Written Testimony for Dr. Gerard J. Buckley

Mr. Chairman and Members of the Committee:

I am pleased to present the following invited testimony regarding the topic of "Leveraging Higher Education to Improve Employment Outcomes for People who are Deaf or Hard of Hearing."

Background

In the 1960s, it became apparent that an institution with a technical and professional emphasis was needed for people who were deaf and hard-of-hearing. In 1965, Representative Hugh Carey and Senator Lister Hill introduced the companion bills that would become Public Law 89-36, signed by President Lyndon B. Johnson, establishing a National Technical Institute for the Deaf (NTID). Over 20 postsecondary institutions expressed an interest in being the sponsoring institution for NTID, with eight submitting formal proposals. In 1966, the Rochester Institute of Technology (RIT), founded in 1829, was selected for being the only institution meeting all of the mandated requirements. RIT had a national reputation for its technical programs, a history of incorporating cooperative work experiences with education (since 1912), existing partnerships with business and industrial leaders, and connections to deafness through its own past admittance of deaf students, several of whom had graduated from the nearby Rochester School for the Deaf.

RIT/NTID first admitted students, 70 of them, in 1968 and graduated its first class of 54 students in 1971. I began my academic career at NTID in 1974 and went on to graduate with a B.S. in Social Work from RIT in 1978. I then went on to complete a Master's in Social Work at the University of Missouri and a Doctorate in Special Education at the University of Kansas. I spent 10 years heading Gallaudet University's Regional Center at Johnson County Community College in Kansas before returning to my alma mater as a faculty member and administrator. In January of this year, it was my honor to become NTID's first alumnus president. I have also served in the past as president of the American Deafness and Rehabilitation Association and a member of the National Advisory Board of NIH's Institute on Deafness.

Our Students

Much has changed since that first group of 70 students came to NTID. This fall, NTID's enrollment is higher than it has ever been, with 1,547 students – 1,354 of which are deaf or hard-of-hearing. This fall's enrollment includes students from 49 states and 19 foreign countries.

More of our students are coming from mainstream high schools, and we have seen a dramatic increase in the number of students enrolling with cochlear implants – from 75 students (6%) in FY 2002 to 305 students in FY 2011 (23%). Similarly, our students are increasingly ethnically diverse, with 29% of them from minority backgrounds (up from 25% in FY 2007). Over the last

decade, we have also seen an increase in the number of students with secondary disabilities. They represented 11% of the student population in FY 2011 compared to 5% in FY 2000.

RIT and its hearing student population have also changed as a result of having NTID students on campus for the last 43 years. RIT's total enrollment this fall is 17,652 students. Those students are represented by RIT Student Government, whose current president is Greg Pollock, a former NTID Student Congress President and deaf student pursuing his bachelor's degree in Professional and Technical Communication. This year and last year, Greg was the only student to give a speech at the RIT Convocation for New Students and Families, which he did in American Sign Language or ASL (with voicing and captioning provided by NTID Access Services staff). Many RIT students become interested in ASL as a result of NTID. The number of students taking ASL has more than tripled at RIT over the past four years – this year, 2,193 students enrolled in ASL classes in just the fall, winter and spring quarters. RIT students organize the No Voice Zone, where they meet regularly (often in late evening) to teach, laugh and learn about deaf culture. Another example of the integration of NTID within RIT is the opening of the RIT American Sign Language and Deaf Culture Community Center last year, right in the center of campus at RIT's Student Alumni Union.

Fulfilling Our Mission

Flexibility informs every aspect of NTID's preparation of students for the workforce – flexibility in terms of academic programs, communication preferences, support services, and professional experiences. Students who are deaf or hard-of-hearing can be admitted directly into baccalaureate degree programs at RIT, while receiving all the support and access services NTID offers. They can enter pre-baccalaureate programs individually tailored to prepare them for entry into baccalaureate degree programs or enroll in the associate + bachelor's degree program. Students can also pursue associate degrees in various technical programs. RIT also offers a variety of Master's and Ph.D. programs, should NTID students wish to continue as graduate students.

Regardless of degree program, deaf and hard-of-hearing students enrolled at NTID or supported by NTID as they pursue a degree at RIT are able to take advantage of myriad access services designed specifically for them. There are faculty tutors, advisors, notetakers, and captionists, as well as the largest staff of full-time interpreters of any college in the world. On-site audiologists provide services related to hearing and hearing aids, cochlear implants and FM systems. Speech-language pathologists offer a broad range of speech and language services. NTID also works with each of RIT's colleges to provide the support needed to implement strategies for maximizing access to campus services for deaf students.

Cooperative work experiences, or co-ops, are an integral part of academic programming at NTID. Employment specialists at the NTID Center on Employment assist students in securing 10-week work experiences that augment their studies. Employment specialists or faculty members visit many students and their supervisors at their co-ops to assess progress and resolve any workplace issues. Most academic programs require one to three cooperative assignments. For example, RIT's Student Government President Greg Pollock worked in the Public Affairs Department of Dow Chemical's Business Services Group in Michigan. Finance

student Erick Hoens worked as a branch intern for J.P. Morgan Securities in New York City. Mechanical Engineering student Kelly McNabb worked on polymer blends for fuel cell technology at Tufts University in Massachusetts. Medical Illustration student Mitsuyoshi Yabe worked as a medical illustration intern at the University of California at San Diego. Applied Computer Technology student George White worked as an engineering aide at the Aviation and Missile Research Development and Engineering Center in Alabama. Biomedical Sciences and Diagnostic Medical Sonography student Abbi Simons worked as a marine botany anatomist at the Smithsonian Institution National Museum of Natural History here in D.C. These are just some examples of the hands-on job experiences that NTID students have at major companies and institutions nationwide. Requiring a co-op experience is a practice that other higher education institutions could adopt to better prepare students, with or without disabilities, for the workforce.

Following RIT's leadership in this area, NTID is increasing its emphasis on innovation and creativity, both in the curriculum and in other activities across campus. We encourage our faculty to actively involve students at all levels in scholarship and innovation activities. Last year, NTID awarded to faculty and staff innovation grants related to student services or scholarship/research projects, requiring them to include students as active team members. NTID faculty, staff, and students participate annually in Imagine RIT, an innovation and creativity festival that is attended by over 30,000 people. At Imagine RIT, NTID Laboratory Science Technology students present their research; the NTID Electric Bike Club shows off their no-carbon-emission bicycles; and students present applications they have developed for deaf and hard-of-hearing users of smartphones and PDAs. Also, this Friday, October 14, NTID will celebrate a groundbreaking ceremony for Rosica Hall, a first-of-its-kind facility specifically designed to foster innovation, research and entrepreneurship among our deaf and hard-of-hearing students.

Changes at RIT also help NTID remain dynamic as the premier technical institute for the deaf and hard-of-hearing. RIT is one of the largest producers in the country of baccalaureate degrees in the STEM (science, technology, engineering, and math) fields. It has recently added a College of Health Sciences and Technology as well as the Golisano Institute for Sustainability, featuring the world's first doctorate in sustainable production. To support technical fields of study, RIT's campus offers wireless computer access, smart classrooms with state-of-the-art computers and multimedia-based technologies, computer graphics and computer-aided drafting labs, microelectronics and computer engineering facilities, digital printing presses, laser optics labs, a robotics program and fully networked residence halls.

NTID also aims to provide deaf and hard-of-hearing middle school and high school students with educational experiences designed to encourage them to seek postsecondary education. NTID conducts a SpiRIT Writing Contest; a National Science Fair for deaf and hard-of-hearing students in grades 6 through 11; Explore Your Future summer camp for upperclass high school students; TechGirlz and TechBoyz summer camps for junior high students; Steps to Success weekend camp for African-American, Latino-American and Native-American students; a math competition for middle school students; and a Digital Arts, Film and Animation Competition for high school students. NTID also assists employers and secondary and postsecondary

educational institutions that work with students who are deaf or hard-of-hearing through the efforts of our Postsecondary Education Programs Network – Northeast Region center. NTID's Project Access initiative is designed to help educators incorporate basic strategies to foster better learning for mainstreamed deaf and hard-of-hearing students. Many other outreach activities are aimed at deaf and hard-of-hearing adults who are post-college and now employed. These kinds of outreach activities could be used at other postsecondary institutions to help prepare and generate interest in young people with disabilities for college and the workforce.

Outcomes

In the late 1970s, it became increasingly clear to NTID that self-reported questionnaires completed by graduates were inadequate for assessing the impact of an NTID education on employment outcomes. As a result, institutional partnerships have been forged over time with the Internal Revenue Service, the Social Security Administration, and disability employment and public policy experts at the School of Ecology at Cornell University. NTID has not only developed memoranda of agreement with these federal agencies, but also data sharing agreements that ensure complete confidentiality of exchanged information. The resulting program of research generated and supported by these partnerships and agreements is described as "unique throughout higher education and rehabilitation services" by Dr. Richard Burkhauser, who is an internationally recognized public policy expert at Cornell University.

By providing the social security numbers (serving as individually unique identifiers) of its graduates to appropriate federal agencies, NTID has obtained aggregate statistics on yearly earnings, employment participation, and participation in federal assistance programs such as Supplemental Security Income (SSI), and Social Security Disability Insurance (SSDI). Analyses of these aggregate data have revealed the return on investment for students who attend RIT/NTID. For example, deaf and hard-of-hearing bachelor degree graduates return to the federal treasury an average of $6,632 per year in federal taxes during their first 25 years of employment. This figure exceeds, by $2,063, the annuitized amount of $4,569 required to pay back the federal investment for their education (Clarcq, J. R. & Walter, G. G., 1998; Schley et al, 2011). Using longitudinal data collected through this same program of research, NTID also has documented the effects of successive degree levels from RIT for deaf and hard-of-hearing individuals. For example, 2006 research showed that each successive degree level translates to an average $10,000 increase in taxable yearly earnings.

Additionally, research conducted in 2006 compared a group of NTID deaf and hard-of-hearing graduates with three other groups: those students who were denied admission, those who were accepted but chose not to attend, and those who enrolled but did not persist to graduation. In each of these cases, it was clear that graduating as an NTID-supported student at RIT meant on average a significant increase in earnings. Further observations include the decreased dependency on federal assistance programs such as SSI and SSDI for those individuals who graduate from RIT/NTID, as compared to those who do not (NTID Annual Report 2010, http://www.ntid.rit.edu/sites/default/files/annual_report_2010.pdf). This resulted in a lower expenditure of Federal funds on deaf and hard-of-hearing students who attend and graduate from RIT/NTID.

In short, deaf and hard-of-hearing graduates from RIT/NTID have higher employment rates and higher earnings than deaf and hard-of-hearing students not graduating from RIT/NTID. By age 50, deaf and hard-of-hearing bachelor degree graduates from RIT/NTID earn on average $6,021 more than those with associate degrees; who in turn earn $3,996 more on average than those who withdraw; who earn $4,329 more than those who are not admitted.

Over the last five years, our job placement rate for graduates is 90%. Michael Anthony, a 2010 graduate with a B.S. in Computer Science and Game Design and Development, is now working for Microsoft as a Software Development Engineer for Xbox. Monica Donovan, a 2006 graduate with a B.S. in Visual Media, started her own photography business. Lawrence Dorsey, a 2008 graduate with an associate degree in Computer Integrated Machining Technology, is a machinist for Rock Island Arsenal. Alex Johnson, a 2011 graduate with a B.S. in Mechanical Engineering, is part of a New Engine Development Team with GE Aviation. Melissa Skyer, who went on to get an M.S. in Environmental Science in 2006, is an environmental specialist with Southern California Gas, Natural Resources & Land Planning Group of Environmental Services. Right here in D.C., we have Christopher Samp, a 2010 graduate with his M.S. in Public Policy, who is now working as a congressional staffer for Senator Dick Durbin.

Building and Maintaining Relationships with Employers

RIT/NTID's focus on career education and preparation for career success through experiential learning and cooperative work experiences provides key advantages for deaf and hard-of-hearing students in securing employment after graduation. NTID's annual Job Fair is in its 11th year and has grown from featuring 17 employers to over 40 employers, specifically recruiting deaf and hard-of-hearing graduates. The NTID Center on Employment identifies new employers with which to build relationships by networking and exhibiting at human resources conferences, using the community and professional contacts of parents of new NTID students, helping alumni encourage their employers to recruit from NTID, and inviting companies to visit campus, meet our students, and learn about the technical programs we offer and skills we are developing.

The NTID Center on Employment also initiates and delivers consultation, training, follow-up and other support services to employers. Through these services, employers become aware of the needs of deaf and hard-of-hearing people and facilitate graduates entering the workforce. For instance, in FY 2010, the NTID Center on Employment presented programs to 521 human resources professionals, including the workshop "Working Together: Deaf and Hearing People." This workshop has been given on-site to companies like Honda, Procter and Gamble, the Walt Disney Company, The Dow Chemical Company, and the CIA to help employers understand hearing loss, accommodate deaf and hard-of-hearing employees, and ease communication. NTID also produces several brochures and other materials to educate employers and facilitate communication, such as the *Let's Communicate* brochure with basic signs and tips for communicating with ASL users and the DVD *I Can Work for You!,* featuring students and graduates talking about their successful co-op and employment experiences. The extensive employer outreach and education that the NTID Center on Employment does on behalf of students who are deaf or hard-of-hearing could be replicated by other institutions on behalf of students with disabilities in general.

NTID's relationship with employers directly affects the educational programs we provide. NTID's co-op visitation program enables faculty and staff to visit students while on their co-op education assignments. During that visit, faculty are able to observe firsthand the job environment and the NTID student's responsibilities in that environment, which allows them to evaluate what skills that student needed to acquire at NTID in order to be successful. Similarly, every employer participating in NTID's co-op program has an opportunity to provide feedback on what technical or communication skills its co-op student needs to improve before graduation. NTID's academic programs also have employer advisory groups in which employers in the field can review the curriculum for that program and offer suggestions.

Recently, the National Science Foundation provided funding for RIT/NTID to establish DeafTEC: Technological Education Center for Deaf and Hard-of-Hearing Students, an Advanced Technological Education National Center of Excellence. There are approximately 40 advanced technological education centers across the country, and DeafTEC will be the first ever established to serve individuals who are deaf or hard of hearing. In addition to serving as a national resource for high schools and community colleges that educate deaf and hard-of-hearing students in STEM-related programs, DeafTEC will assist employers hiring deaf and hard-of-hearing individuals. Through its comprehensive website, DeafTEC will serve as a clearinghouse for information related to technical education and technician careers for deaf and hard-of-hearing students, including career awareness materials, teaching strategies for improving student access to learning, developmental math and English curricula, and information for employers to help them provide a more accessible workplace.

Communications Technologies

Communication technologies that facilitate communication for and with people who are deaf and hard-of-hearing are just as much for the general hearing public, or broader society, as they are for deaf students and graduates in that they foster communication between both groups. Because of the low incidence of deafness, most technologies utilized by people who are deaf have come from the adoption or adaptation of technologies for people who hear, with the exception of various assistive listening devices.

In the early 1980s, NTID researcher Dr. Ross Stuckless adapted the "stenotype system" utilized by court recorders to provide real-time captioning for classroom use. The success of this application in RIT classrooms led to the development and deployment of C-Print. C-Print is a speech-to-text system developed at NTID, as a communication access service option for deaf and hard-of-hearing students in educational environments. It was developed by researchers to improve the classroom experience for students at both the secondary and college levels. This technology has not only provided access to students who are deaf but also serves to reinforce materials presented in classrooms for those who hear.

Presently, the NTID Center on Access Technology is working with various companies to develop devices that will use off-the-shelf technology to create innovative applications for people who are deaf. For example, a proprietary smart phone application and micro-circuit is being licensed to a corporation for a notification device. Additionally, a Bluetooth-based device/micro-circuit application is being developed for athletic events where deaf and hearing

people compete together. Further, a video-based see-through white board system is being developed for use by deaf people teaching students who are deaf so that the teacher always faces the students. These are three applications of off-the-shelf technologies that are being innovatively applied for use with people who are deaf.

Challenges for the Future

Despite all the outreach NTID, Gallaudet University, and other entities conduct with employers, there continues to be prejudice and ignorance about hiring and working with deaf and hard-of-hearing individuals. Earlier this year, ABC's television show *What Would You Do?* featured NTID students Hannah Worek and Maya Ariel acting as if they are trying to get jobs at a coffee shop. An actor portraying the manager of the coffee shop told the young women that they would not be hired simply because they are deaf. The show looked at how the general hearing public who witnessed the discrimination would react. Sadly, in this instance, only a few individuals spoke out against the management. What is worse, several customers who identified themselves as HR professionals advised the managers on how to discriminate in ways that could not be easily detected or proven. Almost five million viewers tuned in, and NTID is using the show as another launch pad to provide outreach and education to human resource professionals and employers.

Other challenges continue to be ensuring that NTID students, like hearing students, keep pace with the changing job market and technical skills needed in the workplace. RIT and NTID work to address those challenges by creating new academic programs in "hot job" categories, using employer feedback to tweak existing academic programs, and making sure equipment and facilities continue to be state-of-the-art. Appropriate academic preparation for college is another challenge for some deaf and hard-of-hearing students. NTID tries to improve that preparation through its outreach programs that connect with middle and high school students and alert them to what they need to do to prepare for college and career success.

The Road Ahead

NTID has a strategic plan for the next 10 years that establishes key initiatives responding to existing challenges and shaping future opportunities. We want to improve services to underprepared students by working with regional partners to create intensive summer academic preparation programs in select high-growth, ethnically diverse areas of the country. We are pursuing enrollment targets and admissions and programming strategies that will result in increasing numbers of our graduates achieving baccalaureate degrees and higher, while maintaining our focus and commitment to quality associate-level degree programs that lead directly to jobs. We will continue our commitment to admit and support qualified African-American, Latino-American, and Native-American students; qualified students who use ASL, spoken English, and both ASL and spoken English; and qualified students with secondary disabilities and diverse learning characteristics. In response to employers' emphasis on "soft skills" as being key to workplace success, we will create more opportunities for the integration of soft skills (such as time management, teamwork, critical thinking, ethical and civil behavior, independence, etc.) into course objectives.

We are also mentoring deaf and hard-of-hearing NTID employees to have the honor, as I do, of serving NTID as faculty, administrator and now president. I am excited to lead NTID as we build on our rich history, navigate new and existing challenges, and continue to prepare our students for employment in the workforce and enrichment in their communities.