad (Reed, McLaughlin, & Milholland, 2000). Finally, distance education can either be done well or done poorly (IHEP, 1999d). "The important issues are not technical but curriculum-driven and pedagogical" (CRAC, 2001, p.4).

Distance education is defined by the regional accrediting commissions (CRAC, 2001) as a formal educational process in which the majority of the instruction occurs when student and instructor are not in the same place. Instruction may be synchronous or asynchronous. Distance education may employ correspondence study, or audio, video, or computer technologies. The regional accrediting commissions also agree that best practices in distance education (see Appendix B) simply extend to emergent forms of learning the well-established essentials of institutional quality that have been applied already in regional accreditation practices (CRAC, 2001). These essentials are as follows:
1. That education is best experienced within a community of learning where competent professionals are actively and cooperatively involved with creating, providing, and improving the instructional program;

2. That learning is dynamic and interactive, regardless of the setting in which it occurs;

3. That instructional programs leading to degrees having integrity are organized around substantive and coherent curricula which define expected learning outcomes;

4. That institutions accept the obligation to address student needs related to, and to provide the resources necessary for, their academic success;

5. That institutions are responsible for the education provided in their name;

6. That institutions undertake the assessment and improvement of their quality, giving particular emphasis to student learning; and,

7. That institutions voluntarily subject themselves to peer review.

Distance education can be employed across the spectrum of learning communities to provide training to place committed individuals and to enhance traditional educational programs. While individual regional accreditation commissions may vary in how they articulate their standards of review, they have reached consensus on five general domains of “best practice” in reviewing distance education programs and institutions. These domains were initially developed by the Western Cooperative for Educational Telecommunications (WETC, 2000). A review of the literature suggests further delineation of relevant categories may be useful. What follows is a distillation of the extant information related to distance education, organized into nine domains:

(1) Access; (2) Learning Community; (3) Faculty Support; (4) Student Support; (5) Curriculum and Instruction; (6) Evaluation and Assessment; (7) Institutional Context and Commitment; (8)
Facilities and Finance; and (9) Library and Learning Resources. Within the domains are principles of good practice (italicized statements) with supporting references.

Domain 1: Access

- *Programs implementing technology-supported, distanced delivery provide evidence of careful attention to the issue of accessibility.*

Access issues include barriers that may be physical, cultural, linguistic, temporal, geographic, sociopolitical, sociocultural, socioeconomic (Stamm, in press, b). The use of technology is often seen as expanding access to education or services (Gullahorn, *et al.*, 1998; Jerome, *et al.*, 2000). In fact, this is seen as a primary benefit of distance education (Lewis, *et al.*, 1999; Oblinger, Barone, & Hawkins, 2001; NEA, 2000a). The range of delivery systems, training models and learning activities has dramatically increased with the introduction of various forms of technology, particularly those that facilitate interactivity (Technology Applications Advisory Group [TAAG], 2001). Changes in the quality and availability of technology, such as reduced cost of hardware and software and increased availability of Internet and variability of bandwidths, continues to make internet-based delivery more accessible to a wider population (Kunekawa, 2000; TAAG, 2001; Shapiro and Rohde, 2000).

Technology offers the possibility of overcoming some of the limitations of the traditional classroom environment (Gullahorn, *et al.*, 1998). In many cases, technology can increase access for rural and other traditionally underserved populations (e.g., those facing barriers of time, distance, physical disability) (Jerome, *et al.*, 2000; Reed, McLaughlin, & Milholland, 2000; Stamm, 1998, Willis, 2001). However, limits to accessibility that arise from the use of particular technological platforms may also be a useful consideration (IHEP, 1999b; Jerome, *et al.*, 2000; Lewis, et. al, 1999; Shapiro and Rohde, 2000; Reed, McLaughlin, & Milholland, 2000). Finally,
technology may increase access for non-traditional groups such as Army University Access Online (AUAO), which provides access to education for enlisted soldiers across the globe.

The matches between the nature of the student population, student demographics and the technological platforms selected are important. General factors to be considered include age, cultural and socioeconomic background, experience and learning, (CRAC, 2001; Lewis, et al, 1999; Gullahorn, et al, 1998; Jerome, et. al., 2000; Oblinger, Barone, & Hawkins, 2001; Sattem et al, 2000). The demand for training comes increasingly from non-traditional students, who may be working or balancing family and other demands with education (Gullahorn, et al, 1998; Oblinger, Barone, & Hawkins, 2001). Therefore the importance of the program components, and the technologies employed, gains importance.(CRAC, 2001). For example, rural populations are limited by access to telecommunications services (Reed, McLaughlin, & Milholland, 2000; Stamm, 1998; Stamm in press). Some ethnic minority populations have lower rates of access to computers and internet services (IHEP, 1999b; Jerome, et al, 2000; Shapiro & Rohde, 2000; Stamm, in press, b). Persons with disabilities face additional barriers to the use of certain technologies (Lewis, et. al, 1999; Shapiro and Rohde, 2000) and the Americans with Disabilities Act should influence program planning (Oblinger, Barone, & Hawkins, 2001).

**Domain 2: Learning Community**

- *Facilitation of interactions in the learning community relies on the delivery method and technologies employed.*

The challenge is to ensure that the "interactive experience that are the hallmark of [graduate] education are integrated in the delivery" (Gullahorn, et al, 1998). The relationships between instructor and learning and levels of interaction can, in fact, be enhanced by technologically mediated distance delivery (Carnevale, 2000; Oblinger, Barone, & Hawkins,
Faculty hold a more positive view of distance courses and give those courses higher ratings when the degree of student interaction is higher (NEA, 2000a). "The importance of appropriate interaction (synchronous or asynchronous) between instructor and students and among students is reflected in the design of the program and its courses, and in the technical facilities and services provided" (CRAC, 2001, p.7).

**Domain 3: Faculty Technical Support**

- *Reasonable efforts are made to ensure the competency level of faculty and instructors to offer quality services through the methods of delivery and technological platforms selected.*

Many authors feel that faculty must be provided with an orientation to distance learning, technology training, and on-going technical support (Carnevale, 2000; CC, 2000; CRAC, 2001; CSWE, 2000; Gullahorn, *et al.*, 1998; IACET, 2001; NEA, 2000b; SREB, 2000-2001; Stamm & Perednia, 2000; Wong, 1999). Currently, no standard of competency exists for distance education faculty (Saba, 2001), but specific faculty skills in program design and delivery, technology application, evaluation, etc. are summarized in Truman (1995, p.9). Gullhorn and colleagues (1998) provide a list of possible training areas on pp.30-31. Also, for faculty of professional psychology programs, domains of competency identified for professional practice in telehealth (Reed, McLaughlin, and Milholland 2000) may be relevant. In any case, the academic institution shares in the responsibility for provision of continuing faculty education and training to build proficiencies related to the model of distance education in which faculty will be involved and the technologies they will be using.

- *Financial, human, and systems resources influence the choice of delivery models and technological platforms.*
Additional funding may be needed to support the technological infrastructure and increased demands of advanced learning technologies. (Sattem et al, 2000). These pressures may occur at the faculty, departmental and institutional level. The costs of incorporating distance education may vary; significant up-front, capital investment may be required (NLNAC, 1998-99; Oblinger, Barone, & Hawkins, 2001; Wong, 1999). Sustainability rests on cost-effectiveness and other economic implications (IACET, 2001). The equipment and technical resources to support distance education create a complex system. Some system elements include: (a) transmission (phone/cable, rate, compression standards, radio frequency, carrier) (Stamm & Perednia, 2000); (b) network support (hardware, software) (Stamm & Perednia, 2000); (c) data storage (Stamm & Perednia, 2000); (d) specialty equipment (Stamm & Perednia, 2000); (e) server capacity (CRAC, 2001); (f) scalability (Oblinger, Barone, & Hawkins, 2001; Wong, 1999); (g) down time (Wong, 1999); (h) system robustness (CRAC, 2001); and, (i) maintenance, monitoring and repair (CSWE, 2000).

Technical support staff and web-based development are needed to support distance delivery of online curriculum and programming (CRAC, 2001; Gullahorn, et al, 1998). Colleges and universities currently have fewer IT support staff than is recommended for organizations (IHEP, 1999c). Faculty support services facilitate the application of technologies and distance learning processes (AAUP, 1999; CC, 2000; SREB, 2000-2001). Support for faculty include technical, design, and production functions (CRAC, 2001) such as web designers, database managers, graphic designers, instructional designers (Oblinger, Barone, & Hawkins, 2001).

- **Attention is given to the changing roles of faculty in distance delivery, the demands that technology places on faculty time and resources, and to appropriate faculty compensation.**
While many thought that distance delivery would increase the reach and capacity of faculty for teaching, it was quickly noted that the degree of interaction between faculty and students is typically greater for distance-delivered than for traditional courses (Gullahorn, et al., 1998). Moreover, in many settings, and particularly for those managing transfers of teaching technology from traditional means to distance delivery, faculty roles are expanded to include being content experts, curriculum design, project managers, etc. (Merisotis & Phipps, 1999). The demands on faculty time are therefore increased and it is appropriate to compensate for faculty effort in some way (course release, etc.) (AAUP, 1999; Gullahorn, et al., 1998). According to the National Education Association, one of the primary concerns for faculty is that they will do more work without appropriate compensation (NEA, 2000a). Workload, class size, compensation, intellectual property, merit and promotion review issues continue to be unclear and many authors have pointed out that they ought to be addressed (AAUP, 1999; CRAC, 2001; CSWE, 2000; Oblinger, Barone, & Hawkins, 2001; Sattem et. al., 2000).

**Domain 4: Student Technical Support**

- *Technical requirements are made clear to students before they enroll; and support services are provided to students in their use of distance education technology.*

Many authors feel that there ought to be a specified set of minimum hardware, software, and operating system requirements for technology-based distance programs (CRAC, 2001; Gullahorn, *et al*, 1998; Mariani, 2001; Wong, 1999), although it is likely that individual programs or organizations will have differing minimum requirements. There are no strong movements at this point suggesting that national standards be implemented. For example, specific technical requirements will depend on the nature of the learning technologies employed (Mariani, 2001). While the requirements may vary from program to program, it is appropriate for
students to have full informed consent regarding the technical aspects of programs in which they enroll and be made fully aware of the implications of technological systems failures to their course/program success (Roberts & DeWitt, 1999).

- *Reasonable efforts are made to ensure competency among students with respect to the methods of delivery and technological platforms selected.*

Many authors have called for technology-based distance programs to have standards for computer literacy for students (CRAC, 2001; Gullahorn, *et al.*, 1998; Mariani, 2001; Wong, 1999). The competency domains identified for telehealth practitioners (Reed, McLaughlin, and Milholland, 2000) also apply to students as well as faculty in distance educational programs. Client proficiency with technology is critical to effective service as computer-mediated learning requires special skills of students and more sophisticated technical support if students are to interact fully" (Merisotis & Phipps, 1999).

- *Reasonable technological support services provided to students in the program/courses to ensure continued ease of access to curricular materials and instructional/learning processes.*

According to the National Education Association, students should be provided with up-front training or practice sessions (prior to starting the course), as well as continued tech support (NEA, 2000b). In addition, it is useful to provide student support to facilitate comfort with the technological platform and provide direction for trouble shooting technological problems that arise (Willis, 2001). Appropriate student support might have a variety of characteristics including information that address each educational technology hardware, software, and delivery system required (CRAC, 2001). Additionally, some feel that it is important for all students to have "equal access" to required technologies - including 24 hour support (CSWE, 2000). Help desk services are viewed as important, with attention paid to evening and weekend access and various
time zones to accommodate non-traditional students (CRAC, 2001; Wong, 1999). Many questions could be answered through a FAQ (frequently asked questions) document or service as it related to distance access (CRAC, 2001). One paper noted that providing adequate user support was one of the top challenging facing colleges and universities in a report on distance education prepared by IHEP (1999a). Finally, student support for distance education requires unique considerations. The Western Cooperative for Educational Telecommunications states that, “The institution recognizes that appropriate services must be available for students of electronically offered programs, using the working assumption that these students will not be physically present on campus (e.g. services related to registration, testing, financial aid, academic advising, access to grievance procedures, labs, library etc.)” (WCET, 2000, p.10).

**Domain 5: Curriculum and Instruction**

- Programs implementing technology-supported distanced delivery describe the links between choice of technological platform and the learning objectives of the program.

It is important to have evidence that the type of instructional or learning activities envisioned can be reliably and effectively delivered through the platforms selected. (CRAC, 2001; CSWE, 2000). This is especially important in the context of higher education’s increasing emphasis on student learning outcomes as the basis for program evaluation (Eaton, 1999; Glidden, 1998). For example, courses and programs are to be judged on "their learning outcomes, and the resources brought to bear for their achievement, not on method of delivery" CRAC (2001, p. 3). The learning goals and desired outcomes guide the selection of technological platforms and other instructional strategies not the other way around (IACET, 2001; NEA, 2000b). Different forms of technology offer different advantages and disadvantages and effective matching depends on learning goals, instructional purpose and learner needs (Lewis, *et al*, 1999).
Unless careful attention is paid to the selection of appropriate models for delivery and technological platforms, there is a risk that the technology itself becomes the driving force in change (Reed, McLaughlin, & Milholland, 2000).

When planning programs, the questions arise around the best mode of delivery for the various elements of a given educational program (Gullahorn, et al, 1998; Roberts & DeWitt, 1999). Rather than a single one, “best” mode of delivery, there often will mean incorporating a mix of technological media to support the various curricular or student development goals (Truman, 1995; Willis, 2001). There does not seem to be a single clear answer to date about which technologies are most suited for the delivery of which services (Rabasca, 2000).

Delivery model viability needs to be assessed by qualified professionals with appropriate expertise and with attention paid to student learning outcomes (CRAC, 2001; Gullahorn, et al, 1998). Instructors have the additional burden of understanding the legal and regulatory requirements of the jurisdictions in which they operate; e.g., requirements for service to those with disabilities, copyright law, state and national requirements for institutions offering educational programs, international restrictions such as export of sensitive information or technologies, etc. Mechanisms for ongoing evaluation of the suitability of any program applied are important, and can include the human, as well as the technological aspects of use (Stamm, B.H., & Perednia, 2000). Evaluations can benefit from including qualitative and quantitative information, as well as outside reporting mechanism. Effectiveness studies demonstrate the application to a local, or service, area enhance the applicability of programs and evaluations. Additionally, ongoing quality assurance and quality improvement protocols with appropriate local control and ongoing mid-course evaluations resulting in appropriate mid-course adjustments can be helpful.
Domain 6: Evaluation and Assessment

- Regardless of delivery method, programs are dedicated to identifiable standards that guide assessment of student learning and any impact on program structure and pedagogy that arise from technological innovation.

As noted above, there has been a shift in accreditation emphasis from resources and process of education to outcomes of student learning as the basis for program and institution evaluation (Eaton, 1999; Glidden, 1998). This represents a substantial challenge to the process of setting and applying quality standards. They need at once be clear enough to guide evaluation, yet broad enough to accommodate a variety of models and innovative approaches to training. Regardless of how standards are set, ideally, they allow for desired outcomes to be achieved while encouraging innovation in instructional approaches, methods of reaching students, and training goals and objectives. Moreover, a good assessment represents a comprehensive evaluation of the learner, requires standardization of content, process, faculty competence, and careful documentation throughout the learners’ tenure. Specific faculty skills in program design and delivery, technology application, evaluation, etc., that could be useful in bridging between action and assessment, are summarized in Truman (1995, p.9).

The issues of quality assessment in distance education are best addressed within the broader context of technology advances that can potentially enhance and change professional education regardless of context. Many of the same validity and reliability issues that arise in psychological testing also arise in assessment of learners. Several issues bear particular attention. First, there is the issue of plagiarism. Plagiarism is not new, and in fact, is a venerable partner for most faculty and supervisors. However, the advent of technology has made plagiarism easier to accomplish, particularly the combination of computer generated “cut and
paste” with the access to information that exists on the World Wide Web. While there are no foolproof methods to prevent plagiarism, vigilance its enhanced potential is worth noting. Furthermore, technical measures can assist in ensuring copyright infringement does not take place for materials placed on the web (IHEP, 1999a).

A second issue that bears addressing is also a perennial issue in teaching and training situations; authentication of the learner. This issue is fundamentally no different in an electronic environment than it is face-to-face. It is important to verify that the person who claims to be engaged in an activity is the person who is actually completing the activity. There are multiple methods for accomplishing this, with a growing number of options as a result of HIPAA (Health Insurance Portability and Accountability Act of 1996), which requires authentication of people viewing confidential records. Many use proctored tests such as is used in testing centers (Gullahorn, et. al., 1998).

Finally, many have expressed concern about data security. Data security, which is closely linked to authentication, is important both in health care and in training settings. Neither patient nor learner wants to worry about the privacy of their information. As previously noted, HIPAA requires authentication as one of the governmentally specified data security measures. In addition, measures to identify system users and control levels of access are also popular (IHEP, 1999c).

Domain 7: Institutional Context and Commitment

- The institution's administrative structure, policies and procedures, and interdepartmental communications provide a supportive system for distance delivery of online curriculum and programming.

A "sufficiently robust systems" (Gullahorn, et al, 1998, p. 24) and support collaboration between administrators, faculty, technical experts, departments, etc. enhance the potential for
developing programs (DLRN, 1998). CRAC (2001, p.2) provides a list of some of the potential roles of university internal organizational structures and NLNAC (1998-99) lists the technological systems that may need to be developed / supported. Appropriate policies and procedures help ensure that the technical infrastructure remains up-to-date (CRAC, 2001).

**Domain 8: Facilities and Finances**

- *The delivery model and supportive technologies employed benefit from remaining as consistent as possible, with care taken to minimize the impact of change on students and faculty.*

  There are benefits from platforms remaining as consistent as possible across courses or programs (CRAC, 2001). Where change in courseware and other technological platforms is required, having a processes in place to familiarize students and faculty with the new technologies reduce the negative aspects of the transitions (CRAC, 2001). In addition, faculty education on new or upgraded technologies, prior to its introduction to students, has benefits.

- *Confidentiality and integrity of student records and other program and course materials is ensured. Electronic security measures are in place to address issues of reliability, privacy protection, safety, and security.*

  Security and confidentiality issues raised by Reed, McLaughlin, and Milholland (2000) in regard to telehealth practice apply also to the confidentiality of student records and other electronic security issues. The NEA suggests that there is a need for "documented technology plan that includes electronic security measures to ensure both quality standards and the integrity and validity of information" (NEA, 2000b, p.2). Many authors point out the importance of secure, private, and confidential transmission of data (CRAC, 2001; IHEP, 1999c; Maheu, 2001; Reed, McLaughlin, & Milholland, 2000). Additionally, it is important to assure the reliability of
the technology and adequacy of back-up systems in the case of some level of systems failure (CSWE, 2000; Darkins, 1966; Oblinger, Barone, & Hawkins, 2001; NEA, 2000b).

The National Education Association has also addressed the “obligation of education institutions to protect students from harm, injury, and harassment, and student records from compromise, tampering, or unlawful disclosure.” (NEA, 2001, p.1). Along similar lines, relative to telehealth practices, Reed, McLaughlin, and Milholland (2000) address issues of client and practitioner safety, which may be particularly important in cases where teaching involves working with clients or patients. As with other areas, it is important for students to have full informed consent and be provided information about the implications of technological systems failures to their course/program success (Roberts & DeWitt, 1999).

In clinical training settings, federal rules may be applicable. On December 28, 2000, the Secretary of Health and Human Services (HHS) released final privacy regulations relating to the protection of patients' individually identifiable health information as mandated by the Health Insurance Portability and Accountability Act of 1996 (HIPAA). According to information at the HIPAA website (http://telehealth.hrsa.gov/pubs/hipaa.htm), all medical records and other individually identifiable health information held or disclosed by a covered entity in any form, whether communicated electronically, on paper, or orally, is covered by the final regulation (http://aspe.hhs.gov/admnsimp/final/pvcfact1.htm). The regulations point to a need for a heightened level of concern for patient privacy in the telemedicine environment, especially where patient visits are occurring in real-time (http://telehealth.hrsa.gov/pubs/hipaa.htm#how). There is the potential for more complicated informed consent requirements under HIPAA that could inhibit obtaining the necessary patient consent signatures that are necessary prior to initiating telehealth activities (http://telehealth.hrsa.gov/pubs/hipaa.htm#how). While there is still
ambiguity about the precise means of meeting HIPAA regulations, or even the interpretation of some regulations, the final regulation covers health plans, health care clearinghouses, and those health care providers who conduct certain electronic financial and administrative transactions (http://aspe.hhs.gov/admnsimp/final/pvfact1.htm). In clinical teaching and training settings where healthcare is also provided, HIPAA is likely to be a challenge to the training program.

Domain 9: Library and Learning Resources

- Programs have appropriate and comparable access to instructional/learning support services including library facilities, research resources, bookstore services, registry services, counseling / advising, and other resources is key to successful student activities.

This principle is endorsed by many (AAUP, 1999; CC, 2000; CRAC, 2001; CSWE, 2000; Gullahon, et. al., 1998; IACET, 2001; NEA, 2000b; NLNAC, 1998-99; Roberts & DeWitt, 1999). To date, however, there is no specific definition of “appropriate and comparable access” as compared to traditional libraries, but it would not be uncommon for resources to include a "virtual library" (NEA, 2000b). On the other hand, traditional libraries increasingly expand their holdings through access to electronic media including databases, electronic books and documents, as well as Internet tools. In some cases, such as searchable databases like MedLine and PsychInfo, the electronic versions of the information is superior to the traditional print versions. In the United States, many states have moved towards a state-wide system of inter-library collaboration and access to electronic databases (IHEP, 1999b). One important caveat is assuring that staff that are trained in distance library techniques (CSWE, 2000). As with most electronic resources, it is important that resources be "scalable and [there is a] viable strategy for making information resources available" to distance learners (Oblinger, Barone, & Hawkins, 2001).
QUALITY ASSESSMENT AND ASSURANCE IN DISTANCE EDUCATION

Introduction

This portion of the task force report examines issues associated with quality assessment and assurance raised by the emergence of distance education approaches to professional education. The assessment of training quality informs and guides program development and self-assessment, which in turn affect the accreditation and recognition of programs and the credentialing of graduates. The issues of quality assessment in distance education are best addressed within the broader context of technology advances that can potentially enhance and change professional education regardless of context. Some programs employ these methods to enhance training within traditional or residence based settings and other programs use these methods to support training of students who are distributed in a variety of ways, such as satellite campus, pods or clusters of student and faculty, and students who are nationally or internationally distributed.

Regardless of approach, all programs must be dedicated to a system of quality assessment and enhancement and the discipline must articulate standards based on research and consensus about best practices that can serve to guide programs. Thus, both residential programs and those that employ distance or distributed approaches rely on standards to guide assessment of the impact of changes in program structure and pedagogy arising from technological innovation. This document will identify major issues to be addressed by programs as they develop and pursue recognition and accreditation, and incorporate technological innovation into established programs. Preparation of the document was guided by the following assumptions.

Guiding Assumptions

- Regardless of the means by which training is provided, all programs are assessed against a common set of standards.
- These standards are linked to generally recognized outcomes in terms of professional preparation.
• There are a variety of legitimate models of training that can achieve the desired outcomes.
• Programs can employ a variety of programmatic, instructional, and pedagogical approaches to achieve the desired outcomes.
• The standards and assessment procedures assure that desired outcomes are achieved while encouraging innovation in instructional approaches, methods of reaching students, and training goals and objectives.

Difficulties in Establishing Standards

The above assumptions represent a substantial challenge to the process of setting and applying standards because they must at once be clear enough to guide evaluation and broad enough to accommodate a variety of models and innovative approaches to training. The emergence of distance education introduces additional challenges because some quality indicators have been based on program elements that are defined by program characteristics rather than upon outcomes. For example, in the past residency has been a central consideration in quality assessment. Distance education raises questions about what competencies or other desired program outcomes are achieved by residency. Both traditional and distance based approaches are challenged to address how outcomes associated with residency are achieved and assessed.

Efforts to establish standards are complicated by the emergent and dynamic nature of technology-based applications. Naturally initiatives to apply technology-based approaches to training are far ahead of the efforts directed to evaluate them and to develop research foundation for understanding what each approach can achieve. In fact, there is no systematic taxonomy that identifies the technology platforms and the associated pedagogical approaches employed. Without a set of categories there is no foundation for assessing what outcomes can be achieved by any given application, much less which approach is best. This issue becomes even more complicated when the interaction between pedagogical approach and student learning style is considered.

In the first section of this report we provide a brief overview of the components of professional training programs. This review serves as a foundation for the remainder of a report that is dedicated to explicating a series of considerations to be addressed by programs and the
discipline. The committee also offers specific suggestions and comments intended as guidance for programs and an agenda for research and the development of consensus regarding standards. Programs that effectively address the considerations and issues articulated and provide persuasive evidence will not only move toward their goals but also advance the discipline.

Components of Professional Training Programs in Psychology

The Guidelines and Principles of the APA Committee on Accreditation (2002) and other resources available through the APA Office of program Consultation and Accreditation provide foundation and guidance for developing programs. The key components discussed below provide a summary of the elements that are included by accredited programs. Professional training programs prepare students for careers in education, research, and/or practice. The relative emphasis varies among programs and is articulated by the program's model and the goals and objectives that proceed from the model. Regardless of the individual characteristics of the program, it ensures that graduates have demonstrated the requisite knowledge, attitudes, and skills associated with the program’s goals as well as objectives and the standards of the profession.

To accomplish its goals a program organizes training to be is sequential, cumulative, and graded in complexity and employs a variety of elements. These elements include:

- the curriculum or coursework;
- process elements that contribute to professional socialization and understanding of context, practicum, internship, research, and additional program components;
- opportunities for skill development and application in research, practice (practicum, internship) and teaching;
- program elements related to evaluation such as preliminary or qualifying examinations and examinations of professional practice (student ABPP type examinations);
• program elements that provide students with relevant knowledge and experiences about the role of cultural and individual diversity related to both the science and practice of psychology;

• program elements that ensure incorporation of standards of ethics/professional provide for continuing assessment of student professional suitability, and address human subjects review/IRB; and,

• program organization that ensures integration of these elements into a cohesive and consistent whole.

Programs articulate a comprehensive system of quality assessment and enhancement. Assessment of the extent that the program achieves its goals and students achieve desired competencies is a complex process that raises many of the same issues of validity and reliability psychologists encounter in ability and personality assessment. As a discipline psychology is familiar with applied measurement of complex constructs. The first step is to effectively articulate which knowledge, attitudes, and skills are central to the profession and the goals of the program. It is axiomatic that assessment of any given outcome is a challenging process that can only be accomplished by employing multiple methods that converge on the issues being assessed.

The preceding discussion provides a context for quality assessment of any professional training program in psychology. In subsequent sections the issues that that are brought into focus by the application of distance education methods are considered. Particular focus is upon considerations that affect accreditation and designation of programs. The assessment of the graduates of a distance education program by licensure/credentialing bodies partially determines the program’s recognition. The following sections address issues that that have to be considered in order to establish acceptable standards and expectations for programs that employ distance education. These areas include foundation or eligibility issues, curriculum and pedagogy, socialization and mentoring, and development of research and clinical skills. Also considered are issues of diversity and individual and institutional ethics and conduct. Finally, issues related to accreditation, state, national, and international regulation, and consumer concerns are discussed.
Foundation Issues

Regional Accreditation

Accreditation and recognition of programs typically begins with the expectation that they will be housed within regionally accredited institutions. This has always been perceived as the most basic criterion. However, beyond serving as an important threshold for the structure in which education and training is offered, this criterion contributes little to the evaluative process. The provisions of regional accreditation are not directly related to the standards for professional training in psychology and are subject to a wide range of factors unrelated to the discipline’s standards. However, it is essential that the profession monitor and evaluate the impact of changes in standards of regional accrediting agencies in order to assess their continuing applicability and the extent to which they reach an even lower threshold.

Institutional Considerations

A more important consideration is the extent to which an institution or graduate program needs to exist in a physical location, as opposed to be totally electronic, or be located in a facility that serves as a physical hub for coursework, faculty meetings, student socialization, administration, and contacts with the public. The field has not developed standards and expectations regarding the extent to which learning and administrative activities can be carried-out exclusively online. To aid in establishing standards programs should demonstrate how they achieve certain outcomes. For example, if the faculty is distant from the students, the program must address how they exercise control over the training program, standards, monitor progress, and assure quality. Furthermore, a program in which faculty are distant from the students needs to demonstrate how it is able to provide socialization into the profession, meaningful peer interaction, mentoring, and guide and evaluate professional development. If all communication is online, the program assesses in what way communication is different from residence based programs. The goal is to provide a basis for establishing standards that address the functions that are served by a centralized facility and the extent to which the functions can be carried-out online. Similarly, standards need to address what outcomes arise from what types of interaction between and among students and faculty. This will be considered further below.
Policy and Procedure

Distance learning models face greater challenges than residency programs in addressing certain policy and procedure issues. All psychology programs deal with issues of academic integrity, but these issues are even more difficult for distance models. Programs must develop acceptable procedures to authenticate that the student taking the course or submitting work products is the student who is enrolled in the program.

Programs are expected to be clear, consistent, and accurate in their public descriptions. They therefore carefully consider what must be publicly disclosed about various aspects of the institution, policies and procedures, expectations in terms training, and reasonable expectations regarding employment and barriers to credentialing. Furthermore, programs are expected to address privacy, security, grievance, due process, and evaluation of students on non-academic standards. To the extent these issues or procedures differ for distance education programs, expectations and standards must be developed. Areas for public disclosure unique to distance-learning programs include students’ technology needs, experiential requirements, and travel and time expectations associated with non-distance aspects of the program.

Program Development

Developing programs are often confronted with the fact that they do not know what the do not know. Experiences with doctoral and graduate education are helpful to faculty developing a new program but there are nuances and subtleties that are not intuitively obvious. The difficulty is even greater when dealing with innovative approaches to training. Some recommendations include:

- Include faculty who have participated in professional training in an accredited training program in the same as substantive area as the developing program.
- Maintain regular communication with the accrediting/credentialing and other regulatory bodies at all points in the innovation process. Although it is unlikely that these regulatory bodies will be in a position to approve an innovative practice in advance, programs are advised to solicit input and consultative guidance at significant steps in the innovation process.
- Inform regulatory bodies of the program’s progress in developing innovative methods.
- Use knowledgeable consultants.
• Consider how they will demonstrate that their innovative methods result in high quality educational outcomes consistent with the model of the program. It is key that data are not based solely on responses to surveys of students and faculty, but include a thoughtful system of multiple and independent criteria.

**Issues Associated With Pedagogy and the Articulation of a Didactic Curriculum**

Quality programs are derived from a set of goals that are manifest in desired outcomes. These outcomes include an array of student competencies in domains of knowledge, skills, and attitudes across all aspects of psychological foundations and professional practice.

The curriculum, then, addresses the development of student competency outcomes in the following areas:

• the broad theoretical and scientific foundations of the discipline and field of psychology in general,
• the existing and evolving body of knowledge, skills, and attitudes that define the declared substantive practice area(s), and
• the integration of the two.

As distance based programs develop knowledge about the effectiveness of various technologies and methods to advance training, they will challenge residency programs to consider how to optimize outcomes by including distance methods to supplement or replace traditional didactic methods. Programs considering reliance on distance learning methods need to consider the correspondence between method and outcome, such that the desired outcome is one that is achievable through the chosen distance method. Some areas of desired student competence, such as content knowledge in the foundational areas of psychology, may be very effectively acquired and evaluated through distance methods. However, other areas of student competence, such as interviewing skills, might necessitate both distance and residential methods of delivery and evaluation.

Regardless of the residential- or distance-based nature of program delivery, all programs must undertake continuous examination of how well program goals are being achieved, and how
effective the chosen delivery methods are in insuring the accomplishment of desired student outcomes.

In addition, and in recognition of the diversity of student learning styles and characteristics, programs will need to consider how the delivery methods correspond to or are adapted to the array of ways in which students learn. Programs will need to assess carefully whether the delivery method precludes participation in the learning process for students with particular characteristics or circumstances.

Technology-assisted methods will entail, at a minimum, access to and competent use of various technological tools. The resources involved for successful use of these methods will impose special demands on faculty, students, and other program resources.

For faculty, the development and use of distance technologies will require additional training, support, and competence. Programs will need to consider what kinds of knowledge and skills faculty need in order to be competent to employ a particular methodology, and, further, will need to have some vehicle through which such competence is assessed. Similarly, student competence in the use of technology will be an essential pre-requisite to effective learning in a distance modality. Programs will need to ensure that students meet or exceed a minimum level of competence in this regard.

A quality program includes both didactic and experiential components. Therefore, a distance learning program will need to demonstrate how it provides the resources, technological or otherwise, to execute both components.

Both faculty and students must have ready access to both the technology and corresponding support services.

Programs using distance education delivery strategies, are not exempt from making available all of the facilities, space, testing, library, communication, and student support services that are necessary to support the educational enterprise.

Programs that rely on distance methods shoulder the same responsibility as traditional residential programs in insuring that the program represents a coherent, cohesive educational experience. Thus, programs will need to consider how it organizes its components such that they are sequential, cumulative, and graded in complexity and that the various didactic, experiential components are integrated. Similarly, programs must demonstrate their success in achieving integrative outcomes.
Contextualization and Socialization Issues

An essential standard of training is to provide early identification with the profession through learning and socialization experiences that facilitate assimilation of professional identity. It is the program’s responsibility to ensure that these opportunities are available to each graduate student through faculty supervisory and consultative guidance, informal faculty-student discussion, role modeling, and informal peer socialization. In traditional residential training programs, these experiences typically occur within the context of face-to-face individual or group meetings, and through larger program functions (e.g., program social and recreational events).

One of the greatest challenges facing distance approaches is to demonstrate how such early professional identification experiences are fulfilled within a distance-learning environment. In reflecting upon this issue, the committee has a number of issues that distance programs must address. They include:

- How are programs designed to enable modeling, guidance, and supervision?
- To the extent that nonverbal cues important to supervision are less available or absent in distance learning, how do programs address the impact of this in training and provide the functional equivalent?
- Assuming that there are benefits from extra classroom activities that arise from student interaction with program faculty, how do programs address providing these experiences in a distance education format?
- How do programs address student identification with the academic institution and the profession in a distance format?
- Given that benefits derive from students participating with one another on projects and maintaining social interaction, how do programs provide these experiences? Particular attention needs to be given to the extent that students are able to work collaboratively, work in institutional and group settings, and appreciate and effectively deal with issues of diversity.
- How do programs achieve the outcomes associated with development of a mentoring relationship based on face-to-face interaction in a distance context?
• How are training strategies and assessment procedures developed that are appropriate for distance programs to address competencies associated with socialization?

Note that one should not assume a priori that distance learning limits opportunities for developing professional identity. It is entirely possible that distance-training models provide equivalent or possibly greater opportunities for identification with the profession. These programs may show increased levels of student-faculty contact and peer-to-peer socialization by reducing barriers to communication (e.g., the need for predetermined daytime appointments with faculty and for reserving physical space for group meetings), thus potentially fostering higher levels of professional identity than those obtained by traditional residential programs. On the other hand, distance learning models may lead to reduced interaction between faculty and graduate trainees due to the loss of salient environment cues and demands for social exchange, and in turn, fewer opportunities for identification with the profession.

In the final analysis, this controversy cannot be resolved by debate, but by comparative investigations of the outcomes of these two different training models. Further research is needed to identify factors in both traditional and distance learning programs that facilitate the development of professional identity and social connectedness with faculty and peers.

Skill Development and Application

Some of the most difficult elements for programs to provide through a distance-learning model address the development of skills, such as those in clinical assessment and intervention and competence in research. As a consequence, distance programs should pay particular attention to the choice of technical platforms, and to the choice of proximal and distal instructional methods and ensure that they are appropriate to the development of the skill in question and to the level of development of the student. The development of professional clinical and research skills represents an iterative process in which learning experiences are sequential, cumulative, and incremental following from a set of interactions between faculty and student.
Research Competencies

Research skills appropriate to the program’s training model are essential competencies. Programs have to ensure that students have knowledge, attitudes, and skills regarding research that inform their practice regardless of whether the goal is to train informed consumers of research, local clinical scientists, or scientist practitioners. The development of knowledge in areas such as research design and data analysis may be communicated by distance based didactic course work. However, the skills and attitudes involved in conducting research and applying results are formed in the interaction between student and advisor. Those who are familiar with doctoral training know that the process of developing, conducting, and reporting a doctoral research project or dissertation presents students with a confrontation with the self that often is more daunting than the practical aspects of the project itself. Regardless of the nature of the program, students often lose their way in the absence of guidance, assistance, and support from faculty advisors. This is a challenging and time-consuming responsibility for the advisor. Key issues to be addressed by programs in facilitating the development of student research competencies include:

- Reflecting on the training model in order to articulate clearly the research competencies and level of attainment expected of program graduates.

- Specifying how instruction and advisement/supervision/mentoring are provided to promote these competencies and evaluate these procedures.

- Ensuring that the faculty members are available to students.

- Providing procedures that effectively evaluate the extent research competencies have been achieved.

- Establishing consensus about specific mechanisms for development of the research competencies and the measures of efficacy.
Clinical Competencies

Ensuring that students develop competencies in service delivery is central to all professional training programs. It is in this area that training programs find their greatest responsibilities and challenges. In residential programs students often begin practice by learning testing and interviewing under the direct observation of instructors and peers. They often practice in clinics run by the program where they have the opportunity to observe the clinical work of other students and faculty and staff. Faculty or staff associated with the program supervise their work. Placements in hospitals, mental health facilities and community agencies are generally provided and programs are expected to provide mechanisms by which external training experiences are integrated in the training program.

In regard to the development of clinical competencies, distance education programs must consider and specify:

- the kinds of training experiences that are necessary for the development of clinical competencies,
- the manner in which distance education methods can be applied to achieving these competencies,
- the mechanisms by which practice is integrated into the training program, and
- the extent that outcomes arising from distance approaches to integration are similar to more traditional approaches.

Given that training for the development of clinical skills requires the provision of clinical services, and given that the program assumes responsibility for ensuring quality of the services that are provided by its students, it is also important to assess how the program assesses the quality of trainee services. This raises other issues. For example, the program would need to evaluate and ensure the quality of the services provided by students while their clinical skills are
being developed. Procedures would have to be clear about how this is accomplished. Likewise, the program also needs to ensure that it identifies and addresses the professional, state and/or national standards that are applicable to the supervision of the development of clinical skills, when that supervision is conducted from a distance.

Many of the issues raised in the context of telehealth service delivery are relevant and the programs must ensure that they are consistent with the emerging standards in this area. They must address issues such as the manner the program incorporates regulations relating to the protection of patient's individually identifiable health information (e.g., HIPAA) or CMS requirements for contact supervision in training for the provision of service.

If a program does not employ internship programs that have external review, it must demonstrate how it exercises oversight and quality assurance. In accomplishing this they must adopt nationally accepted quality assurance standards to specify the essential components of the internship and the manner in which the internships they employ address those components. Programs should identify the programmatic, didactic, and socialization experiences offered in the internships and how they are provided by distance technologies. In the absence of external review, programs should address how internships meet acceptable professional standards.

Ethics/Professional Conduct, Diversity Training, Continuing Assessment of Student Suitability, Human Subjects Review/IRB

Training programs must integrate certain key elements in all aspects of professional preparation. Particularly important areas for consideration are ethics, professional standards and conduct, and the provision of services sensitive and responsive to ethnic, racial, cultural, and individual differences. These areas must be infused into both academic and experiential aspects of all training programs. Distance programs must demonstrate that the knowledge, attitudes, and skills are addressed in meaningful ways and that the students’ competencies are fostered and assessed. Because faculty are not in regular direct contact with students, programs may rely on training and assessments by professionals not on the core faculty. Therefore, distance programs must develop procedures for ensuring that ethics, professional conduct, and issues of human diversity are integrated into the experiential aspects of the program, are mastered by students. These issues are closely related to student suitability for clinical work and provisions must be
made for how the readiness and suitability for professional practice are shaped, assessed, and ensured.

Programs have a wide variety of strategies for assessing these critical competencies. Methods programs employ might include traditional tests of knowledge content and application, dealing with hypothetical and derivative ethical material through e-mail or other distance delivery option dialogues or threads, residential or distance qualifying examinations, standardized ratings by supervisors (both faculty, practicum and internship), and by careful assessment of the mastery of ethics, professionalism, and research protocols for human subjects. The assessment must represent comprehensive evaluation of the learner, requires standardization of content, process, faculty competence, and careful documentation throughout the learners’ tenure.

Accreditation, Designation, Licensure and Other Regulatory Issues

The institution should develop its program so that accreditation by APA is possible, if the program emphasis is in clinical, counseling or school psychology, and for designation as a doctoral program in psychology, if the program emphasis is in another area. In addition, the program should consider whether it is beneficial to apply for designation before petitioning accreditation, regardless of its area of emphasis. Any resultant status should be clearly represented in the materials describing the program.

Any doctoral program in psychology that has among its goals the preparation of its graduates for licensure and credentialing, regardless of whether the specific graduate pursues either, should also design its curriculum and associated requirements (internship) so that the graduate can expect that their education and training sequence would meet the requirements for admission to licensure in their chosen jurisdiction. It is recognized that postdoctoral experience is not under the auspices of the doctoral training but is a requirement for licensure in most jurisdictions in the US. In Canada the requirements vary depending upon the province or territory. Programs should have available information on the requirements for licensure in all jurisdictions in the US and Canada as well as representative information for countries outside US and Canada and for credentialing by the recognized bodies in psychology, such as the National Register of Health Service Providers in Psychology, Canadian Register of Health Service
Providers in Psychology, American Board of Professional Psychology, and the APA College of Professional Psychology.

Regulatory issues are often jurisdiction specific, such as the information typically included in the jurisprudence examination given in a substantial majority of US states and territories as part of the examination for licensure. Information on the knowledge base that would permit students to pass this examination should be available to students.

Other pertinent regulatory issues are those found in US Federal laws, such as the HIPAA regarding patient information, and standards for recognition by various entitlement programs, such as Tricare (CHAMPUS), Medicare, Medicaid (state based), Vocational Rehabilitation, and Disability Determination (SSA). These and any state or provincial corollaries (GST exemption) should be available in the online library of resources related to this broad topic.

Because of the importance of these issues to the future of psychologists, regardless of where they work initially or later, evidence of the guided discussion of these issues should be apparent in the curriculum for doctoral training.

Consumers, Users, and International Issues

Consumers of a distance learning program include prospective and current students seeking to be qualified as psychologists. Information concerning intent, process, recognition, cost, duration and minimal admission characteristics and any other relevant qualifications must be online and written in terms that are understandable, with opportunity for additional information assigned to proper faculty and staff. Another way to communicate this information is to create a FAQ list posted on the website. Potential applicants should be able to evaluate whether they are the type of individual likely to benefit from a distance learning program and what alternatives there are for a different type of education.

Users of the graduates of the program are prospective employers and credentialing organizations (licensure board, hospitals, insurance companies, credentialing organizations). These users want to know performance characteristics that are likely to be exhibited by a student educated and trained (if applicable) in a distance learning program. Users may want to delineate for themselves the benefits and risks as they consider these graduates for employment, for further training (postdoctoral research or applied professional residencies). Transcripts should reflect
which components of the program were offered through traditional methods and those using distance learning technology so that the user can evaluate whether that individual is appropriate for the setting for which they would be hired. While one might argue that there should be no difference if they achieved the established learning outcomes, our current state of knowledge may not be as sophisticated or as developed to make the comparisons needed.

Although the past ten years has stimulated communication among the various regions and countries providing training and employment of psychologists, consistent standards for education and training are less prevalent in Europe (now comprising approximately 45 countries), Central and South America, Asia and the African continent than within the US. Predictably, Australia and New Zealand education and training model is more similar to England than to the US.

Through the alternating international meetings that take place yearly (European Congress/European Federation of Psychology Associations, International Association of Applied Psychology and International Union of Psychological Science), issues addressing distance education in the international arena could be formally explored.
REFERENCES


APPENDIX A

APA TASK FORCE ON DISTANCE EDUCATION IN PSYCHOLOGY

At-Large Appointments

Sandra Collins, Ph.D.
Director, Centre for Graduate Education in Applied Psychology
Athabasca University
Athabasca, AB T9S 3A3

Chester D. Copemann, Ph.D.
P O Box 1547
Kingshill, V.I. 00851

Elizabeth Davis-Russell, Ph.D.
Provost and Vice President, Academic Affairs
SUNY College at Cortland
Cortland, NY

Robert L. Glueckauf, Ph.D.
Department of Clinical & Health Psychology
University of Florida
Health Science Center
Gainesville, FL

Judy E. Hall, Ph.D.
Executive Officer
National Register of Health Service Providers in Psychology
Washington, DC

Thomas L. Jackson, Ph.D.
362 N. Assembly
Fayetteville, AR 72701

Leigh W. Jerome, Ph.D.
150 Hamakua #426
Kailua, HI 96734-2825

Kathleen M. McNamara, Ph.D.
PO Box 330489
Kahului, HI 96733
Thomas W. Miller, Ph.D.
Professor and Head
School of Allied Health
University of Connecticut
Storrs, CT

Beth Hudnall Stamm, Ph.D.
Assistant Director & Research Associate Professor
Institute of Rural Health Studies
Idaho State University
Pocatello, ID

Beth Todd-Bazemore, Ph.D.
Psychology Department
University of South Dakota
Vermillion, SD

BoD Appointments

Laura H. Barbanel, Ed.D.
Department of Psychology
School of Education
CUNY, Brooklyn College
Brooklyn, NY

Ronald F. Levant, Ed.D., Chair
Dean, Center for Psychology Studies
Nova Southeastern University
Ft. Lauderdale, FL

BEA Appointment

Christina C. Iijima Hall, Ph.D.
MCCD District Office
2411 W 14th Street
Tempe, AZ 85281-6941

CoA Appointments

Michael Murphy, Ph.D.
Department of Psychology
Indiana State University
Terre Haute, IN
Susan D. Phillips, Ph.D.
Acting Dean, College of Education
State University of New York-Albany
Albany, NY

APA Staff Liaisons

Joan Freund, Education Directorate
James G. Hill, Practice Directorate
Paul D. Nelson, Ph.D., Education Directorate
The Task Force reviewed the standards and guidelines of regional commissions within which “best practice principles” of distance education and learning have been adopted. In as much as distance education requires institutional commitment and support, it is especially important that the regional accrediting commissions have taken the initiative to develop “best practice principles” for quality assessment of distance education and learning programs. Indeed, the regional accrediting commissions have collaborated through their Council of Regional Accrediting Commissions (CRAC, 2001) to achieve consensus on basic principles of accreditation practice, doing so also in collaboration with the Council on Higher Education Accreditation (CHEA, 2002) and the Western Interstate Commission on Higher Education (WICHE).

The summary that follows includes a definition of distance education and principles of quality assessment in distance education programs upon which CRAC and WICHE are in agreement.

Definition

*Distance education is defined, for purposes of accreditation review, as a formal educational process in which the majority of the instruction occurs when student and instructor are not in the same place. Instruction may be synchronous or asynchronous. Distance education may employ correspondence study, or audio, video, or computer technologies.*

Principles of Quality Assessment

The regional accrediting commissions (CRAC, 2001) also agree that best practices in distance education simply extend to emergent forms of learning the well-established essentials of institutional quality that have been applied already in regional accreditation practices. These essentials are:

- *That education is best experienced within a community of learning where competent professionals are actively and cooperatively involved with creating, providing, and improving the instructional program;*

- *That learning is dynamic and interactive, regardless of the setting in which it occurs;*

- *That instructional programs leading to degrees having integrity are organized around substantive and coherent curricula which define expected learning outcomes;*
• That institutions accept the obligation to address student needs related to, and to provide the resources necessary for, their academic success;

• That institutions are responsible for the education provided in their name;

• That institutions undertake the assessment and improvement of their quality, giving particular emphasis to student learning;

• That institutions voluntarily subject themselves to peer review.

These principles were initially developed by WICHE through the Western Cooperative for Educational Telecommunications (WCTE). In support of the principles, WICHE and the regional accreditation commissions also have developed quality assessment standards and guidelines for distance education programs, addressing quality through the following commonly used accreditation domains of institutional responsibility: (1) institutional context and commitment; (2) curriculum and instruction; (3) faculty support; (4) student support; (5) evaluation and assessment; (6) library and learning resources; and (7) facilities and finances.

A summary of the standards or guidelines applied to distance education at the institutional level of assessment follows, first for WICHE, then for the regional accrediting commissions represented by the North Central Association of Colleges and Schools (NCA) and the Southern Association of Colleges and Schools (SACS). NCA and SACS were selected as the two largest regional accrediting bodies, together accounting for more than half of the 3,077 regionally accredited colleges and universities in the United States (CHEA, 2002). They also have identical standards for assessing distance education programs.

Following the WICHE, NCA, and SACS standards, are lists of standards employed in specialized program accreditation by the Council on Social Work Education (CSWE, 2000)) and the National League for Nursing Accrediting Commission (NLNAC, 1998/99), representing two professions that have taken leadership in the use of distance education for degree or certificate programs. The domains in which standards are developed are somewhat different, but cover the major areas of institutional and program responsibility.

A. WICHE Standards

Domain I: Institutional Context and Commitment

In its content, purposes, organization, and enrollment history if applicable, the program is consistent with the institution’s role and mission.

The appropriate accreditation commission should be notified and consulted whether an electronically offered program represents a major change (for the institution).
The institution’s budgets and policy statements reflect its commitment to the students for whom its electronically offered programs are designed.

The institution assures adequacy of technical and physical plant facilities, including appropriate staffing and technical assistance, to support its electronically offered programs.

The internal organizational structure that enables the development, coordination, support, and oversight of electronically offered programs will vary from institution to institution, but ordinarily will include the capability to:

- facilitate the associated instructional and technical support relationships
- provide the required informational technologies and related support service
- develop and implement a marketing plan appropriate for target student population
- provide training and support to participating instructors and students
- assure compliance with copyright law
- contract for products and out-source services
- assess and assign priorities to potential future projects
- assure that programs and courses meet institution-wide standards
- maintain appropriate academic oversight
- maintain consistency with the institution’s academic planning and oversight functions
- assure the integrity of student work and faculty instruction

In its articulation and transfer policies the institution judges courses and programs on their delivery outcomes, and the resources brought to bear for their achievement, not on modes of delivery.

The institution strives to assure a consistent and coherent technical framework for students and faculty. When a change in technologies is necessary, it is introduced in a way that minimizes the impact on students and faculty.

The institution provides students with reasonable technical support for each educational technology hardware, software, and delivery system required in a program.

The selection of technologies is based on appropriateness for the students and the curriculum.
The institution seeks to understand the legal and regulatory requirements of the jurisdictions in which it operates, e.g., requirements for services to those with disabilities, state and national requirements for institutions offering (such) programs, etc.

*Domain II: Curriculum and Instruction*

The institution assures that the program of study results in the level of learning outcomes appropriate to the rigor and breadth of the degree awarded.

The substance of the program, its presentation, management, and assessment are the responsibility of people with appropriate academic qualifications.

The institution provides a coherent plan for the student to access all courses (or hybrid courses) necessary to complete the program, and clearly notifies students of requirements not included in the electronic offering.

Although important elements of a program may be supplied by consortium partners or outsourced to other organizations, including contractors, the responsibility for performance remains with the institution awarding the degree.

The importance of appropriate interaction (synchronous or asynchronous) between instructor and students and among students is reflected in the design of the program and its courses, and in the technical facilities and services provided.

*Domain III: Faculty Support*

The institution and its participating faculty have considered issues of workload, compensation, ownership of intellectual property resulting from the program, and the implications of program participation for the faculty member’s professional evaluation processes. This mutual understanding is based on policies and agreements adopted by the parties.

The institution provides an ongoing program of appropriate technical, design, and production support for participating faculty.

The institution provides to those responsible for program development the orientation and training to help them become proficient in the uses of the program’s technologies, including potential changes in course design and management.

The institution provides to those responsible for working directly with students the orientation and training to help them become proficient in the uses of the technologies for these purposes, including strategies for effective interaction.

*Domain IV: Student Support*
The institution has a commitment (administrative, financial, and technical) to continue the program for a period sufficient to enable all admitted students to complete the degree in a publicized timeframe.

Prior to admitting a student to the program, the institution assures that the student by prior education or equivalent experience is qualified to be admitted, including language skills required.

Prior to admitting a student to the program, the institution informs the prospective student about:

- required access to technologies used in the program and the technical competence required of students
- estimated program costs and associated payment policies
- curriculum design, timeframe of course offerings, and learning objectives.
- library and other learning services available and how to access them
- arrangements for interaction with the faculty and other students
- independent learning expectations
- estimated time for program completion

The institution recognizes that appropriate services must be available for students of electronically offered programs, using the working assumption that these students will not be physically present on campus (e.g., services related to registration, testing, financial aid, academic advising, access to grievance procedures, labs, library, etc.).

The institution recognizes that a sense of community is important to the success of many students, and that an ongoing, long-term relationship is beneficial to both student and institution.

Domain V: Evaluation and Assessment

As a component of the institution’s overall assessment activities, documented assessment of student achievement is conducted in each course and at the completion of the program, by comparing student performance to the intended learning outcomes.

When examinations are employed, they take place in circumstances that include firm student identification. The institution otherwise seeks to assure the integrity of student work.

Documented procedures assure that security of personal information is protected in the conduct of assessment and evaluations and in the dissemination of results.
Overall program effectiveness is determined by such measures as: extent to which student learning matches intended outcomes, student retention rates, student satisfaction, faculty satisfaction, and extent to which access is provided to students not previously served.

The institution conducts a program of continual self-evaluation directed toward program improvement.

Institutional evaluation of electronically offered programs takes place in the context of the regular evaluation of all academic programs.

**B. NCA and SACS Standards (Regional Accreditation)**

*Domain A: Curriculum and Instruction*

Programs provide for timely and appropriate interaction between students and faculty, and among students.

The institution’s faculty assumes responsibility for and exercise oversight over distance education, ensuring both the rigor of programs and quality of instruction.

The institution ensures that the technology used is appropriate for the nature and objectives of the programs.

The institution ensures the currency of materials, programs, and courses.

The institution’s distance education policies are clear concerning ownership of materials, faculty compensation, copyright issues, and the utilization of revenue derived from the creation and production of software, telecourses, or other media products.

The institution provides appropriate faculty support services specifically related to distance education.

The institution provides appropriate training for faculty who teach in distance education programs.

*Domain B: Evaluation and Assessment*

The institution assesses student capability to succeed in distance education programs and applies this information to admission and recruiting policies and decisions.

The institution evaluates the effectiveness of its distance education programs (including assessments of student learning outcomes, student retention, and student satisfaction) to ensure comparability to campus-based programs.
The institution ensures the integrity of student work and the credibility of the degrees and credits it awards.

*Domain C: Library and Learning Resources*

The institution ensures that students have access to and can effectively use appropriate library resources.

The institution monitors whether students make appropriate use of learning resources.

The institution provides laboratories, facilities, and equipment appropriate to the courses or programs.

*Domain D: Student Services*

The institution provides adequate access to the range of student services appropriate to support the programs, including admissions, financial aid, academic advising, delivery of course materials, and placement and counseling.

The institution provides adequate means for resolving student complaints.

The institution provides to students advertising, recruiting, and admissions information that adequately and accurately represents the programs, requirements, and services available.

The institution ensures that students admitted possess the knowledge and equipment necessary to use the technology employed in the program, and provides aid to students who are experiencing difficulty using the required technology.

*Domain E: Facilities and Finances*

The institution possesses the equipment and technical expertise required for distance education.

The institution’s long range planning, budgeting, and policy development processes reflect the facilities, staffing, equipment, and other resources essential to the viability and effectiveness of the distance education program.

C. **CSWE Standards (Social Work)**

*Domain I: Organization, Governance and Resources*

Adequacy and stability of financial resources to support the distance education component and uses to which program income will be put.

Availability of redundant and backup systems in case of technical or personnel problems.
Comparability of library resources, including on-site availability of books, journals, and computer search facilities.

How the educational policies relating to distance education are formalized and reviewed.

How and by whom the distance education component is administered or coordinated on-site with evidence of how administrative personnel are trained in distance education and the specific technology being used.

What administrative and secretarial supports exist and what are their responsibilities.

A discussion of the physical facilities which have been contracted and their appropriateness to support the program to achieve its goals.

Secretarial supports and resources and provisions for copying materials and for records maintenance.

Criteria, procedures, and responsibilities for the development and monitoring of field placements and training of field instructors. Creation and operation of a field advisory board and means to secure its input into program operations.

How it will manage off-campus administrative processes.

The program ensures that all students have equal access to the hardware and software needed to participate fully in a course, whenever and however students are participating.

How it supports computer-mediated teaching and learning technologies – both in establishing them and in monitoring, maintaining and repairing them as well as backing them up should primary systems fail.

Domain II: Nondiscrimination and Human Diversity

Nondiscrimination policies of the distance education component and host setting are addressed.

Means by which equity and cultural diversity are promoted in distance education-site personnel and students.

Review how use of computer-mediated technologies might advertently or inadvertently raise issues around equal treatment, report the results of this review and any needed measures to ensure a nondiscriminatory situation.

Domain III: Faculty

In what ways and to what degree faculty have been trained in the distance education technology and in special teaching requirements of that medium.
Identification of who teaches each course, their credentials and connection to the main campus program.

The nature and availability of course supports built in for content discussion, materials dissemination, and assignment review.

How professional and academic advising are provided and by whom and the training and monitoring of advisers if these are not regular faculty.

How main campus faculty maintain control over curriculum planning, design, and delivery.

How assignments to the distance education component affect faculty workload at the main campus location.

How and the extent to which faculty will be accessible to students to discuss course work.

Field liaison requirements, procedures and assignments.

Evidence that faculty using the computer-mediated technology have been trained in using computer-mediated technology and in converting courses to or in newly developing courses in this format.

How faculty workload has been adjusted to accommodate changes in teaching styles and organization required by computer-mediated teaching.

Domain IV: Student Development

Admissions standards, criteria, and procedures, with comparison to the main campus.

How and to what extent students will be oriented to distance learning, to the overall program and to field practicum and problem-solving procedures with evidence that students understand the potential implications of technological system failures.

Program supports to promote student retention and faculty monitoring of student progress.

Program policies around attendance and participation and how these will affect grading.

Support systems in place for professional socialization of students.

Professional and academic advisement for students.

Student-student interactions are built into the program related to professional socialization, student organization and governance of the program with connections to the main campus.

Specify how content is to be made available to students who miss class sessions.
Provisions for student evaluation of both program implementation and outcomes.

Procedures by which grievances will be instituted and handled.

Plans and procedures to ensure confidentiality of student work and of faculty-student interactions as well as safeguards for testing student learning.

How documentation of authorship of any work is achieved or any communications within its system.

Orientation and training of students in the effective use of all aspects of the computer-mediated system, and of on-going technical support.

How advising and mentoring of students by faculty is accomplished, including how non-verbal communications are processed and reacted to.

*Domain V: Curriculum*

How the curriculum design of the distance education component is connected to the overall program’s mission, goals and objectives and to specific objectives of the distance education component.

How the program assesses appropriateness of any given type of distance education technology for a given course and how the course has been reworked to fit into a distance education model.

Provisions have been made for group projects, inter-site interactions and student initiation of classroom activities.

Confidentiality of student participation is maintained.

Course sequencing is handled to ensure comparability with the main campus course ordering.

Analyze each course to determine its appropriateness for conversion from another teaching approach and the activities to convert content such that comparability of learning relative to course objectives is obtained. Detailed teaching and learning plan for each course charting how/where/when teaching and learning occur.

Specify how interactive skills learning objectives are addressed using computer-mediated technology with attention to role playing and visual learning experiences.

Address how students access learning and research resources in all media.

Address institutional and program criteria for student and faculty use of computer-mediated education technology, detailing numbers and types of required contacts and time and other parameters for these contacts.
Student field practicum should be detailed if computer-mediated technology is used with attention to confidentiality and documentation of authorship of work.

Domain VI: Evaluation

The overall evaluation design and specific components to assess implementation and outcomes, including instruments and measurement and analysis procedures.

What groups of people are involved in what way in program evaluation.

Discussion of evaluation focuses, including such aspects as impacts of the distance education component on the main campus programs, student characteristics, student assessment of program implementation, program impacts, student learning outcomes, before and after faculty and administration assessments, and, an assessment relating the learning theory used for actual program implementation.

Evaluation plan to include specific means for assessing program goals and objective attainment using computer-mediated technologies. These results to be compared to objectives attainment through use of other teaching and learning technologies. Implementation assessment should also occur.

D. NLNAC Standards (Nursing)

Domain I: Student Services

Access to the range of student services appropriate to support the program(s), including admissions, financial aid, academic advising, delivery of course materials, placement and counseling.

Means for resolving student complaints.

Advertising, recruiting and admissions information that adequately and accurately represents the program(s), requirements and services available.

Students admitted possess the knowledge and equipment necessary to use the technology employed in the program and are provided with assistance when experiencing difficulty using the required technology.

Domain II: Curriculum and Instructions

Interaction between students and faculty, and among students.

Faculty assumes responsibility for and exercise oversight of distance education, ensuring both the rigor of program(s) and the quality of instruction.
Technology used is appropriate to the nature and objectives of the program(s).

Currency of materials, programs and courses.

Policies are clear concerning ownership of materials, faculty compensation, copyright issues, and the utilization of revenue derived from the creation and production of software, telecourses, or other media products.

Faculty support services specifically related to distance education.

Training for the faculty who teach in distance education programs(s).

Domain III: Library and Learning Resources

Students have access to and can effectively use appropriate library resources.

Monitors student use of learning resources.

Laboratories, facilities and equipment appropriate to the courses or program(s).

Domain IV: Facilities and Finances

Equipment and technical expertise required for distance education.

Long range planning, budgeting and policy development processes reflect the facilities, staffing, equipment and other resources essential to the viability and effectiveness of the distance education program.

Domain V: Evaluation and Assessment

Assesses student capability to succeed in distance education program(s) and applies the information to admission and recruiting policies and decision.

Evaluates the educational effectiveness of its distance education program(s) including assessments of student learning outcomes, student retention, and student satisfaction) to ensure comparability to campus-based programs.

Integrity of student work and the credibility of the degree and credits awarded.
APPENDIX C

ISSUES OF TECHNOLOGY CAPACITY, ACCESS, AND USE

A: Telecommunication Networks

Unless otherwise noted, the following information is summarized from:


- The AG Sieman’s website at www.siemens.com

What is Bandwidth?

Bandwidth generally refers to amount of throughput on a physical medium or Radio Frequency (RF) Transmission. These mediums may consist of combinations of different types of physical segments like Copper and or Optical Fiber Cables. The real rate of transmission however depends heavily on the medium that is being used. Bandwidth is measured in cycles per second or Hertz (Hz). In short, bandwidth refers to how fast the signal is oscillating and being sent across the medium. Note that since bandwidth limitations arise from the physical properties of matter and energy, every physical transmission has a finite bandwidth. To overcome the physical limitations of mediums engineers have used Frequency and Wave Division Multiplexing (broadband) that allows multiple frequencies from multiple users to be shared on a single medium.

Digital or Analog?

Because computers are digital machines, they use binary digits (1s & 0s) or bits, to represent data. In actuality, these bits of information are electrical current, radio wave, or light that transfer information in and across a network. Electrical communications use a small electrical signal to encode data. To understand how electrical signals can encode bits, we need to think of it as having a wire that carries two electrical signals, a positive and a negative. So, in
such a setting a short positive signal can be used to represent a 1, and a negative voltage to represent a 0 and vice versa. The motivation for such digital communication arose from the need to handle large quantities of data, as well as, improve the quality of services.

Older, analog systems rely on sine waves to transmit information from one location to another. Analog systems are limited with respect to distance, bandwidth, and quality because electrical signals degrade over distance and amplification increases undesirable Signal to Noise Ratio (S/N). Voice Digitization or Pulse Code Modulation (PCM) is widely used by telephone systems and Samples (converts) analog signals to digital signals thus connecting the local analog call to digital long distance communication networks.

The connection from a local telecommunications company to the customer equipment remains, an analog system, often called “Plain-Old Telephone Service,” or POTS line.

I. Important characteristics of different type of transmission media and technology

Because many telecommunication networks are intergraded systems, they can handle Internet and telephone traffic simultaneously. Modern information networks use a variety of transmission media like copper wire (Ethernet, Coax and T lines), optical fiber (STSs & OCs), infrared and laser beams, as well as, radio communication systems like Wireless 2G & 3G systems and microwave transmission. In the U.S. digital telephone networks that use copper were given a standard name that consists of the letter T followed by a number. The most common T line is the T1 line, which is capable of transmitting data up to 1.544 Mbps (megabits per second) or 24 Voice Circuits. The T2 and T3 respectively transmit 6.312 Mbps and 44.736 Mbps.

Higher Capacity digital networks use Optical Cable or fiber optics to accommodate super fast Internet capacity (called a trunk). OC-3, OC-12, OC-24 and OC-48 lines provide desirable trunk capacity and minimize network congestion and delay. OC-1 rates at 51.840 Mbps while OC-48 clocks at 2,488.320 Mbps.
What is TCP/IP?

The most important protocol made for Internetworking is the TCP/IP Internet Protocols. TCP/IP is globally known and implemented by many countries and is the result of a funded project by the U.S. military through ARPA. The protocol software in an internet defines an addressing scheme that assigns addresses to each unique host and therefore enables hardware communication. The TCP/IP protocol stack addressing is specified by the Internet Protocol (IP). The IP standard then specifies each host a 32-bit binary number or the Internet Protocol address known as IP. Each 32-bit IP is divided into two parts, first the prefix, and the suffix. This is done so that routing Packets is done most efficiently. The prefix identifies the physical network or the subnet while the suffix identifies individual computers. There are five classes of IP addresses. The primary classes, A, B & C are for hosts use only while class D is used for broadcasting and class E is for future use. Each class of IP has its limits with respect to number of networks and hosts. For example a class A network uses 7 bits in prefix which accommodates 128 networks (subnets) and 24 bits in the suffix which can accommodate up to 16777216 hosts per network. In another word, by multiplying 16777216 by 128, we get 2,147,843,648 hosts on 128 networks. Class B and C networks respectively accommodate 16,384 and 2,097,152 subnets and have a maximum number of 65,536 and 256 hosts per subnet. An IP address does not identify a computer in a network instead each IP address establishes a connection between a computer and a network.

The Current version of IP is IPV4 and due to its huge success in handling large scale heterogeneous networks engineers have designed a newer version of IP known as the IPV6.

The motivation behind designing IPV6 is primary due to exhaustion of the address spaces. When IP was first introduced fewer networks existed and designers thought that the 32 bit addressing scheme would be sufficient to accommodate the need for millions of networks. With the boom of the World Wide Web and the constant growth in information systems and technology, the current IP can no longer support the needed addressing and will soon be replaced by the new IPV6. Some important characteristics of the new IPV6 include:

Address size:

IPV6 has 128-bit address space which is four times the amount of IPV4

Header format: The header of the new IP has been changed with respect to each field and function.

Support for Audio & Video:

The new IP supports a mechanism that allows the sender and receiver to establish high quality path within a network.

Extensible Protocol:

This means that new IP can be modified to meet new features as needed.
When did digital systems become widespread?

During the 1960s, the first effort to provide a large-scale digital switching system was launched by telephone companies under the name Integrated Services Digital Network or (ISDN). There are emerging alternatives in designing digital networks that provide higher data transfer rate than ISDN. Among the most desired and popular digital networks systems are Digital Subscriber Line technology (xDSL), Cable Modem Technology (Cable) and Hybrid Fiber Coax technology. These systems provide digital access to the Internet without using the conventional telephone lines, except for DSL, and offer higher bandwidth for many users.

What is ISDN?

Integrated Services Digital Network (ISDN) provides its subscribers with digitized voice and data over conventional local loop wiring or POT. ISDN provides three separate digital channels, usually written 2B+D, the B channels each operate separately at 64 Kbps for digitized voice and data. The D channel is for requesting services (Upstream) and operates @ 16Kbps. Although the user has a total of 144 Kbps, the underlying network operates at 160 Kbps; the remaining 16 Kbps are consumed for synchronization and framing. ISDN operates over conventional copper telephone lines but uses three pairs of twisted wires where as the telephone lines only use one pair.

What is ADSL?

Since they are many similar DSL technologies and they differ by the first word, the set is referred to by the acronym xDSL. ADSL, Asymmetric Digital Subscriber Line, provides a higher rate of transfer then ISDN but just like ISDN uses conventional phone lines. So, how fast does ADSL operate? Downstream of this technology reaches up to 6.144 Kbps while the upstream reaches up to 576 Kbps. To achieve maximum rate in data transfer, ADSL uses adaptive technology that use modems to probe for the most efficient frequency in which data can transfer fastest. However, DSL technology has limitations with respect to distance in which these modems operate. The desired distance from the local Telephone Central Office and the user must remain less than two miles. Other DSL technologies like Very-high bit rate Digital Subscriber line (VDSL) can reach up to 52 Mbps.

What is Cable Modem Technology?

Unlike technologies described earlier, Cable Modem Technology does not use conventional telephone lines and therefore can reach much higher rate of data transfer. Cable modems use coax copper lines or conventional Cable Television lines. Coax lines are better insolated then telephone lines and therefore are less likely to be effected by Electro-magnetic interference from power lines and other electrical devises. Cable technology is capable of transfer rates of up to 36 Mbps however; the actual amount of bandwidth depends of specific network architecture and design.

What is Hybrid Fiber Coax?
In summary, just like the Cable Technology, the system uses the existing coax lines to deliver digital communication to the end-user. The system uses two-way communication across a network composed of Fiber Optic trunks and existing Cable Television coax lines. This system delivers bandwidth up to 2 Mbps. The system requires Optical trunk carriers and replacement of amplifiers to operate in a two directional fashion. This technology uses frequency division multiplexing and time division multiplexing or broadband technology to take slots on 450 MHz to 750 MHz for downloads, and 5 MHz to 50 MHz for upstream.

What is a Wide Area Network (WAN)?

Wide Area Networks or long haul networks are designed to connect long distant networks, as well as, connect cities, regions, countries, continents and the entire planet. These networks are designed to deliver reasonable performance and vary in scalability then Local Area Networks. For instance, a WAN is constructed from many switches and may connect different types of networks or networks of individual computers. Packet Switches (Routers) in a WAN work much like traffic lights that route cars. In our case the cars resemble the packets that are being routed and switches resemble the actual light. In actuality, routers are designated high-speed computers that perform the store and forward technique which puts the arriving Packets in a queue until it can be forwarded to the next hop or destination while they perform many algorithms. This routing operation consist of shortest-path algorithm, distance vector routing algorithm and other complex operations.

What are some examples of WANs?

- **ARPANET**

  Advance Research Project Agency (ARPA) was funded research on networking for the U.S. department of defense during the late 1960’s. This project was using packet switch technology to build WANs and to determine if this technology would be useful in battlefield conditions. This network was one of the very first packet switching WANs and is still known as the ARPANET. Although the system was slow in comparison to today’s WANs, the project did leave a legacy of concepts, algorithms, and terminology that are still in use.

- **X.25**

  The X.25 is also among the very first WAN designs and was developed by the International Telecommunications Union (ITU) mainly for the European continent. These networks, just like ARPANET, use digital switching systems and provide two-way communication. The system is however too expensive for the performance that delivers.

- **FRAME RELAY**

  Frame Relay is another type of telecommunication service designed for cost-efficient data transmission for intermittent traffic between local area networks (LANs) and end-points in a
Frame relay puts data in a variable-size unit called a frame and leaves any necessary error correction (retransmission of data) up to the end-points, which speeds up overall data transmission. For most services, the network provides a permanent virtual circuit (PVC), which means that the customer sees a continuous, dedicated connection without having to pay for a full-time leased line, while the service provider figures out the route each frame travels to its destination and can charge based on usage. An organization can select a level of service quality - prioritizing some frames and making others less important. For example, an organization can choose to send information for a live videoconference (VTC) prior to e-mail which can improve the quality of the VTC while delaying the e-mail only fractions of a second which is unnoticeable to most users. Frame relay is offered by a number of service providers, Frame relay is provided on fractional T-1 or full T-carrier system carriers. Frame relay complements and provides a mid-range service between ISDN, which offers bandwidth at 128 Kbps, and Asynchronous Transfer Mode (ATM), which operates in somewhat similar fashion to frame relay but at speeds from 155.520 Mbps or 622.080 Mbps.

- **SMDS**

  Switched Multi-Megabit Data Service (SMDS) is a high-speed long distance technology and its primary function is to transmit data: not voice. SMDS is designed to operate at the highest speed possible and uses less packet header overhead so the available bandwidth can be used more efficiently. SMDS systems are much faster than Frame Relay and are also more preferred by long distance communication carriers.

- **ATM**

  Another significant and popular wide area technology is the Asynchronous Transfer Mode (ATM). ATM, by design is a single technology that can be used to provide voice, video and data services across wide area. ATM, just like other WAN systems, uses switches as its primary building block. Since video and voice require low delay and jitter, ATMs use packets or cells to carry data and can reach up to speeds of 155 Mbps or @ OC-3 speed.

**Wireless networks & characteristics**

Wireless networks allow the user to send and receive multimedia without physical cabling. There are multiple standards for wireless including UMTS (Unified Mobile Telecommunications Systems). The precursors to UMTS are CDMA (Code Division Multiple Access), TDMA (Time Division Multiple Access), and GSM (Global System for Mobile). All digital networks take advantage of enhanced resistance to co-channel interference, but there is no agreement on which digital standard is “best.”

**What Are Some Key Principles for Selecting Technology?**

The following principles are taken from the U.S. Office for the Advancement of Telehealth. [http://telehealth.hrsa.gov/pubs/tech/intro.htm](http://telehealth.hrsa.gov/pubs/tech/intro.htm)
• **Interoperability**

In order to develop networks that interface together and create an open environment that can share the national information infrastructure, one should strongly consider the purchase of technologies that meet the recommended guidelines provided within this document.

• **Compatibility**

Not only should the technologies be compatible in terms of interoperability, but newer versions of these technologies must also be compatible with earlier versions of a similar technologies. Whenever possible, the purcharer of equipment must insure, to the best of their ability, that the vendors they select will provide some commitment to planning and developing new technologies that are compatible with previous versions of their equipment. This type of commitment decreases the likelihood of rapid product obsolescence.

Scalability: Technology purchased for telehealth or distance education should be capable of migrating into expanded capabilities without total replacement. For example, if there is high probability that a purchaser would eventually need to move from 128k to 384k of bandwidth for their network, then it would be a mistake to purchase a unit that would only operate at 128k. Rather, the correct choice would be a unit that would work at both 128k and 384k. Additionally, features and functions should be available as options rather than impacting the base cost of the technology. Various instruments for patient examination should be added to the base system as needed by the clinical applications being provided at each site.

• **Accessibility**

The level of the vendor's accessibility in terms of sales, timely delivery, and equipment maintenance should be a purchase evaluation factor.

• **Reliability**

Telehealth and distance education programs should consider issues such as the reliability that the network and equipment will work as intended, that the end user can consistently use the equipment for its intended purpose without operational error, and that the technologies can be reliably serviced with minimum downtime.

**B: Transmission Methods and Speeds**

Unless otherwise noted, the following information is summarized from:


Dial-up modems are typically available in the smaller communities. Transmission rates in vary from 1.2 to 28.8 and in areas with newer telecommunications switches, up to 56 kilobits per second. The effect of HIPAA is unclear, but since these connections are analogue point-to-point, some argue that they are private as is.

Dial-up ISDN is generally available in medium to large population areas. Some rural areas have ISDN available if the telecommunications companies can “bundle” the need, e.g. multiple organizations requested a service upgrade. Residential customers can benefit from the equipment originally installed for business purposes, as it is often possible to purchase unused business capacity. Where it is available, it works well. The effect of HIPAA is unclear, but since these connections are point-to-point, some argue that they are private as is.

Cable is newly available in larger and some rural places. Speeds vary from fractional T1 to T4 depending on other network traffic. Installation ranges from $0 to $1000 or more dollars with monthly fees dependent user numbers. The effect of HIPAA is unclear because cable technology relies on shared bandwidth for all customers. To comply with HIPAA, most seem to be using “tunneling” with virtual private networks and 128-bit encryption with annual or random keys.

Frame Relay is available in some communities at speeds from 56k to a full T-1. These are usually dedicated lines include minute fee and monthly lease reducing usefulness for some. In some cases, these networks usually provide T1 or fractional T1 bandwidth-on-demand. The effect of HIPAA is unclear, but most seem to be using “tunneling” with virtual private networks and 128-bit encryption with annual or random keys.

Wireless Broadband with Virtual Private Network (Wireless VPN) is gaining popularity, particularly in areas within line of site and one or two “tower-hops” (26-52 miles) of larger towns where there is existing wireless broadband capacity. The effect of HIPAA is unclear, but most seem to be using “tunneling” with virtual private networks and 128-bit encryption with annual or random keys. These networks usually provide T1 or fractional T1 bandwidth-on-demand.

ATM is increasingly available in communities that have larger urban areas on either side of them, even as much as 100 miles. This provides dedicated T1 to T3 connectivity. Installation charges exceed $1000 with monthly fees of $1200 per site plus line charges. These networks generally provide T1 or fractional T1 bandwidth-on-demand. The effect of HIPAA is unclear, but most seem to be using “tunneling” with virtual private networks and 128-bit encryption with annual or random keys. These networks usually provide T1 or fractional T1 bandwidth-on-demand.

| Potential Activities on Different Types of Bandwidth |
|-----------------------------------------------|-----------------|-----------------|-----------------|
| **Band Width** | **High** | **Medium** | **Low** |
| Store & Forward only (e-mail with attachments) | T | T | T |
| H.324 VTC only | | | |
| Store & forward and H.324 VTC | P | | |
| H.320/323 VTC only | | T | |
| H.320/323 VTC + Store & Forward | T | | |
| **KEY** | T = Typical | P = Possible |
There is a great deal of controversy about how much bandwidth is enough. Figure 1 shows a categorized summary of activities and bandwidth. While this is a rough guide, it is based on experience and common practice.

For the purposes of the table, Low speeds are analogue modems, generally running between 14.4 and 56 kilobits (K) per second. Medium speeds are generally found in ISDN (128 K) or some Frame Relay. High bandwidth, also called broad band, can be considered speeds greater than 128K, typically running between 10 and 100 Megabits per second (Ethernet speed). Specialized high bandwidth applications can run to T 4.

Equipment is rated to match the type of bandwidth. H.324 refers to equipment used on analogue telephone lines, also known as POTS or plain old telephone service. In video, it generally allows for 8-15 frames per second (fps; 30 frames is full motion video). H.320 is designed for digital phone lines, usually ISDN or frame relay. It allows 15-30 fps. H.323 is based on digital IP (Internet Protocol) and runs 30 fps on broadband applications. Increasingly, equipment runs both H.320 and H.323 but typically is not compatible with H.324.

Global Internet Resources

The map above clearly shows where the majority of the internet activity takes place in the world. The United States, followed by Europe, are the largest consumers of internet bandwidth, with Japan a distant third.

In addition, the map displays intercontinental Internet bandwidth, scaled by capacity. Intercontinental and international internet bandwidth is network capacity on data links which cross international political borders, run the Internet Protocol (IP), are reachable from other parts of the Internet, and carry general Internet traffic: e-mail, Web pages, and most of the other popular services which have come to define today's Internet. For more information, the reader is referred to:


Finally, the map illustrates the global nature of the “digital divide,” the invisible indicator of the unequal distribution of internet access, including internet service providers and bandwidth. Clearly, the United States and other developed countries far outpace other nations in the ability to share in telecommunications and information, e-commerce, telehealth, and the other benefits of internet access. The “digital divide,” however, also exists within the borders of the United States. Access is greatest on the East and West coasts, with rural areas lagging behind urban centers.

C: Telehealth Issues of Relevance to Distance Education in Professional Psychology

What is telehealth?

Telehealth is the use of telecommunications and information technology to provide access to health assessment, diagnosis, intervention, consultation, supervision, education and information across distance. (Nickelson, 1998)

Does the content and software change between continuing education and care provision?

The stereotypical telehealth consultation is that of a video teleconference (VTC) between clinician and patient. (Stamm & Perednia, 2000). One of the popular and less complex uses is for education. Educational activities include grand rounds; continuing education; distance-delivery, university coursework; and community health education. (Stamm & Perednia, 2000)

Telecommunications has the potential to expand access to health care services across state borders and even internationally. This has major implications for a health care regulatory system that is state-based with its primary responsibility being the protection of the public. (http://www.nursingworld.org/readroom/tele2.htm)

Telemedicine is the practice of medicine over distance with the use of telecommunications equipment. Early telemedicine may have been as simple as a doctor telephoning another doctor for advice and consultation. Today, telemedicine can bring a specialist located hundreds of miles away into the actual examination room via a live interactive system. (http://www.ttuhsc.edu/telemedicine/)
What is the role of HIPAA in telehealth and what are some privacy issues?

On December 28, 2000, the Secretary of Health and Human Services (HHS) released final privacy regulations relating to the protection of patients' individually identifiable health information as mandated by the Health Insurance Portability and Accountability Act of 1996 (HIPAA). (http://telehealth.hrsa.gov/pubs/hipaa.htm)

A need for a heightened level of concern for patient privacy in the telemedicine environment, especially where patient visits are occurring in real-time. (http://telehealth.hrsa.gov/pubs/hipaa.htm#how)

The potential for more complicated informed consent requirements under HIPAA that could inhibit obtaining the necessary patient consent signatures which are necessary prior to initiating telehealth activities. (http://telehealth.hrsa.gov/pubs/hipaa.htm#how)

As required by HIPAA, the final regulation covers health plans, health care clearinghouses, and those health care providers who conduct certain financial and administrative transactions (e.g., electronic billing and funds transfers) electronically. (http://aspe.hhs.gov/admnsimp/final/pvcfact1.htm)

All medical records and other individually identifiable health information held or disclosed by a covered entity in any form, whether communicated electronically, on paper, or orally, is covered by the final regulation. (http://aspe.hhs.gov/admnsimp/final/pvcfact1.htm)

What are the benefits of telehealth for prisons?

Telehealth reduces inmate transfers out of prison clinics for primary care and improves public safety by treating more inmates in the secure prison setting. It also discourages false medical claims by inmates, which has resulted in more efficient utilization of the prison medical staff’s time. It also provides inmates with a high standardized level of medical care, thus reducing the risk of litigation. (http://www.ttuhsce.edu/telemedicine/tdcj.htm)

What are the resources that are involved in the provision of services via telehealth?

According to the Australian New Zealand Telehealth Committee, resources that are involved in the provision of services via telehealth are varied. There are the capital costs of setting up the links between locations and the fixed costs of establishing the service, including training of staff and the establishment of administrative arrangements. Administrative costs exist for the maintenance of the telehealth facility. Some of the administrative activities include staffing for booking appointments, maintenance of equipment, and other general facility and administration costs. There are also costs for the actual telecommunications links and the costs of health service staff time involved in service provision at each location (remote and base) including any support services directly involved in service provision (for example, attendance of a mental health worker at a psychiatry teleconference) http://www.telehealth.org.au/ANZTC%20Status%20Report%2098/ffo_tele.html.
What are the potential benefits to the health care system?

There are a variety of potential benefits, not the least of which is improved access to services. There may be improved quality of service provision to rural and remote residents and there may be improved efficiency through the provision of the same or improved levels of service coupled with reductions in travel time and other costs for consumers and providers. There may also be improved workforce recruitment and retention through enhanced access to education/training. For more information, the reader is referred to: http://www.telehealth.org.au/ANZTC%20Status%20Report%2098/ffo_tele.html.

D: Issues of Technology and Human Diversity

Cross Cultural Issues in Telehealth and Distance Education

There is little written about cross-cultural issues in relation to telehealth or distance education. Issues that are important to cultural literacy and sensitivity in general, however, are important to consider in this context (Arunachalam, 1999; Kenney, & Eng, 1990; Lechat, 2001; Li, Kirkup., & Hodgson, 2000; Patterson, Hoque, Vassallo, Roberts, Swinfen, & Swinfen, 2001; Sinha, 1998; Tachinardi, 1998; Wootten, 1997).

Some developing countries see technology as an important vehicle to access information in the world beyond their geopolitical borders (Center for World Indigenous Studies: http://www.cwis.org/; Kenney, & Eng, 1990; and Sinha, 1998). Others, however, regard it as a negative intrusion of western technology into their cultures. In any case, most recognize the issues of technology access and the potential impact of technology in addressing access issues while addressing the cultural clash issues that can occur.

The reality of the widening gap of the digital divide, coupled with profound differences between traditional indigenous medicine and education and western medicine and education, opens the door for profound power differentials to develop. While the internet and technology in general were originally seen as a leveling effect (Stamm & Rudolph, 1999) the growing digital divide (see telegeography section of this paper) has shown the potential of technology to consolidate the power basis of the most powerful, further marginalizing the poor (Stamm, in press; Stamm & Friedman, 2000).

Issues Relating to Persons With Disabilities

The following information is taken from Web Content Accessibility Guidelines 1.0, W3C Recommendation 5-May-1999. These recommendations to make internet web sites sensitive to people with disabilities—http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/. The original draft of this document is based on The Unified Web Site Accessibility Guidelines, (G. Vanderheiden, W. Chisholm, eds.). The Unified Web Site Guidelines were compiled by the Trace R & D Center at the University of Wisconsin under funding from the National Institute on
These guidelines explain how to make Web content accessible to people with disabilities. The guidelines are intended for all Web content developers (page authors and site designers) and for developers of authoring tools. The primary goal of these guidelines is to promote accessibility. However, following them will also make Web content more available to all users, whatever user agent they are using (e.g., desktop browser, voice browser, mobile phone, automobile-based personal computer, etc.) or constraints they may be operating under (e.g., noisy surroundings, under- or over-illuminated rooms, in a hands-free environment, etc.). Following these guidelines will also help people find information on the Web more quickly. Also, these guidelines do not discourage content developers from using images, video, etc., but rather explain how to make multimedia content more accessible to a wide audience. For those unfamiliar with accessibility issues pertaining to Web page design, consider that many users may be operating in contexts very different from your own:

- They may not be able to see, hear, move, or may not be able to process some types of information easily or at all.
- They may have difficulty reading or comprehending text.
- They may not have or be able to use a keyboard or mouse.
- They may have a text-only screen, a small screen, or a slow Internet connection.
- They may not speak or understand fluently the language in which the document is written.
- They may be in a situation where their eyes, ears, or hands are busy or interfered with (e.g., driving to work, working in a loud environment, etc.).
- They may have an early version of a browser, a different browser entirely, a voice browser, or a different operating system.

Content developers must consider these different situations during page design. While there are several situations to consider, each accessible design choice generally benefits several disability groups at once and the Web community as a whole. For example, by using style sheets to control font styles and eliminating the FONT element, HTML authors will have more control over their pages, make those pages more accessible to people with low vision, and by sharing the style sheets, will often shorten page download times for all users.

The guidelines also discuss accessibility issues and provide accessible design solutions. They address typical scenarios (similar to the font style example) that may pose problems for users with certain disabilities. For example, the first guideline explains how content developers can make images accessible. Some users may not be able to see images, others may use text-based browsers that do not support images, while others may have turned off support for images.
(e.g., due to a slow Internet connection). The guidelines do not suggest avoiding images as a way to improve accessibility. Instead, they explain that providing a text equivalent of the image will make it accessible.

How does a text equivalent make the image accessible? Both words in "text equivalent" are important. Text content can be presented to the user as synthesized speech, braille, and visually-displayed text. Each of these three mechanisms uses a different sense—ears for synthesized speech, tactile for braille, and eyes for visually-displayed text—making the information accessible to groups representing a variety of sensory and other disabilities.

In order to be useful, the text must convey the same function or purpose as the image. For example, consider a text equivalent for a photographic image of the Earth as seen from outer space. If the purpose of the image is mostly that of decoration, then the text "Photograph of the Earth as seen from outer space" might fulfill the necessary function. If the purpose of the photograph is to illustrate specific information about world geography, then the text equivalent should convey that information. If the photograph has been designed to tell the user to select the image (e.g., by clicking on it) for information about the earth, equivalent text would be "Information about the Earth". Thus, if the text conveys the same function or purpose for the user with a disability as the image does for other users, then it can be considered a text equivalent.

Note that, in addition to benefiting users with disabilities, text equivalents can help all users find pages more quickly, since search robots can use the text when indexing the pages. While Web content developers must provide text equivalents for images and other multimedia content, it is the responsibility of user agents (e.g., browsers and assistive technologies such as screen readers, braille displays, etc.) to present the information to the user.

Non-text equivalents of text (e.g., icons, pre-recorded speech, or a video of a person translating the text into sign language) can make documents accessible to people who may have difficulty accessing written text, including many individuals with cognitive disabilities, learning disabilities, and deafness. Non-text equivalents of text can also be helpful to non-readers. An auditory description is an example of a non-text equivalent of visual information. An auditory description of a multimedia presentation's visual track benefits people who cannot see the visual information.

The guidelines address two general themes: ensuring graceful transformation, and making content understandable and navigable.