Low Incidence Disabilities and Personnel Preparation for Rural Areas: Current Status and Future Trends

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Abstract

The shortages of special education personnel are nowhere more severe than in low incidence disabilities in rural schools. This article presents the results of a national study that identified shortage estimates, state certification patterns, personnel preparation programs, and distance delivery mechanisms and examined relationships among these data to assess the state of shortages of special educators in the areas of vision impairments, hearing impairments, severe disabilities, and early intervention. The authors outline current issues and future trends in preparing personnel in low incidence disabilities for rural areas.

Special education is a discipline that has been plagued by a significant and persistent shortage of appropriately trained teachers since its inception. In the 30 years since the passage of the Education of All Handicapped Children Act (the forerunner to the Individuals with Disabilities Education Act (IDEA) in 1975, there have not been enough fully certified special educators to fill the positions in the nation’s public schools. These shortages, which exist across all areas of specialization and all regions of the country, have been documented by state and federal governments, professional organizations, and individual researchers.

Personnel shortages are due to increasing demand, inadequate supply, and high attrition rates. In those states that reported teacher shortages areas to the federal education agency between 1993 and 2004, special education was identified as a shortage area across all states (U.S. Dept. of Education, 2004). Special educator shortages will continue to worsen due to increasing enrollments of students with disabilities and retirements of veteran teachers (National Teacher Recruitment Clearinghouse, 2002). Nationally, about 12% of special educators are not fully certified for their positions, but in some states the number may be over 30% (McLeskey, Tyler, & Flippin, 2004). Institutions of higher education produce only .86 new teachers for every available special education position but 2 new teachers for every elementary position; in addition, not all graduates seek employment in special education (Boe, Bobbitt, Cook, Burkanic, & Terhanian, 1998). Special educators are 2.5 times as likely to change positions or leave teaching as general educators, especially when they work in high poverty schools (Smith & Ingersoll, 2004). They are 10 times more likely to move to general education positions than general educators are to move to special education positions (McLeskey, Tyler, & Flippin, 2004). Perhaps 50% of special educators leave teaching or transfer to general education within the first four years (Billingley, 2005). There is some evidence that teachers who are not certified or have been inadequately prepared are more likely to leave teaching (Miller, Brownell, & Smith, 1999).

Special education teacher shortages are a particular problem for rural communities.

A survey of state directors of special education revealed that shortages were worse in rural schools (National Association of State Directors of Special Education, 1996). Fewer personnel programs prepare special educators for rural positions (Ludlow, 1998; Rosenkoetter, Irwin, & Saceda, 2004). A survey of distance education programs from 1985 to 2000 identified three (3) programs in vision impairments, one (1) program in hearing impairments, seven programs (7) in severe disabilities, and nine (9) programs in early intervention, or a total of 20 low incidence programs of the 32 programs serving rural schools (Ludlow & Brannan, 1999 (published in 2004)).

Recruitment and retention of special education personnel has presented numerous challenges for rural schools. Rural special educators also have higher attrition rates, perhaps as high as 100% every three years (Williams, Martin, & Hess, 2002). Rural special educators leave their positions for many of the same reasons as other teachers but also because they experience a greater sense of isolation and lack of support (Westling & Whitten, 1996). This is especially true of personnel working in low incidence areas, because they may be the only one with such responsibilities in a rural school or system. Because one of the main reasons rural special educators seek out and stay in positions is ties to the local community (Bornfield, Hall, Hall, & Hoover, 1997), efforts have been directed at recruiting community members and providing on the job training. Such “grow your own” strategies typically involve field-based training and distance education programs (Lemke, 1995). Rural shortages, which are similar to shortages in
warrant policies specific to address them (Brownell, Rosenberg, Sindelar, & Smith, 2004).

Context of Low Incidence Personnel Preparation

Low incidence disabilities include four categorical areas of specialization within special education: vision impairments (VI); hearing impairments (HI); severe disabilities (SD); and early intervention (EI). The Individuals with Disabilities Education Act (IDEA) defines low incidence disabilities as “a visual or hearing impairment, or simultaneous visual and hearing impairments; a significant cognitive impairment; or any impairment for which a small number of personnel with highly specialized skills and knowledge are needed in order for children with that impairment to receive early intervention services or a free appropriate public education” (20 U.S.C. 1400 § 675(a)(3)). Students with low incidence disabilities represent less than 1% of the school population (U. S. Department of Education, 2002). Although early intervention is not always considered to be low incidence, in fact, developmental disabilities and delays that are significant enough to warrant intervention in the early childhood years represent only a small portion of the total number of students with disabilities later to be served by the schools. Children from age 3 to 5 with special needs represent slightly over 1.4% of their birth cohort (U. S. Department of Education, 2002).

Nearly all states have differentiated their teaching licensure policies to address low incidence disabilities categories (Brownell, Rosenberg, Sindelar, & Smith, 2004). However, because programs to prepare personnel in low incidence disabilities are often expensive due to specialized or intensive training needs, colleges and universities have been slow to develop them and may fail to maintain them when resources are scarce. The National Center on Low Incidence Disabilities (NCLID) was created at the University of Northern Colorado to conduct research and disseminate information related to the preparation of personnel in the low incidence disabilities of vision impairments, hearing impairments, and severe disabilities. The Center to Inform Personnel Preparation Policy and Practice in Early Intervention and Preschool Education was created at the University of Connecticut to address the same issues with respect to early intervention and early childhood special education.

In addition, the preparation of personnel to serve students with low incidence disabilities is seen as a national priority, as evidenced by the U. S. Office of Special Education Programs offering a separate competition for personnel preparation grants in low incidence for under Part D of the Individuals with Disabilities Act (IDEA). State and federal grants have been used to stimulate development as well as to sustain operation of these personnel preparation programs for many years (Corn & Ferrell, 2000). These resources content or delivery and have enhanced outreach to rural areas (Ludlow, 1998). However, when the funding period is past, some universities are no longer able to maintain the innovations or to support the program (Winton, 2000).

Personnel Preparation in Vision Impairments

Students with vision impairments have received educational programming in the United States since the founding of Perkins School for the Blind by Samuel Gridley Howe in 1829. Early training programs tended to be located near the residential schools in which most students were served. In more recent years, the inclusion movement led to a growing recognition that these students could be served by local school districts, which resulted in a greater need for personnel, who were called upon to serve as itinerant teachers across several schools (Ferrell, 2002). This development led to an increased need for qualified VI teachers and resulted in severe shortages that persist to the day.

Nationally, VI personnel preparation programs prepare only a small number of new specialists each year and many of their graduates take positions in non-school programs (Mason, Davidson, & McNerny, 2000). In the past decade, 10 universities have closed their degree programs due to high cost and low enrollment and more are expected to follow (Corn, Ferrell, Spungin, & Rinnerman, 1997). Shortages have led to increased use of paraprofessionals, a practice that has been critiqued for focusing on personnel quantity rather than quality (Tolpor, Holbrook, & Koenig, 2000). Personnel preparation programs in the area of vision impairments have traditionally relied upon a campus-based model, because of the need for intensive training and hands-on practice in specialized strategies such as instruction in braille use and orientation and mobility training. However, chronic shortages, especially in rural areas, spurred a move to distance education models, including the use of virtual and/or across-state consortium agreements (DeMario & Heinze, 2001). Such programs have used combinations of Web-based instruction with interactive television and/or occasional face-to-face meetings in Colorado (Ferrell, Perschke, Lowell, & Roberts, 2001), Michigan (Bruce & Hwang, 2001), California (Lueck, 2002), Utah (Day & Sebastian, 2002), Texas (Cooper & Keefe, 2001; Griffin-Shirey, Almon, & Kelley, 2002), and New York (Trief, Decker, & Ryan, 2004).

Personnel Preparation in Hearing Impairments

Educational programs for students with hearing impairments have the longest history in the United States, beginning with the founding of the first school for the deaf in Hartford, Connecticut by Thomas Gallaudet in 1816. Students with hearing impairments were primarily served in state residential schools where they had access to teachers trained in sign language and
other specialized methods. The first personnel preparation programs in this area also were initiated at colleges and universities near the residential schools where these students were served. Inclusion has resulted in more of these students being served in their home school districts, although some may attend cluster schools where they can receive more specialized services and interact with peers who also use sign language (Luckner, 2002). The increased need for HI specialists to serve students in more school settings produced a demand that has exceeded the supply of new personnel (LaSasso & Wilson, 2000).

Programs to prepare personnel for students with hearing impairments have often developed in conjunction with programs in speech/language therapy and audiology, with a more clinical orientation due to the need to learn sign language as well as specialized techniques for teaching speech reading and speech production (Jones & Ewing, 2002). Several states do not have an HI personnel preparation program and must rely on personnel trained in other areas (Johnson, 2003). But the growing need to train enough HI teachers for local school systems, especially in rural areas, led first to the use of summer institutes for intensive training and later to some experimentation with distance education technologies. Programs have also entered into regional collaborative agreements to harness the resources of multiple institutions and address the needs of neighboring states (Johnson, 2003).

Although colleges and universities preparing HI specialists have produced a stable number of graduates for the last several years, increases in the number of students to be served and the spread of locations in which they receive services means that the demand has outstripped the supply of teachers (Luckner, 2002). This resulted in increasing interest in field-based programs and distance delivery to prepare teachers for these students (Jones & Ewing, 2002). During the 1990s, the University of Kansas Medical Center initiated an HI training program utilizing interactive television (Luekte-Stahlman, 1995); the video capability of this system allowed instructor and learners to use sign language during learning activities.

**Personnel Preparation in Severe Disabilities**

Students with severe disabilities were generally excluded from public school systems until the passage of the Education of All Handicapped Children Act (the forerunner of IDEA) in 1975. The law’s zero reject principle mandated that all children with disabilities were entitled to a free appropriate public education, no matter how severe their disabilities. The deinstitutionalization movement, coupled with this mandate, resulted in a growth of classrooms serving students with significant cognitive impairments and multiple disabilities, who were often served in special day schools or segregated classrooms (Westling & Fox, 2000). The move to more inclusive practices for this group, including placement in neighborhood schools and even within general education classrooms, created a need for more SD teachers with the highly specialized skills to address students’ complex needs (Jackson, 2002). These teachers are in short supply because fewer prospective teachers seek to work with students with severe disabilities (Lang & Fox, 2003). They also have high attrition rates due to the stress of dealing with complex needs and challenging behaviors (Lancar & Canosa, 1995). A trend toward inclusive placements has raised concern over the extent to which paraprofessionals may be replacing certified teachers in education programs for these students (Brown, Farrington, Knight, Ross, & Ziegler, 1999).

Programs for preparing personnel for students with severe disabilities were initiated at several major universities in the late 1970s in response to the new federal mandate to serve students in the schools. However, until fairly recently states were slow to adopt new certification categories for this group of students (Eichinger & Downing, 2000). As more SD specialists began to serve in consultative roles in regular classroom settings, some leaders in this field have called for training for all teachers to have specialized training (Jackson, Ryndak, & Billingsley, 2000) and for more collaborative models of training (Jackson, 2002). In addition, some have called for the development of programs focused on autism as distinct from severe disabilities, in recognition of the unique needs of these students (Scheuerman, Webber, Boutot, & Goodwin, 2003). Few institutions prepare teachers in SD and those that do graduate relatively low numbers compared with other teacher education programs (Ryndak & Kennedy, 2000).

Preparation programs in this area of specialization were among the first to adopt distance education technologies to prepare SD teachers for rural and remote areas. Distance education for SD programs initially involved the use of closed circuit television in Utah (Sebastian & McConnell, 1995), satellite television in Kentucky (Collins, 1997) and interactive television in North Carolina (Spooner, 1996) and use of interactive television (Spooner, 1996). More recently, online programs have been developed in a western state consortium (Spooner, Agron., Spooner, & Kiefer-O’Donnell, 2000) and in West Virginia (Ludlow & Duff, 2002).

**Personnel Preparation in Early Intervention**

Young children with special needs from birth to school entry age are the newest group to receive educational programs. In 1986, amendments to federal law extended the right to education to children with disabilities from three to six and provided incentives for states to also serve children from birth to three. Schools initially established special preschool programs to meet the needs of these children, while in most states, community agencies providing health or social services began to offer home-based or center-based programs for infants and toddlers and their families. The rapid growth of services combined with the dearth of personnel...
preparation programs at the time meant that the EI positions were filled far outstripped the available pool of trained applicants (McCollum, McLean, McCartan, Odom, & Kaiser, 1989). More recently, the growing demand for universal preschool programs combined with the focus on natural environments for young children with special needs led to the implementation of inclusive preschools serving children with and without disabilities.

Preschool programs were initially staffed by special educators trained to work with students at the elementary and secondary level, but it soon became obvious that such teachers needed more developmentally appropriate teaching methods (Association of Teacher Educators, Division of Early Childhood, and National Association of Education for Young Children, 1994). Leaders in the field called for unified or blended preparation programs that prepared early childhood special educators to also work with children with special needs (Miller & Stayton, 1998). Most recently, the difference in intervention philosophy and models between birth to three services and preschool programs has led to a call for separate training programs (Bruder & Dunst, 2005) as well as an interest in interdisciplinary training programs (Kilgo & Bruder, 1997) and family involvement in personnel preparation (Pretti-Frontczak, Gallourakis, James, & Hayes, 2002)) for infant and toddler specialists. Even today, not all states recognize the need for separate training and certification for this age group. However, there is growing recognition that EI personnel work as much with families as with children (Lava, Recchia, & Giovacco-Johnson, 2004) and with more complex special needs (Able-Boone, Crais, & Downing, 2003), so they need different instructional expertise than special educators for school-age student.

Because so many EI personnel were hired before programs were available, institutions of higher education were immediately faced with the challenge of training them in place. Field-based and distance delivery methods were utilized even in the early days of rapid growth (Hughes & Forest, 1997), often to address personnel needs in rural areas (Squires, 1996). A recent national survey identified 60 EI preparation programs and another 50 blended programs, with specialized programs more common at the graduate and undergraduate level (Center to Inform Personnel Preparation Policy and Practice in Early Intervention and Preschool Education, 2005). Distance education models first used satellite television (Ludlow, 1994) and audioconferencing (Ryan, 1999), then interactive television (Hains, Conceicao-Rumlee, Caro, & Marchel, 1999), and finally, online instruction (Ludlow & Duff, 2002).

National Survey of Low Incidence Personnel Preparation

This study involved a search of the professional literature and a search to locate Web sites with a focus on locating all available information on personnel preparation in low incidence disabilities. In considering the areas of vision impairments, hearing impairments, severe disabilities, and early intervention. All search activities were conducted during the period June 2004 to March 2005 using a the broadest possible range of descriptor terms for maximum coverage. The study was guided by four (4) major goals: to uncover available personnel shortage data for each of these areas, to compare state certification patterns in these areas, to locate personnel preparation programs in each area, and to identify distance delivery models used in these activities. The activities and findings related to each goal are described below.

Personnel Shortage Data

Web sites of government agencies, professional organizations, and special interest groups were searched for any reports of personnel shortages in the four low incidence disabilities areas. The only source located that specifically addressed low incidence disabilities area separately and in detail was found to be the annual Educator Supply and Demand Research Report published by the American Association of Employment in Education from 1998 through 2005. The region experiencing the greatest shortages in 2005 were all compared with ranking of states using the Rural Scho and Community Trust's Rural Priority gauge for 2004 (Beeson & Strange, 2005).

Vision impairments. Critical shortages of VI teacher were documented by the fact that this area has been identified as an area of considerable shortage since 1999 and has appeared in the top ten shortage areas in five of the last seven years (American Association for Employment in Education, 1999; 2000; 2001; 2002; 2003; 2004; 2005).

Hearing impairments. Critical shortages in the area of hearing impairments are documented by the fact that the area has been identified as an area of considerable shortage since 1998 and has appeared in the top five shortage areas in all of the last seven years (American Association for Employment in Education, 1999; 2000; 2001; 2002; 2003; 2004; 2005).

Severe disabilities. Critical shortages in the area of severe disabilities are documented by the fact that this area has been identified as an area of considerable shortage since 1998 and has appeared in the top five shortage areas in all of the last seven years (American Association for Employment in Education, 1999; 2000; 2001; 2002; 2003; 2004; 2005).

Early intervention. Critical shortages in the area of early intervention/early childhood special education are documented by the fact that this area has been identified as an area of some shortage since 1998 and has been in the top 20 shortage areas in all of the last five years (American Association for Employment in Education, 1999; 2000; 2001; 2002; 2003; 2004; 2005).

Low incidence teacher shortage patterns. The American Association for Employment in Education data document severe and persistent shortages in all low incidence disabilities, but especially in severe disabiliti
although the situation has improved slightly in early intervention (probably due to more blended programs), there is still a significant need for EI personnel. The situation may even have improved slightly in vision and hearing impairments, but the relative stability of shortages in these areas also points to a continuing need for VI and HI specialists. The apparent increase in shortages in severe disabilities probably reflects the growing recognition of this as a separate area of training and licensure to address the more complex needs of these children and the need for more teachers overall to serve them in inclusive placements. Overall, the worst shortages were reported in the Rocky Mountain, Western, and Southeast regions, which contain heavily rural states, while balanced supply and demand was reported only in the Northeast and Great Lakes regions. Unfortunately, these data are not disaggregated by state, so it is not possible to examine the relationship of teacher shortages in low incidence disabilities to specific state certification patterns. It is clear, however, that shortages are worse in more rural areas.

State Certification Categories

A review of information provided by the professional licensure or certification unit in each state education agency was conducted to determine the frequency of certification categories in low incidence areas. When certification patterns could not be determined by consulting the agency’s web site, a follow-up telephone call was made to the designated official to clarify the requirements. This information was also cross-referenced by checking other sources such as the list maintained by COPPSE. Data was collected from all 50 states and the District of Columbia between June 2004 and September 2004.

Vision impairments certification. Licensure of VI specialists is offered by 45 states and the District; the category is generally identified as vision impairments, visually impaired, blind and visually impaired, or blind and partially sighted.

Hearing impairments certification. Licensure of HI specialists is offered by 45 states and the District; the category is generally identified as hearing impairments, hearing impaired, deaf and hearing impaired, or deaf and hard of hearing. Three states have more than one certificate in this area: Kentucky includes both hearing impaired and hearing impaired with sign language; Minnesota includes both deaf and hearing impaired and oral/aural deaf education; Nebraska includes deaf/hard of hearing in subject and in field; and New Jersey includes oral/aural and sign language. In addition, two states, Hawaii and Illinois, include a separate category for teachers of deaf-blind students. Presumably, this difference reflects a desire to identify teachers who need more specialized training to work with some students. Some states that do not include this category of licensure may allow speech and language therapists to serve students with hearing impairments.

Early intervention certification. Licensure of EI specialists is offered by 36 states and the District; the category is identified by many different terms, including early intervention, early childhood special education, preschool handicaps or special needs, and early childhood exceptional needs. Several states have moved to blended licenses in early education and early childhood special education and do not permit certification in EI alone (Idaho, Illinois, Kentucky, Massachusetts).

Low incidence state certification patterns. These data reveal that not every state offers licensure in all low incidence areas. In fact, only 25 states offer certificates in all four areas. Nearly all (43 states plus the District) offer licensure in both vision and hearing impairments and about half (24 states) offer licensure in both severe disabilities and early intervention. These differences may represent the longer history of services to students with sensory impairments compared with the more recent development of programs of students with severe disabilities and preschoolers with special needs. Several states offer generic or non-categorical licensure in special education across all categories and grade levels (Montana, New Hampshire) or across all areas and ages except vision and impairments (Connecticut, Florida, Georgia, New Mexico, Oregon, Pennsylvania, Texas).

Personnel Preparation Programs

A review of the personnel preparation programs available at colleges and universities was conducted to determine the frequency and distribution of personnel preparation programs in low incidence disabilities. Programs were located through the listing provided by the National Clearinghouse for Professions in Special Education, the American Foundation for the Blind, the Center for Education of the Deaf, and the Division for Early Childhood of the Council for Exceptional Children. Since low incidence disabilities programs require extensive resources typical of universities rather
than colleges, other programs were located by searching all institutions of higher education in the listings for doctoral/research universities (extensive and intensive and Masters colleges and universities (I and II) published by the Carnegie Foundation for the Advancement of Teaching. Data were collected from all institutions listed in these courses between June 2004 and March 2005. NOTE: It is possible that additional programs exist that were not listed, in the sources consulted or listed on institution web sites.

Vision impairments preparation programs. The search process utilized for this study located 80 programs preparing personnel to work with students with vision impairments. Nearly half (38) of these programs are housed in doctoral/research universities; only a few (5) were found at colleges rather than universities. The distribution of VI programs appears to be heavily concentrated in the eastern sections of the country, especially the Northeast and Great Lakes regions, with relatively few programs in the Western and Rocky Mountain states (a region characterized by extensive and remote rural areas). Several states had no VI program but also no licensure in this area (Delaware, Montana, Washington), while others had licensure but no programs (Idaho, Maine, Nevada, New Hampshire, New Mexico, Rhode Island, Vermont, Virginia).

Hearing impairments preparation programs. The search process utilized for this study located 94 programs preparing personnel to work with students with hearing impairments. In addition, some institutions (8) have specialized deaf-blind programs. Nearly two-thirds (59) of HI programs are housed in doctoral/research universities; only a few (10) were found at colleges rather than universities. Again, the distribution of HI programs appears to be concentrated in the eastern sections of the country, especially the Northeast and Great Lakes regions, with other clusters in Texas and California and relatively few programs in the more rural regions of the Western and Rocky Mountain states. One state had no HI program but also no licensure (Montana) and two states had no licensure but at least one program (New Mexico, Washington). Several states had licensure but no programs (Maine, Nevada, New Hampshire, Rhode Island, Vermont).

Severe disabilities preparation programs. The search process utilized for this study located 118 programs preparing personnel to work with students with severe disabilities. Over two thirds (77) of SD programs are housed in doctoral/research universities; only two (2) programs were found at colleges rather than universities. Once again, the distribution of SD programs is heavily concentrated in the eastern sections of the country, especially the Mid-Atlantic and Great Lakes regions, and in California (30 programs) and Texas (11 programs), states in which nearly all graduate institutions offer a program. Another five (5) programs offered an endorsement in autism. Of the 18 states that have no licensure in severe disabilities, just over half (10) have no programs (Alaska, Arkansas, Connecticut, Montana, New Hampshire, New Jersey, North Dakota, South Dakota, Wisconsin, West Virginia) or more programs (Colorado, Florida, Georgia, New Mexico, Oregon, Pennsylvania, Texas, Washington); another four (4) states have licensure but no programs (Idaho, Missouri, Oklahoma, Rhode Island).

Early intervention preparation programs. The search process utilized for this study located 168 programs preparing personnel to work with students in early intervention/early childhood special education. Only one-third of the programs (56) are housed at doctoral/research universities, with the remainder spread across smaller colleges and universities. As with the other areas, the distribution of EI programs is heavily concentrated in the eastern sections of the country, especially the Northeast (particularly in New York) and Great Lakes regions, and to a lesser extent in the Southeast region. Of the 13 states that have no EI licensure, most (7) also have no programs (Connecticut, Hawaii, Michigan, Montana, New Hampshire, New Jersey, Texas), while the rest (7) have one or more programs (Florida, Idaho, New Mexico, North Carolina, Oregon, Pennsylvania, Texas). Three (3) states with EI licensure have no programs (Arkansas, Oklahoma, South Dakota).

Low incidence preparation program trends. These data show that only a small percentage of the nation’s 3,941 colleges and universities offer personnel programs in low incidence disabilities. The data also show that these programs tend to be offered in combination at these institutions; only five (5) universities offer all four programs (City University of New York Hunter College, San Francisco State University, University of Nebraska Lincoln, University of Utah, Vanderbilt University); however, many universities offer two or three programs.

With the exception of EI programs, low incidence disabilities personnel preparation is almost always offered at a major university that also offers doctoral training and has active research programs, particularly at doctoral-extensive institution. No doubt this is due to the need to employ faculty with special expertise to offer such specialized training. In addition, most programs are offered at the graduate level, especially in severe disabilities, which may reflect the certification structure for an add-on endorsement or the need for on-the-job training for practicing but uncertified personnel in urban and rural areas.

Distance Education Delivery Systems

As each low incidence personnel preparation program was identified, its Web site was also searched to determine whether the program was available via a field based or distance education model. When the mechanism used for distance delivery were could not be ascertained by consulting the program’s web site, a follow up telephone call was made to the identified contact person for clarification. Data were collected from all identified programs between June 2004 and March 2005.

Distance education in vision impairments. The search found that some form of technology-mediated distance education was used for delivery by 10 V
programs. California State University at Los Angeles for southern California offers a program using interactive television with Web support to southern California. The Pennsylvania College of Optometry offers a program entirely online using Blackboard. San Francisco State University offers a program using interactive television with Web support to northern California. Texas Tech University offers a program using a combination of face-to-face sessions on weekends and in summer, interactive television, and online instruction using Blackboard. The University of Arkansas offers a program using video streaming files and other online instructional formats using Blackboard. The University of Louisville offers a program entirely online using Blackboard that is available across the country. The University of Nebraska Lincoln offers a program using live sessions and/or interactive television with online instruction using Blackboard. The University of Northern Colorado offers a program entirely online using Blackboard that is available through the Western Governor’s University. The University of Utah and Utah State University offer a joint program using interactive television with Web support. Western Michigan University offers a program that uses videotaped class sessions mailed to participants.

Distance education in hearing impairments. The search found that some form of technology-mediated distance education was used for delivery by only four (4) HI programs. San Jose State University offers a program via interactive television with online instruction using WebCT and occasional live class sessions on campus. Texas Tech University offers a program using a combination of face-to-face sessions on weekends and in summer, interactive television, and online instruction using Blackboard. The University of Nebraska Lincoln uses live sessions and/or interactive television with online instruction using Blackboard. The University of Wyoming offers classes at off-campus sites with some Web support.

Distance education in severe disabilities. The search found that some form of technology-mediated distance education was used for delivery by eight (8) SD programs. Eastern Carolina University offers a program entirely online using Blackboard that is available across the country. The University of Kentucky offers a program a combination of interactive television and online instruction using Blackboard to reach learners in the eastern half of the state. The University of Louisville (Kentucky) offers a program entirely online using Blackboard that is available across the country. The University of Maine offers a program using interactive television with Web support throughout that state. The University of Nebraska Lincoln offers a program using live sessions and/or interactive television with online instruction using Blackboard. The University of North Carolina Charlotte offers a program using interactive television with Web support in at regional campuses throughout that state. The University of Northern Colorado offers a program entirely online using Blackboard that is available through the West with resident tuition rates available through the Western Governor’s University. West Virginia University offers a program entirely online via live web streaming plus audioconferencing and other online instructional formats using WebCT to serve a multi-state Appalachian region with resident tuition rates available through the Southern Regional Education Board’s Electronic Campus; this program is also available to other national and international areas by special arrangement.

Distance education in early intervention. The search found that some form of technology-mediated distance education was used for delivery by six (6) EI programs. Auburn University offers a program entirely online using streaming video files and WebCT. The University of Alaska Anchorage offers a program via audioconferencing with Web support throughout that state. The University of Nebraska Lincoln offers a program using live sessions and/or interactive television with online instruction using Blackboard. The University of Northern Colorado offers a program entirely online using Blackboard that is available through the Western Governor’s University. Utah State University offers a program using interactive television with online instruction using WebCT throughout that state. West Virginia University offers a program entirely online via live web streaming plus audioconferencing and other online instructional formats using WebCT to serve a multi-state Appalachian region with resident tuition rates available through the Southern Regional Education Board’s Electronic Campus; this program is also available to other national and international areas by special arrangement.

Low incidence distance delivery systems. The use of technology-mediated distance education to deliver low incidence personnel preparation programs is a growing trend. It is possible that more programs are available at a distance which were not identified by the search. However, only one (1) institution (University of Nebraska Lincoln) offers all four low incidence disabilities programs at a distance. In general, distance education delivery systems are more likely to be adopted at major universities with a landgrant mission and an extensive rural service area, such as Utah State University, West Virginia University, and the University of Wyoming.

Most distance education programs are only available within a local or regional service area. To some extent, the choice of delivery system affects the area that can be served, especially when some face-to-face sessions are required or interactive television is used. Some programs are a result of collaboration across state institutions (such as the SD programs in Kentucky and North Carolina or the VI program in Utah) to meet the needs of an entire state, while others represent consortium agreements of universities in several states (such as the VI program shared by Texas, Arkansas and Louisiana) to pool expertise or share resources across a broader region. Some online programs (such University of Northern Colorado and West Virginia University) are now open to
individuals across the country even though active recruitment is generally confined to a more localized area, while other online programs (such as Eastern Carolina University and the University of Louisville) are actively soliciting applicants nationwide through advertisements in professional journals.

**Implications of Study Findings for Rural Schools**

This study was designed to assess the current status and future trends of personnel preparation in low incidence areas, especially as they impact critical shortages of special education personnel in rural schools. By examining the four interrelated factors of teacher shortage data, state certification patterns, available personnel preparation programs in the four low incidence areas, and current distance delivery systems for these programs, a better understanding of why rural schools experience such difficulties in hiring teachers in the areas of vision impairments, hearing impairments, severe disabilities, and early intervention.

**Critical shortages may persist.** The analysis of shortage data reported in this study, when compared with state certification patterns, suggests that shortages in low incidence disabilities are chronic and severe and not likely to be reduced soon. These shortages will most likely be at their worst in sections of the country with substantial rural areas, such as the Southeast and West. Since these regions also have the fewest low incidence personnel preparation overall, it is unlikely that there will be an adequate supply to meet the continuing demand for teachers. Shortages will also be more significant in the area of severe disabilities, which is experiencing a growth in demand without a concomitant growth in preparation programs. The emergence of autism as a separate licensure category in some states will only add to this problem.

**Supply may not meet demand.** The data collected in this study about the number of personnel preparation programs raise serious questions about the ability of existing programs to address critical shortages in the field. With the exception of early intervention, where the trend to blended undergraduate level training in early childhood education and early childhood special education is likely to continue, there are probably not enough programs and they most likely do not have high enough enrollments to produce the number of new personnel needed each year. The reauthorization of IDEA as the Individuals with Disabilities Education Act in Fall 2004, which mandates that all special education teachers must also achieve highly qualified teacher status under the No Child Left Behind Act, will exacerbate state of personnel preparation in low incidence disabilities. If entry or exit criteria for training programs are increased, then shortages may increase as programs are unable to attract new students or prepare them in a timely, cost-efficient manner.

**Distance education may not increase the supply.** The data collected in this study about available distance delivery systems reveal that even these efforts are now enough to address critical shortages in low incidence disabilities. The small number of distance education programs, as well as the relatively localized service areas of many of them, suggests that even this approach to training personnel may not significantly enhance accessibility of training to rural areas. To some extent, access to these programs has been hampered by the technologies used, especially since so many have relied on interactive television, which requires sites equipped with fairly expensive equipment, and the relatively slow evolution to fully online instruction. Even when programs are available more widely, as online programs are able to be, programs may encounter additional problems such as high non-resident tuition and fees, time zone challenges for synchronous instructional formats, and institutional and state policies that prohibit crossing traditional service areas to reach new areas in state or crossing state lines to go out of state. Finally, many of these programs are dependent on state and federal grants and may be discontinued when such funding is no longer available.

**More studies are needed to understand and solve the problem.** The findings of this study make clear that critical shortages of personnel in vision impairments, hearing impairments, severe disabilities, and early intervention will continue to threaten the access to needed services as well as the quality of educational programs for students with low incidence disabilities in rural schools. Additional studies are needed to determine the teacher shortages in low incidence disabilities in each state and in rural areas within each state, the number of individuals who enter and complete low incidence disabilities personnel preparation programs (and who take special education positions and in what school systems), and the extent to which distance education programs are successful in increasing the pool of available personnel in general and impacting recruitment and retention of teachers for rural schools in particular. Until there is an adequate knowledge base that provides information that can be used to develop policies and practices, it seems likely that there will never be enough teachers in low incidence disabilities areas.
References


