NTID focus

Technical & Professional
Education Programs

National Technical Institute for the Deaf at Rochester Institute of Technology

It was little less than a decade and a half ago that the deaf population of our nation found itself restricted to vocational and technical education opportunities that were available only in state residential schools for the deaf or on the job. The usual deaf adult was lucky to have learned a trade such as baking, shoe repair, woodworking, drafting, or printing in the composition room while in high school or through apprenticeships. Even most deaf college graduates with bachelor's degrees considered themselves fortunate if they found employment readily; and more often than not they ended up in the fields of teaching or printing for which they were ill-prepared. Deaf people, as a group, were either unemployed or underemployed; and vocational rehabilitation counselors did not find it easy to close the files on their deaf clients.
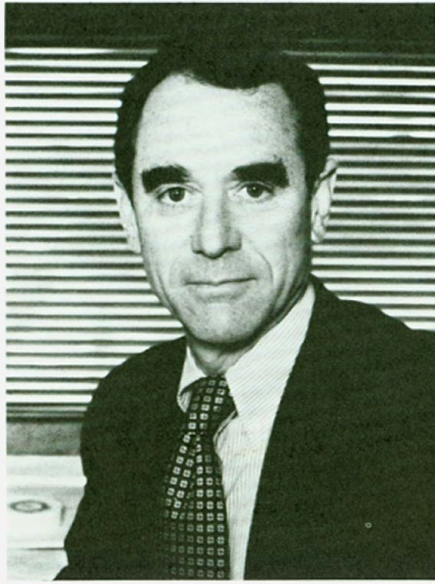
Over the past thirteen years, vocational and technical education opportunities for the deaf have broadened dramatically and, as a result, so have their employment opportunities. In September of 1968, the National Technical Institute for the Deaf (NTID) opened its doors on the campus of Rochester Institute of Technology (RIT). In the process, it opened the doors of every other college on that campus to the deaf. In September of 1969, under the co-sponsorship of the Rehabilitative Services Administration and the

Bureau of Education of the Handicapped, three regional vocational education programs were initiated at the Technical Vocational Institute in St. Paul, Minnesota; at Seattle Community College in Seattle, Washington; and at Delgado Junior College in New Orleans, Louisiana. All three of these programs are still active and today each serves between 100 and 150 deaf students. An amendment in 1968 to the Vocational Education Act provided that 10 percent of the federal dollars used to support vocational education at the state and local levels be used for education of handicapped persons. As a result, many community colleges throughout the country have initiated programs in vocational education for the deaf. Gallaudet College and NTID recently have produced the fourth edition of a guide to post-secondary programs serving the deaf, which includes a description of 60 such programs, each of which serves 20 or more deaf students. In the early 1970s, Gallaudet College established a job placement program for its graduates, and like many liberal arts colleges, it has begun to build up its efforts in career preparation. In 1973, the amendments to the Vocational Rehabilitation Act provided for the civil rights legislation for all handicapped persons which eventually led to the signing of the regulations known as Section 504. In the same year, 1973, the then Commissioner of Education, Dr. Sidney Marland, initiated his thesis of universal career education. And in 1976, the 94th Congress passed Public Law 94-142, which provides for equal educational opportunities for all handicapped people. All of these developments are designed to enhance vocational and technical education opportunities for the deaf as a sub-population among the entire population of handicapped people.

*It is the purpose of this **Focus** to offer narrative detail about the many technical education programs that have been made available to deaf persons through NTID at RIT.*

William E. Castle

Dr. William E. Castle
Vice President of Rochester
 Institute of Technology
Director of the National Technical
 Institute for the Deaf

NTID focus

In any given academic year, 20 to 25 percent of the deaf students sponsored by the National Technical Institute for the Deaf (NTID) pursue bachelor's degree programs in the several other colleges of Rochester Institute of Technology (RIT); and another 50 percent of the deaf students take one or more of their courses in one of the other colleges. We are pleased with these facts, but we would like to see these percentages increase in the future; and we are hopeful that by 1990 closer to 40 percent of RIT's deaf students will be pursuing bachelor's and master's degrees in our other colleges.

As is well known, to pursue the programs they do, deaf students require a good deal of special support, including counseling, speech and hearing services, academic advisement, tutoring, interpreting, notetaking, job application training, and special efforts in job development in today's work world.

Regarding the last, we insist that the deaf students play a very active role and our goal for them is the same as it is for our hearing students —to place all graduates in jobs that match their training. This is not easy, but so far we have placed 98 percent of our deaf graduates who want to enter the labor force, and 95 percent in jobs commensurate with their training.

We at RIT are very proud of this record and pleased to be able to guide so many young deaf adults into productive lives.

M. R. Rose

Dr. M. Richard Rose
President of Rochester Institute
of Technology

NTID focus

Publication of the National Technical Institute for the Deaf
at Rochester Institute of Technology, Rochester NY 14623
Fall 1981

Technical & Professional
Education Programs

Don't panic—our cover photograph isn't contagious. This almost three-dimensional slide depicting the common bacteria E. Coli is part of a project which was produced by a team of instructional developers for use in a microbiology course taught at the Institute.
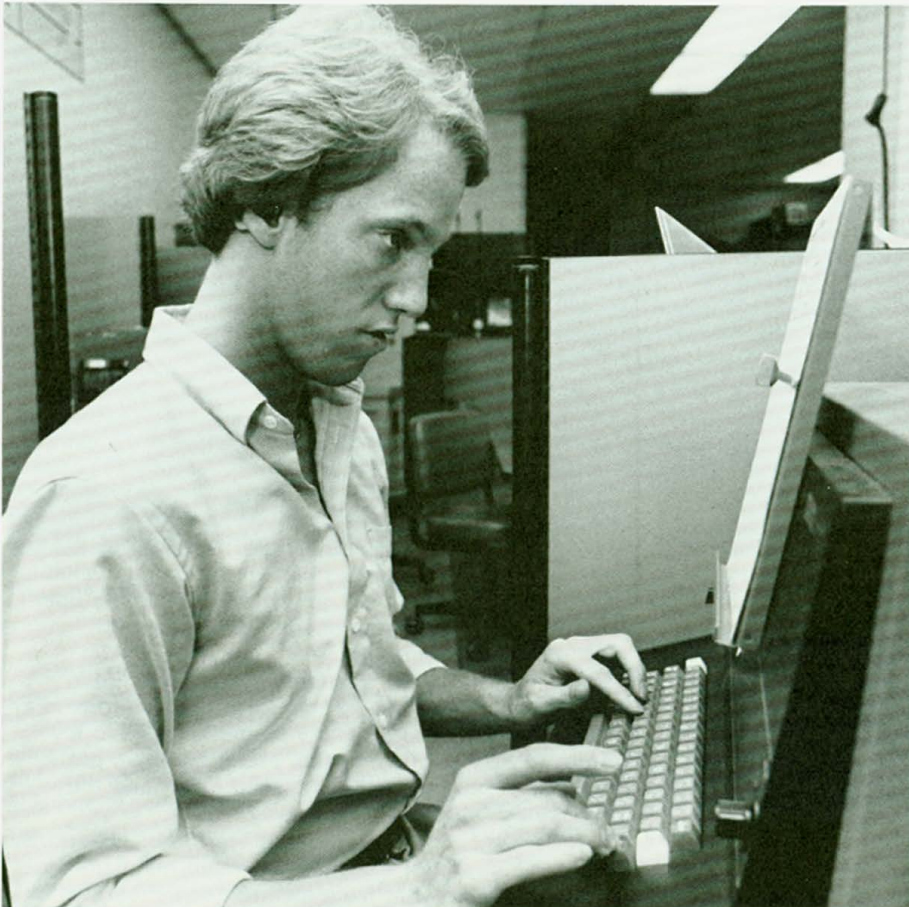
Preparing Students
FOR THE 21ST CENTURY

The history of accommodation for deaf people in the work force of our nation has not been a noble one. Opportunities were limited, stigmas and stereotypes about deafness were firmly held, and progress to open the job place for these Americans was painfully slow.

By the turn of the century, many businesses still were reluctant to hire the deaf. And those who tried to run their own businesses were met by numerous obstacles, as related by author Leo Jacobs in *A Deaf Adult Speaks Out*.

Jacobs recounts how his deaf father attempted to run a small printing shop in San Francisco in the early 1900s. The competition proved to be too much for him, as he found that customers expected both quality and a lower price to compensate for the inevitable communication difficulties.

Many of the customers did not seem to consider the fallacy of their argument. As the younger Jacobs says, "Because my father was deaf, he should be cheap."

Unbelievably, career choices for the deaf were still severely limited as America moved into the 1960s.

"These young people are a healthy and eager group, ready to make a start toward pursuit of individual careers. They mature, both educationally and personally, while at NTID. When they leave us at graduation, they are proud, secure, and job ready."

The technical education programs involve study and preparation for specific career options. Students may pursue certificate, diploma, or associate degree programs through NTID. They may also earn associate, bachelor's, or master's degrees through the professional education programs of the other colleges of RIT.

NTID's program offers study in the following career areas: Business, Computer, Engineering Technologies, Applied Science/Allied Health, Media Production, Photography, Printing, and Art. The total number of career areas available to students on the RIT campus exceeds 150.

To date, more than 1,350 graduates have been placed in 87 job categories around the country. Among the positions secured—computer programmer, offset printer, accountant, actor, engineer, medical laboratory technician, architectural technician, chemist, economist, machinist, secretary, photographer, and designer.

Today's graduates leave school confident of their ability to meet the challenges ahead. They have been prepared both in the classroom and "on-the-job" through the Institute's cooperative work experience program.

"Co-op" is a chance for students to apply their classroom learning to practical experiences in business and industry. It also opens doors for postgraduate positions, because employers discover that their deaf co-op students are highly motivated, conscientious, and qualified.

NTID continues to prepare its students in those areas of study which reflect society's changing needs and wants. As the 21st century approaches, deaf graduates will be ready to compete—and succeed—in the technological mainstream.

—*Kathleen Sullivan*

Despite an unprecedented worldwide industrial and technological revolution, only a small number of new job choices were available to the deaf.

Slowly, the doors to employment in higher level technical professions began to open for the deaf—and they were more than ready to meet the challenge. At last, the question, "What can the deaf do to earn a living?" was being answered with a resounding, "Everything!"

Deaf people emerged in drafting, lithography, health and medicine, agriculture, and business professions, and the number of young deaf adults seeking postsecondary education began to increase.

The National Technical Institute for the Deaf (NTID) at Rochester Institute of Technology (RIT) was, and still is, a major recognized force in this upward trend. Since its inception in 1970, the Institute's Division of Technical and Professional Education has served more than 3,000 students.

"We see students arrive on this campus every summer, 300 strong these past few years," says Dr. Bruce Peterson, associate dean and director of NTID's Technical and Professional Education Programs.

"And gladly would he learn, and gladly teach"*

Forty years ago, an ambitious student at the Rochester School for the Deaf was asked if he would take a job as a machinist and interpreter for a deaf foreman at the Davenport Machine Tool Co. in Rochester.

The young man pondered the offer, decided the practical experience would be better for him than a diploma, and accepted the position.

Sixty-year-old Earl Lake says he's never regretted that decision. But six years ago, after more than 30 years in the tool and die industry, he finally decided to return to school—as a teacher at the National Technical Institute for the Deaf (NTID).

"I decided to change careers because there were no deaf people in the community I could 'talk shop' with," Earl recalls. "I was elated to have the opportunity to teach an occupational skill to young deaf people. I was eager to share my work experience."

He certainly has a lot to share. His knowledge of the tool and die industry dates back to the mid 1940s, when he first started working at Davenport. It was at this time that Earl discovered what a highly skilled trade tool and die is.

"I developed a strong desire to try it," he recalls. "I realized it would require technical studies, but I couldn't afford tuition and I knew I would have problems understanding instructors."

Earl decided "on the job" training was his best bet, so he kept working. But he also applied for independent study courses in engineering drawing and technical mathematics through the Chicago Technical College's correspondence school.

In addition, he grabbed every technical book he could find and studied furiously. He's a great believer in the power of reading. "I tell my students to read every technical book they can find," Earl says. "They may not use all the information, but it will help them solve many problems."

Solving problems is Earl's forte. He prides himself on being available anytime, anywhere to help a student with an academic or personal problem.

"If a student says, 'Meet me at 7 p.m. in the dorm,' I'll be there," Earl says. "Many students come to my office to talk about personal problems. I try to help them, and they usually go away happy."

RIT graduate Fred "Wes" Hawkins, for example, changed his major last year from electromechanical technology to manufacturing processes. The confusing transition was made a bit easier when Earl took the time to show Wes some quicker ways to operate the complicated shop machines.

That extra effort paid off. Wes got a job for the summer at Advanced Mold and Tooling, Inc. in Rochester, and the Pennsylvania native now says he'll stay in the area for a while.

In six years at RIT, Earl has taught both deaf and hearing students, and he notes some similarities and differences between the two groups.

*from *The Canterbury Tales* by Geoffrey Chaucer

4

Earl Lake describes the operation of a Le Blond lathe to a manufacturing processes student during a class.

"Deaf students are easier to teach because they have more dexterity on the machines," he notes. "They're also more safety conscious." But all of today's students are "more aggressive and inquisitive" than their predecessors, according to Earl.

"They're not afraid of the future— they know they're leaving RIT well prepared for the challenges they'll face on the job."

John Haynes is one graduate who has met those challenges successfully. Three years ago, John graduated from RIT through NTID with a diploma in manufacturing processes. He was offered a job at Eastman Kodak Co., where he now works in the tool room at the company's Elm-grove Road plant. John is in the final year of his three-year apprenticeship program for toolmaking, and says he'll stay with Kodak after he graduates.

"I've learned a lot here at Kodak," John says. "And I learned a lot when I was at NTID. Mr. Lake was an excellent teacher for me. He enjoys teaching, and it was easy to learn from him because he's deaf. I could communicate easily with him."

Being a role model for students such as John is a responsibility Earl never treats lightly.

"I try to present myself as an example of a deaf person who has 'made it,'" Earl says. "I explain to students that they'll probably have a hearing foreman in the working world, so they should learn how to react positively to situations now.

"I also stress how important it is for them to continue studying in order to upgrade themselves. They must always be 'two steps' ahead of their hearing peers."

Earl says he'll continue teaching until he's 65, and then might teach on a part-time basis. He knows he'll miss the students, but with eight children and 10 grandchildren, he shouldn't be lonely.

"I love to see the students grow," he admits. "And there's so much they can accomplish if they try. Today's deaf graduates shouldn't be afraid of the future. Patience is bitter, but the fruit is sweet!"

—Kathleen Sullivan

5

COMPUTERS:
THE FUTURE IS NOW

Students graduating in the 1980s must be able to deal with a world increasingly permeated by computers—not only in their chosen technical professions, but in everyday life. Each time they cash a check, make reservations with an airline, buy a newspaper, or check out groceries in a supermarket, they will be affected. To compete successfully in this world, they must have an understanding of computers.

RIT's president, Dr. M. Richard Rose, has encouraged faculty members to prepare all students graduating from RIT to be "computer literate" in order to make their way in a technological society.

In his 1980 State of the Institute Address, Dr. William E. Castle, vice president of RIT and NTID's director, charged the faculty to "design curricula to meet the needs of the 20th century, remembering the fact of computers."

NTID is well on its way to accomplishing this charge. In the space of a few years, computer use has spread through the Institute for a broad range of educational, administrative, and research tasks.

RIT has several main frame systems, which are large computers with terminals in divergent locations to handle many different jobs. A large number of microcomputers are actively used throughout RIT and NTID. In addition, RIT also has a terminal for PLATO, a main frame system with the computer located in Minnesota. These terminals are used extensively by NTID students.

"Our students and faculty are using computers in increasing numbers every year," says Donald Beil, chairperson of the Data Processing Department. "Our faculty have access to microcomputers that are on carts which can be wheeled into offices or into the classrooms. Faculty members use them to develop class materials, to tutor students in their offices, and for some classroom administrative chores such as word processing and classroom record keeping."

Computer literacy among the faculty is an important idea, not only for the advantages it offers them as individuals, but also for the close feelings collectively generated.

"We now have accounting faculty talking to data processing faculty about a computer," Beil explains. NTID has 20 to 30 microcomputers used in instructional areas such as medical record technology, data processing, and communication programs, and the Math Learning Center.

"Now people in other areas working with the computers are calling me and other colleagues, and I'm calling them, with questions about the computers," Beil adds. "The discussion goes from technology to 'What are you up to?', 'What are you working on?', and 'What is the content and how are you going to use the computer?'"

The microcomputer also has an impact in a classroom situation. An element of excitement is added as students gain hands-on experience. Some faculty members divide their classes into two parts, send each group to the blackboard to solve a problem, and tell them that the first group to finish can put the solution on the computer and check it out. Beil points out that this "makes for very stimulating classes, terrific student interaction, and healthy feelings of competition."

The Data Processing Department of NTID provides education for two areas involving the computer—computer operation and computer programming.

John Sweeney, assistant professor, teaches courses for both areas. In the operations courses, students

Using the DAVID computer, students can work on speechreading skills at their own pace.

learn to run a program prepared by a programmer. To become an operator, students can earn either a certificate or a diploma. The certificate requires four quarters of college work and a cooperative work experience as an operator. The diploma requires two years of college work and one co-operative work experience in operations. Many companies need a large number of operators, an entry level job, so placement for these students is very high.

To become computer programmers, students must earn an AAS degree which requires two years and two quarters of college work, plus two work experiences.

"Many of our students stop at the operations level, but we do have students who transfer to RIT's upper division classes," Sweeney says. "These numbers are growing every year."

Microcomputers are used extensively throughout RIT in the School of Computer Science and Technol-

ogy, and in the Colleges of Fine and Applied Arts, Engineering, Photographic Science, Printing, and General Studies.

Introduction to Computers is one of the courses taught by Richard Walton, instructor in the Department of Data Processing. In this course, students sample data processing as a major, with an overview of the terminology and a chance for experience with the computer.

Faculty have found that most deaf students enjoy using the computer. The language requirements are high, but Sweeney feels it is a nice match for the students.

"Most of what students do in terms of language as they train to be computer operators is fill out forms and write and read short memos," Sweeney says. "Computer programming, on the other hand, is very tough in terms of language. If a person spends six months developing a project, another month could be spent writing the documentation for it."

Two years ago, the Department of Business Occupations reviewed the curricula in the major program areas of accounting and office practice and procedures. The re-examination resulted in an infusion of computer concepts and applications into both program areas.

In the April 1981 issue of *Business Education Forum,* Christine Licata, chairperson of the Department, and Joan Inzinga, assistant professor, wrote an article outlining the process.

"For years, business educators have been told by data processing visionaries that the computer would save mankind from inefficiency and non-productivity," they wrote. "But somehow, these data processing educators always appeared like an armed camp using wired boards, large disks, and hocus pocus to those of us in business education who were responsible for the 'other' real, marketable skills students needed for employment."

Licata and Inzinga admit, "Today those 'other' real skills are no longer marketable without an accompanying knowledge of the computer and its applications in the workplace."

NTID has a Computer Center where students can benefit from hands-on experience. It is open 80-100 hours per week so students can work on class assignments and independent projects, using both main frame terminals and 10 individual microcomputers.

Student enthusiasm has been dramatic, according to Licata and Inzinga. In the summer of 1980, all students in the program completed a cooperative work experience related to their major, and about 50 percent were able to interact with a computer.

Dominick Fantauzzo, associate professor in the Department of Electromechanical Technologies, points to two areas of use by engineering students at NTID. First, the computer is used as a tool to solve fundamental engineering problems and, second, it gives students the opportunity to interface small computers with other devices in a laboratory setting. In addition, he feels it is important for students to "be aware of computers and their impact on society, or how they, as students, may have an impact on society through their knowledge of computers. We don't specifically teach courses that deal with social impact," he adds. "It comes about through casual discussions with students in laboratory environments as they ask questions about the role of computers in society."

Fantauzzo believes computers will play an increasingly important role in communication and is convinced that this will benefit deaf people.

"Computers will help the deaf get in touch with a broader base of people. I think they will be able to make contact in ways that don't currently exist."

He sees the day when it will be commonplace in the home for information to be transmitted through telephones and television sets, not only from individual to individual, but from individual to business, and from individual to communication channels.

As a teaching tool, the impact of the computer seems convincingly positive. It can present concepts, computer visuals, and create in-class simulations—a process where an instructor can replicate a real life situation, using a computer program.

Faculty continue to explore the possible uses of the computer as a teaching tool, and to understand more clearly its advantages and limitations.
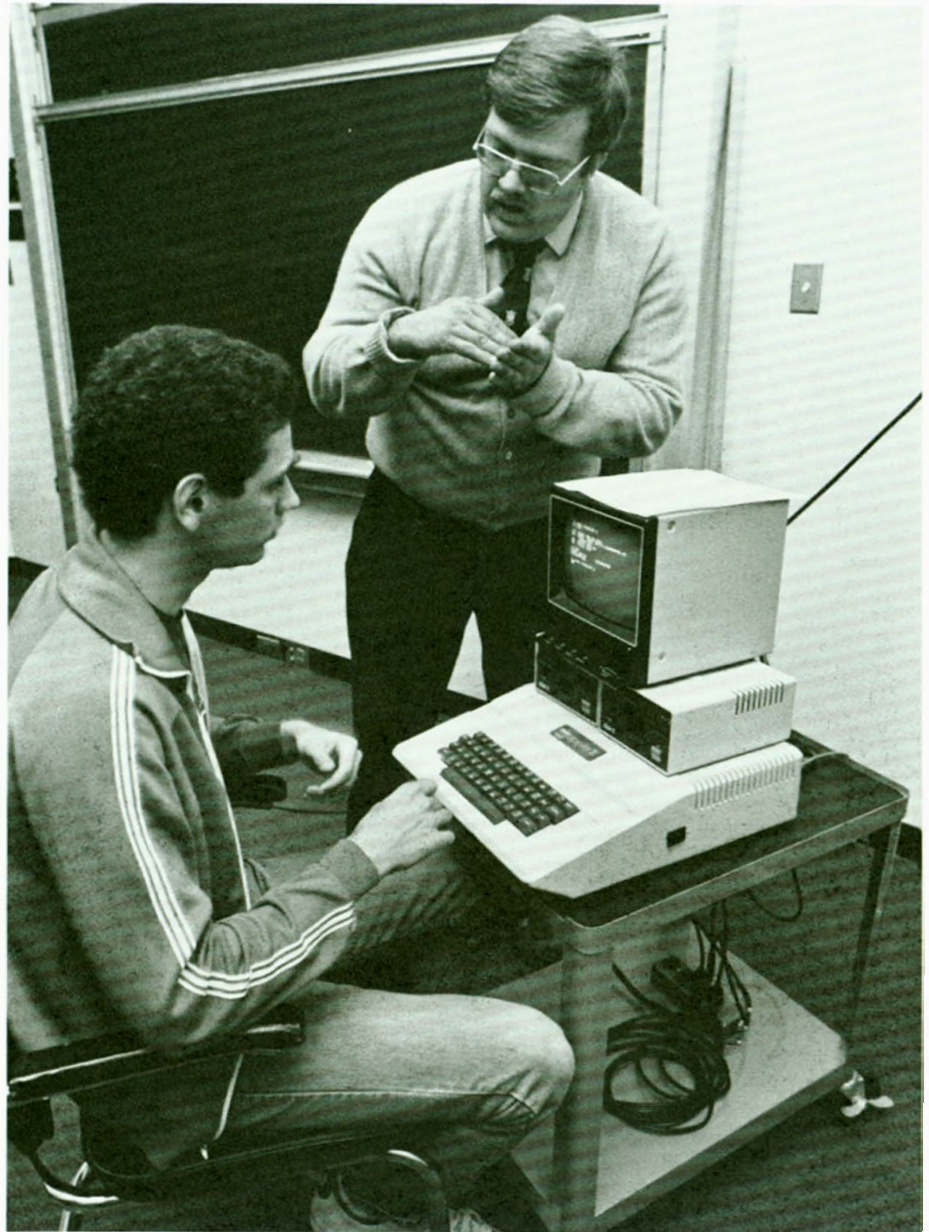
Richard Walton, instructor in Business Careers, helps student David Klinger enter his program on a microcomputer.

The computer also eliminates the tedium of lengthy calculations which use valuable class time. With the computer terminal, students get instant access and feedback so they know what has occurred and how they can change the process.

"We don't expect engineering students to become computer programmers," Fantauzzo adds. "Most will use the machine to understand the applications and limitations of small computers."

He admits this program is very new—microcomputers have been in use for only about a year and a half—but the word about computer efficiency is spreading.

One person spreading that word is Linda Bardenstein, a Computer-Assisted Instruction (CAI) specialist for the Instructional Television Department (ITV). She is the person whom faculty members seek out when they want to learn how to use the computer for instructional purposes.

She helps instructors in a number of ways. "One of my jobs is to let people know about the capabilities of computers," Bardenstein says. "I have a centralized catalog of software—the actual programs that go into the computer. ITV recently purchased two microcomputers, one for lesson development and the second for short-term loans to faculty and staff."

8

Donald Beil. chairperson of the Data Processing Department. works at a terminal in the Computer Center.

"One thing we have to overcome is people's awe of the computer," Bardenstein says. "It's almost a magical thing to them. On my computer, for instance, I sign in with my name. The computer 'knows' who is working and sometimes, during a lesson, it will say, 'O.K. Linda, what do you want to do now?' It's almost like there is a little person in there."

One important advantage to using microcomputers is that if one breaks down, you can go to the next one; the units are portable, easy to operate, and can do a variety of tasks.

"The largest use of computers in the Construction Technologies programs is for teaching fundamental programming skills," says James Jensen, associate professor in the Department of Construction Technologies. "However. the Architectural Technology and Civil Technology programs have found many practical applications for the microcomputer. Students use it, essentially, for computational work," Jensen explains. "It is used for storing structural condition data which involves ratings on such factors as the condition of the roof, siding, and paint. These data are then fed into the computer and, using a formula developed by previous classes, one rating for each structure is computed."

Jensen explains that students often use the digitizer pad—a device used to measure map areas—with the computer. A map is placed on a machine connected to the computer. Using the program that goes along with the digitizer pad, students trace the outline of the map area on the pad and the computer calculates the areas traced. He explains that this is used in the civil engineering profession.

The computer also is used extensively to calculate costs of construction projects in the Building Estimating course. The course uses a commercially published program for tabulating the data and automatically doing the computations. Jensen says it is good for students to become familiar with these techniques, which are becoming more common in the professions.

"Some of the firms hiring our civil technology students have been using them for several years," Jensen says. "Our students were delighted when they arrived on the job, discovered a computer was used by the firm, and realized they were prepared for it."

A department now can try out a computer and test its usefulness before deciding to purchase.

Bardenstein also finds out if programmed lessons exist in a program area, and if not, she helps student programmers write new ones. "Currently, we are writing computer lessons for six courses," she says.

"The computer is a complex but useful tool," Bardenstein stresses. "Instead of using a typewriter or a paper and pencil, one uses the computer. Any department wanting to store data instead of using file drawers can employ the computer and have much of the computation and sorting done. Every department at NTID has so much paperwork that the computer is really useful."

She also explains the desirability of CAI for deaf students. This type of instruction makes the students independent learners who can choose when to do assignments and how fast to proceed through coursework. One student may need 18 hours to go through a particular lesson, while another does it in five.

"The computer has infinite patience," Bardenstein says. "A good computer program will have branching so if a student makes a mistake.

another set of instructions or learning activities will be brought up. If no mistake is made, the student will never see the other instructions."

She states that a good program has other implications for deaf students. The most effective way to present information is a little at a time. The computer has that capability.

One example of computer support for students is DAVID (Dynamic Audiovisual Interactive Device), developed by Donald Sims, research associate in the Communication Research Department and Dr. Jim Von Feldt. formerly of ITV. as an outgrowth of a project to use CAI for auditory training.

DAVID consists of a color television monitor, a modified videocassette recorder and its controller, and a minicomputer for the lesson program. Students progress through DAVID's videotapes watching sentences taken from the NTID academic and social environment. They type stimulus sentences into the computer after speechreading them, with feedback. helps, and hints provided by the computer at the students' option. Next year, the system's "host" computer will be switched to a microcomputer. lowering the cost almost eight times.

—Lynne Williams

9

TRYING ON A JOB

A part of NTID's career development program, the cooperative work experience (co-op), offers many students the best of two worlds—the world of the classroom and laboratory, as well as the world of work.

Co-op has many purposes: it is a job in the student's field of study, it provides an opportunity to test technical skills, it helps employers understand the strengths and capabilities of hearing-impaired people, and it paves the way to many full-time positions after graduation. Depending on the academic department, co-ops vary from one to five 10-week work experiences.

Assistant Professor Paul Taylor coordinated co-ops for the Data Processing Department last summer. He interviewed more than 50 co-op students about their experiences, and reviewed workbooks they kept while on the job.

The interviews prompted him to make several observations about the students. First, students become aware that often a job has a distasteful aspect—there is no way to avoid this, but strategies can be employed to minimize such effects. For example, during computer "down-time," students noticed that others did not just stop working; instead, they got involved in other worthwhile activities, such as catching up on technical reading and working on lower-priority jobs.

Taylor also notes that students have a clear understanding of communication priorities on the job.

"They know that the spoken word is by far the prevailing communication medium and they should use as much of that medium as their skills will allow," he says. "They want to learn how to speak the technical vocabulary better. Students realize that employers are not always capable of signing, but on those occasions when employers do take the initiative to use signs, the students respond enthusiastically. Judging from my interviews and the workbook responses, communication is not a definitive drawback to job performance."

Taylor, who is hearing impaired, feels that the workbook has given students a broad perspective of communication on the job.

"By filling in the blanks, they realize that communication is a multi-faceted vital aspect of the job and, more important, that they need not be limited to any one method. If one method does not work, they realize there are others to try, and the first need not be eliminated permanently."

For example, writing, which was employed frequently at the beginning of the job to compensate for colleagues' lack of familiarity with students' speech, dropped off significantly toward the end of the 10-week period. This was particularly encouraging to students, as they learned that when the time comes for permanent employment, it will be only a matter of time until colleagues become accustomed to their speech. The same applies to lipreading, since it takes time for one to translate speech mannerisms, cues, gestures, and facial expressions into meaningful forms of communication.

"Especially noteworthy," Taylor says, "is the fact that most of the employers had not had any experience with hearing-impaired people. Yet, in the short span of 10 weeks, communication experiences on the job were generally positive."

Several students who have participated in co-op bear out Taylor's statement. One is Deborah Fink, an applied accounting major from Chicago.

Debbie, who will graduate next May with an associate degree, worked as an accounting clerk at Bell Federal Savings and Loan in Chicago.

"I was the first deaf person ever to have worked at this particular company," she says, "and everyone was very patient with me. If they didn't understand my speech, I was able to communicate easily in writing. I worked there two summers in a row because they liked my work, and I liked the idea of going back to a place where I already would know some of the other employees."

She plans to pursue an advanced degree in either accounting or business. One thing she is sure about is that the co-op experience benefited her greatly.

"I was able to show hearing people that I can use my skills to advantage." she says. "I learned that my major is right for me, and that I enjoy working with people. Co-op was wonderful training, and I hope it will encourage me to be more independent once I am on the job permanently."

Nancy Moore, an office practice and procedures major from Syracuse, New York, worked in the payroll department of the Unity Life Insurance Company in Syracuse. Like Debbie, she did both her co-op stints at the same place.

She experienced no communication problems on the job, mainly because she felt prepared to communicate with hearing people as a result of courses she had taken at RIT through NTID.

"I really felt good about working," she says, "although I did miss my friends. But I learned a lot from the business world, and I think I'm going to like corporate life."

Another student who says he's going to miss his friends, but enjoy working, is Gregory Kunsky, a data

Three students take a moment to discuss their co-op experiences. They are, from left, Amanda Tapley, Deborah Fink, and Nancy Moore.

11

processing major from Floral Park, New York. Greg worked as a computer operator at IBM in Elmsford, New York. Like Debbie and Nancy, he did his co-op at the same place two summers in a row. Greg was so impressed by IBM that he hopes to be employed there on a permanent basis.

"My co-op gave me a taste of what it will be like to work full time," says Greg. "But one thing I'm definitely *not* looking forward to is rush hour on the Long Island Expressway!"

Another data processing major is Tammy Shemanske of Darien, Illinois, who, during the summer of 1980, worked at Argonne National Laboratory in Darien. This summer she worked for the Lions Club International in Oakbrook. Illinois.

Tammy's first co-op experience convinced her how important it is to acquire top-notch communication skills in order to compete in the job market.

"I found communication awkward at first," she says. "I had to write everything."

But as the first summer wore on. Tammy's communication skills improved, as did her co-workers' ability to understand sign language. In fact, by the end of the summer she hated to leave. Nevertheless, she felt it would be best for her to test her newly improved skills with a different group of people for the second co-op job. Her first job was as a computer operator, while her second summer was spent as an assistant computer programmer.

Tammy has an unusual dream: to work as a data processor somewhere near Walt Disney World in Orlando. Florida.

"I want to do something different, and you've got to admit *that's* different," she says. "Anyway, it wouldn't hurt to try, would it?"

Florida native Amanda Tapley is an applied accounting major from Bradenton. Her first co-op job was in the Finance Department of the Manatee County Courthouse in her hometown. This summer she worked at the Ellis Bank and Trust Company of Sarasota County in Florida.

"I found good communication was one of the more important skills required of me on the job," she says. "Once I got over my initial nervousness, and because of a high degree of motivation on my part, I found that I was able to communicate easily with hearing people. The vice president of the bank is a speech therapist; that was very helpful.

"After I graduate in February I plan to start working right away. I hope to study for a bachelor's degree at night and I'd also like to become a CPA. I think co-op is a great idea because it gives one the opportunity to gain experience in everything related to the career area. For example, now I know how I feel about working with numbers and things related to finance—I love it! Many things I hadn't been exposed to at school were frustrating at first, but eventually I caught on. Once the ledgers were finished and the balance sheets added up—well, it makes you feel good about yourself."

—*Emily Leamon*

Tammy Shemanske and Greg Kunsky take advantage of one of Rochester's warm spring days.

VISUALIZING
CAREERS IN ART

Assistant Professor Jere Rentzel works with Eric Stahl, a printing major, at a process camera.

Students who choose careers in visual communications and art have four options at NTID. There are majors in printing production technology, applied photography, media production technology, and applied art.

While each course of study is distinctly different, the departments often work for each other. If art students design something, for example, photo students may take pictures of it and it may be printed by printing majors. NTID's Visual Communications Department Chairperson Walter Brown explains that this cooperative working relationship provides the students with "real, live jobs."

Brown feels that students view their work in class as more meaningful if they know someone else will use it.

"We aim to produce top-quality technicians," he says. "Our curricula encompass the latest advances in the field, but we try not to get so far ahead of the game as to make our students unemployable. Our advisory committees (professional groups from business and industry who work with faculty) help us remain alert to what is outmoded."

Not only do these academic departments cooperate with each other, but they also cooperate with other departments at the Institute.

"We have an excellent working relationship with NTID's Media Production Department. We can go to them for facilities and equipment at all times, and vice versa," Brown says.

PRINTING

The NTID printing production technology program provides individualized training in four areas of offset lithography: composition and paste-up, camera, stripping and platemaking, and presswork and finishing. Students proceed at their own rates and are evaluated primarily on the basis of their technical skills.

Associate Professor Michael Kleper and Assistant Professor Jere Rentzel, of the Printing Production Technology Department, describe the individualized program: There are no large classes and no formal lectures. One or two students work with an instructor when learning new skills or information. Eight students share an instructor during labs and when practicing newly acquired skills.

The program is self-paced. Students with several years of high school experience in printing may finish an area of instruction several weeks before students with no experience. Printing courses do not necessarily start at the beginning of a quarter and stop at its end. When students finish the requirements for a course, they immediately begin the next one.

The program is also competency based. Grades are determined by students' abilities to perform the skills being taught in the course—machine operation, task performance, or work assignments. There are few written tests. Students must perform satisfactorily a skill or task before trying to learn a new one.

"The individualized instruction better prepares students for a technical type of job, as evidenced by NTID's placement record," says Kleper, author of *How to Build a Basic Typesetting System*.

One hundred percent of the printing graduates find work in their field, with better-than-average wages for manufacturing industries. Rentzel bears out Brown's statement that other departments are the sources of "live" jobs.

"We print a considerable amount of material for the Experimental Educational Theatre," he says. "We also print as many of the art students' design projects as can be appropriately used as teaching tools, resumes for the media graduates, and NTID's newspaper *The Observing Eye*. This is a great place for deaf students to learn about the field, since RIT's School of Printing is probably the world's most renowned."

PHOTOGRAPHY

In an effort to simulate the work environment, NTID's Applied Photography Department has what is perhaps the most direct relationship with the RIT community as a whole. The photo lab develops pictures for anyone at NTID, providing hands-on experiences for the students.

Those who choose applied photography as a major are introduced to film processing, basic darkroom skills, and custom color work. Many of the advanced students cross register into courses offered by RIT's College of Graphic Arts and Photography.

Associate Professor Jean-Guy Naud, who teaches in the color lab, was selected this year for one of the National Advisory Group's "Outstanding Staff" awards. He has been at NTID since its establishment, and is enthusiastic about the spirit of cooperation that exists within the Institute.

"The administrative structure is no handicap here," he says. "We are often dependent on the good will of people, and help and advice are given freely."
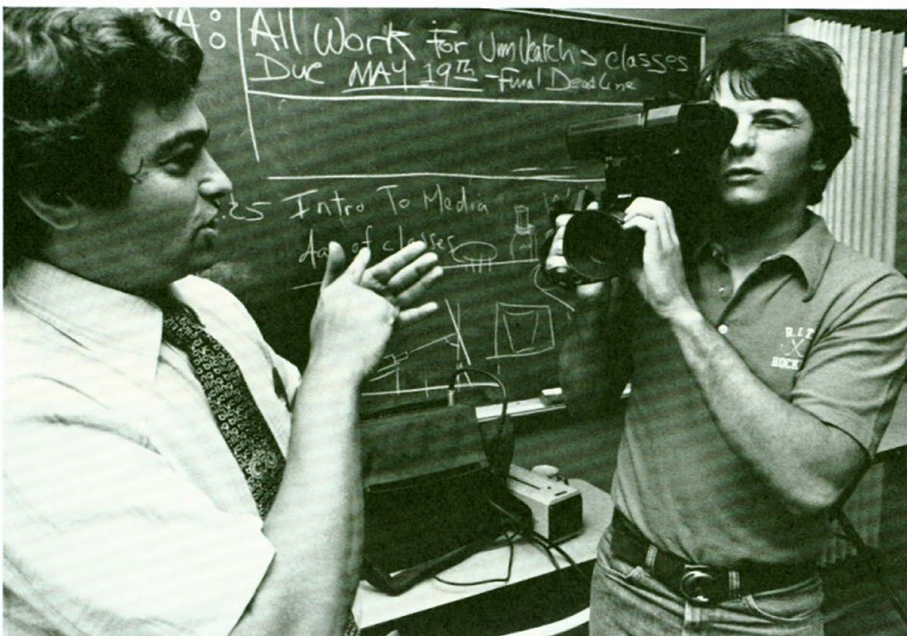
(Above) Associate Professor Bary Siegel gives student Frank DeGirolamo, a media production technology major, some tips on the operation of a portable video camera. (Below) Associate Professor Mike Kleper, left, works with Tim Sisley, president of NTID's Printing Club, at a phototypesetting machine.
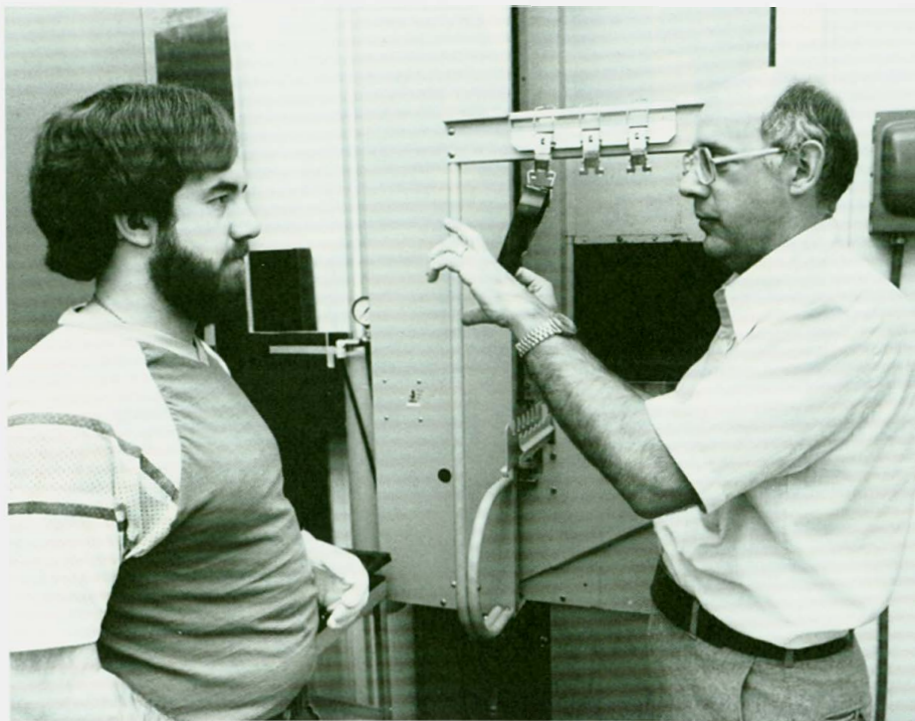
MEDIA

Associate Professor Bary Siegel supervises NTID's four-year-old Media Production Technology Department. Students who choose this major are prepared for photography and graphics careers in business, industry, government, and education.

Like the Applied Photography Department, the Media Production Technology Department stresses real production work experience. The two departments share their first, or core, year. Students then follow either a three-year program (counting the core year) leading to an associate degree, or cross register into RIT's College of Applied Sciences, where they may earn a bachelor's degree in audiovisual communications.

"Our students are generalists," says Siegel. "Media production technology is a growing field with numerous opportunities, and we want our graduates to be able to assume a variety of roles."

(Above) Associate Professor Jean-Guy Naud shows alumnus Larry MacDonald how to strip film on a film processor. (Left) Michael Voelkl.

"We are trying to keep our program as current as possible," Slutzky explains. "We're getting a head start now, so that when future jobs open up in new markets, we can be there in a leadership role."

One goal of the applied art program, says Slutzky, is to prepare students for the realities of the job, much as Kleper and Rentzel do in printing production technology.

"We lay out a road map at the beginning, telling them what they can anticipate," he says. "This is not true of most art programs.

"There is no precedent for the rapidity with which new technology is coming upon us," Slutzky observes. "We have to train our students to meet job requirements, not supply museum pieces."

One way in which students get a preview of life on the job is by participating in In-House Co-op, coordinated by Instructor Michael Voelkl. In-House Co-op's objective is to provide NTID applied art and cross-registered students in RIT's College of Fine and Applied Arts with experiences that translate the theory of the classroom into the practice of the world of work.

This is achieved by presenting the student with situations in which he or she fulfills real needs. In this way, In-House Co-op augments existing curricula and ensures exposure to the multiple processes of production in the applied arts.

In-House Co-op accomplishes its task by servicing some of the art needs of NTID at RIT. The students work on a paid basis during their free time, under a faculty member's supervision. Students participating in this ancillary program begin by completing basic tasks, and advance to more responsible work as they develop the necessary related skills.

The Art Department also has a course called Employment Seminar for third-year students. With the aid of videotapes, they discover how they would fare in an interview situation. In addition, there are guest lecturers, such as the vice president of a local bank who speaks to the students about banking procedures, a vital life skill.

"We are trying," explains Voelkl, "to prepare our students to function on the job by providing them with interpersonal skills as well as communication skills and technical skills."

—Emily Leamon

ART

Like the visual communications curricula, NTID's applied art program is skill-oriented. "In fact," says Department Chairperson John Cox, "we provide a printed list of 50 skills which students are expected to master, and because employers demand more than technical skills, the list includes not only technical art skills, but personal/social and communication skills as well. In the classroom, as on the job, individuals are expected to work and communicate with other people in a responsible, mature manner."

The Art Department offers art training for deaf students who want careers in the visual arts. The Department has three primary programs: the core program, the applied art major, and cross registration in RIT's College of Fine and Applied Arts.

The core program prepares students with basic art experiences for entry into a specific major. With the core experience as a base, some students choose continued studies in applied art which prepare them with the technical skills necessary for direct employment in the applied art field. Other students electing to cross register in RIT's College of Fine and Applied Arts have a variety of options in the crafts, design, and fine arts from which to choose.

"We try to offer course experiences which will make our graduates highly marketable," says Cox. "At the same time, we need to be concerned that an individual doesn't become 'pigeon-holed'. . we try to ensure that every graduate has some upward or lateral mobility."

As an example of this forward-looking approach, Associate Professor Jack Slutzky chairs a division-wide commission which is examining the impact of computers on their programs.

THE TEAM BEHIND THE SCENES

One of the remarkable aspects of the educational environment at the Institute is the host of educational support services which are brought to bear on the quality of learning. The college is fortunate to have a group of instructional developers who work with faculty in the preparation of materials for the classroom.

Certain instructional developers are assigned to Technical and Professional Education Programs (TPEP), where they complete projects in tandem with content and media specialists. This team approach is exemplified by a set of materials prepared by Instructional Developer Michael Steve for use in microbiology classes.

Dr. Steve, working in conjunction with Beverly Price, associate professor in NTID's Department of Applied Science/Allied Health, and Media Specialist Robert Ianazzi, has prepared a number of photographic slides which enable students to observe various bacteria without having to follow the traditional method of growing their own—an often faulty and haphazard process.

The slides were produced with the aid of a specialized macrophotography technique. The photographs were taken by Frank Grubbs, who at the time was a student working on his senior thesis in the biomedical photographic communications program in the College of Graphic Arts and Photography.

Dr. Steve explains the role of the instructional developer: "We have a background in teaching and learning principles and instructional theory, and this complements our faculty's technical background. We can help instructors plan and produce products, or bring in people who can.

"In the case of this particular project, the premise is that in order to consider a student skilled in microbiology, he should be able to recognize a number of bacteria on sight. Since it would be impossible to reliably set up cultures every quarter, we decided to record them permanently on slides. Petri dishes containing the various specimens were brought by courier from Rochester General Hospital to the College of Graphic Arts and Photography's biomedical photography lab and photographed there."

Dr. Steve's role in the project was mainly one of coordination. He says, "An instructor with a 25-hour weekly teaching load has difficulty finding time to take care of details. What I do is work with the instructor and others to put together the instructional materials, and later conduct an evaluation to see if the students have mastered the skills."

Dr. Steve and Mrs. Price began working together in the fall of 1979, two months after he started at NTID. Since that time, he has worked on four different projects with seven faculty members.

"One of the reasons I feel comfortable being assigned to TPEP," he says, "is that I have an engineering and pre-med undergraduate background."

Dr. Steve also has a master's degree in educational research and a doctorate in instructional systems. The latter area includes the design and development of instruction, the psychology of learning, and the evaluation of student outcomes.

"Instructional development is just another tool which adds to the whole educational process," he adds. "We test out our ideas with students, and where the learner is not learning, we make modifications."

The microbiology project also involved working with Vanessa Hill, a student in the medical illustration program in the College of Fine and Applied Arts. As part of an independent study, she illustrated different types of bacteria as they appear under the microscope. The illustrations were better able to show students what they needed to look for when identifying organisms than could be achieved if only photographs were used.

Altogether, there are nearly 600 different slides. Once the slides were produced, Dr. Steve and Mrs. Price sorted and assembled them into sequences which could be used in the classroom and as independent study aids. There are sequences which teach how to identify different kinds of organisms and biochemical test results, and others which assess these skills.

Members of the team who cooperated on this project have high praise for one another, and obviously enjoy the experience of working together.

Dr. Michael Steve and Beverly Price examine slides of bacteria for a project developed as an instructional aid for microbiology classes. Dr. Steve is one of seven instructional developers working with faculty members in all areas of TPEP.

Says Dr. Steve, "What I bring to this situation is time and the ability to coordinate resources. I also try to introduce new approaches—instructional strategies which are often built into the products. After the products are tried out in the classroom, they are discussed with both instructors and students. A product can't be considered successful unless it is accepted by both groups.

"In most cases, the faculty member identifies the need for some sort of assistance. I try to identify and assess whether the need requires the assistance of an instructional developer. Some of the projects we undertake are marketed outside the Institute. One effort which has dissemination potential is a videotape and instructor's guide on the interpreter as 'stage manager,' a project designed to assist interpreters in how to position themselves in different interpreting settings."

Other work being done by instructional developers assigned to TPEP includes projects in business pro-cedures, medical terminology, urinalysis, applied accounting, and tool skills.

If one is to judge by the reaction of Mrs. Price, the assistance offered by instructional developers is greatly appreciated. They are perhaps particularly valuable at a college like NTID, where many of the teachers come from the business or professional world, rather than from an educational background. Mrs. Price, who taught previously in a hospital setting, was the recipient last May of the Eisenhart Award for Outstanding Teaching, one of four RIT faculty members to be so honored.

"I enjoyed working with Mike on this project," she says, "because he was able to explain why he doesn't understand something from the student's point of view. I also like the way this project has evolved, because the use of answer sheets (to identify slides) has gotten students involved in the classroom; it forces them to participate. In addition, I hope to have the opportunity to present the slides to professionals in the field at national workshops."

Another advantage of the slides, Mrs. Price says, is that they duplicate a one-to-one experience with students in a large lecture class. Instead of having to walk around the room and randomly ask questions of students, she uses forms which ask each student the same questions.

Aside from this particular project, Mrs. Price enjoys working with instructional developers in general because "they bring things to the classroom I might not have considered. They also troubleshoot, looking for potential problem areas, and talk strategies with us. I look upon it as teaching effectiveness for me."

"We try to provide varied learning experiences for the students," explains Dr. Steve. "It is my belief that the instructional process here must support a problem-solving approach rather than having our students rely on rote memorization. That way, we're giving our students knowledge they can transfer to settings outside of the classroom. Our ultimate goal is to see that they become active, independent, and effective individuals."

—Emily Leamon

17

A Chance to Help Others

How would you like to check into a hospital for a while? It won't take long—only a few minutes—and there won't be any papers to sign or forms to fill out.

This "check in" will be a little different, however. It's a check into the lives of four deaf RIT graduates who've chosen careers in the health professions.

Mary Chevalaz, Barbara Delia, and Dominic Peroni received associate degrees in 1981, while Gena Gilreath was graduated last year. Their majors were medical record technology, medical laboratory technology, and optical finishing technology.

Although these graduates' career aspirations are diverse, they share a common bond—the cooperative work experience which all completed as part of their academic requirement.

"Co-op" allows students to apply classroom learning in real work settings. It is usually done in the summer between one's first and second year in the major, and lasts anywhere from 10-12 weeks.

"Co-op is a great learning experience for students," says Frederic Hamil, chairperson of the Department of Applied Science/Allied Health.

"It is required for certificate, diploma, and associate degree programs," Hamil continues. "RIT places the students in settings which match their career interests, and most of them are placed in their home location."

Mary, Barbara, and Gena each spent one summer working at hospitals near their hometowns.

Mary spent two weeks in each of six departments—Hematology, Urinalysis, Bacteriology, Clinical Chemistry, Blood Bank, and Histology—at Elizabeth (N.J.) General Hospital.

Gena Gilreath, A.R.T., checks a patient's record with her supervisor, Marilynn Hazelden, in the Medical Records Department at Genesee Hospital.

Mary Chevalaz worked in six different departments during her co-op job at Elizabeth (N.J.) General Hospital.

The 1981 medical laboratory technology graduate grew up in Westfield, New Jersey, where her interest in both NTID and science was shaped at an early age.

"I had a hearing-impaired tutor when I was 10," she says. "She was a senior in high school and was on her way to NTID. She talked about it so much that I started thinking about going there when I finished high school."

A high school biology instructor encouraged her interest in science, and Mary decided medical laboratory technology was the career she wanted.

Her academic program at NTID required her to take one year of biology, chemistry, and math, which she says helped prepare her for her tough medical lab courses.

"When I did my co-op, I asked some of the technicians at the hospital about courses they had taken in college. They were amazed at the variety of subjects I was required to take, and confessed they had not taken several of them."

Her duties within the six departments at Elizabeth General were varied. In Hematology, for example, she ran blood tests, while in Urinalysis, she collected samples and ran tests for protein and glucose.

She checked blood types in Blood Bank, stained and looked at organ tissues in Histology, and ran tests to diagnose diseases in Clinical Chemistry.

But her favorite department was Bacteriology, where "I got to work with my hands," while identifying unknown organisms.

The only drawback of her co-op experience, she recalls, was the problem she had in understanding foreign people's accents.

"We had clients from all over the world," Mary says. "But I never had time to become accustomed to their accents, because just as I started to understand them, I was rotated to another department!"

Co-oping as a medical record technician, Barbara Delia didn't have as much day-to-day contact with patients as Mary did. Nevertheless, the job she performed was critical to the smooth operation of the hospital where she worked, and she calls herself "truly the protector of the patient."

Barbara co-oped at the Delaware Valley Medical Center in Bristol, Pennsylvania, her hometown. Her job was to abstract, or summarize, data from patient records for statistical purposes.

Barbara Delia, a 1981 graduate of the medical record technology program, participated in a clinical practicum this summer at the Hospital Association of New York State in Albany. She is the first deaf RIT graduate invited to receive this practical experience.

"I also coded diseases, symptoms, and conditions, so that if someone needed information on a subject, the material could be retrieved quickly."

Barbara worked with different departments within medical records, and visited all areas of the hospital—from the various floors to the emergency room—to gain exposure to the entire facility.

What does a medical record technician do?

"I follow a patient's record from admission to discharge," Barbara says. "I review records and make sure they are complete. If not, doctors are given a specific amount of time to complete them, and if they don't, their privilege to admit and treat patients is denied until they do."

Barbara adds, "In school you learn the paper work and the theory, but on the job you're able to see the purpose and importance of learning." She also discovered that "doctors are human, not big shots or super professionals.

"I'm a professional, too," she asserts. "I have a duty to correct and keep doctors on their toes."

Barbara kept on her toes during her stay at NTID, and as a result, received the Outstanding Academic Achievement Award from the Medical Record Association of New York State, Inc. This award goes to the top ranking student from each school in the country with a medical record technology program.

Sitting in the audience on the day Barbara received her award was one of last year's graduates, Gena Gilreath, A.R.T. Indeed, one year after graduating from the medical records program, Gena is employed at Rochester's Genesee Hospital. She also has received her Accredited Record Technician status by successfully passing the National Accreditation Examination this year.

As a medical record technician, Gena codes diseases and operations/procedures onto patients' charts.

"I enjoy working at Genesee," she says. "When I first applied here, I was impressed by both the people and the facility."

Gena did her co-op at St. Vincent's Medical Center in Jacksonville, Florida. She is originally from Greenville, South Carolina, but spent the summer living with relatives. She worked in the Medical Records

Dominic Peroni, a 1981 optical finishing technology graduate, now works at Penn Optical Vision Center of Rochester.

Department, coding, filing, and retrieving records for hospital personnel.

"The people at St. Vincent's were friendly and supportive," Gena says. "They gave me a lot of confidence in myself, which I needed at the time. I feel that I benefited greatly from my co-op experience, both professionally and socially."

Dominic Peroni, an optical finishing technology graduate, did not co-op at a hospital, but at a private firm in Rochester, New York.

As a "finishing technician" at Empire Optical Inc., Dominic laid out single vision lenses, checked them for defects, and did some tinting. He also "hand beveled" lenses, smoothing the edges to fit into frames.

"I was a little nervous when I started the job," Dominic says.

"I thought my boss would be watching me all the time. But I ended up working independently, with little supervision."

Dominic, from Lansdale, Pennsylvania, came to NTID three years ago. He is 27, and has been deaf since a flu virus damaged his auditory nerves four years ago. Until then, his education had taken place in a hearing environment, including one year spent at Philadelphia Community College.

He says his deafness "motivated" him to return to school.

"I knew I wanted to work with my hands," Dominic says, "and the optometry business interested me because of its clean, healthy environment."

Advised that technical professions were "where the future is," Dominic enrolled in NTID's optical finishing technology program in 1978.

Although a bit hesitant to return to school, Dominic says the atmosphere he discovered at NTID made the adjustment considerably easier.

"I really liked the instructors, the classrooms, and all the support services available at NTID," he says.

He especially enjoyed his 12-week co-op at Empire Optical, which he says "helped my production skills. My boss was very helpful, and showed me some shortcuts for certain tasks. It was a worthwhile experience."

Dominic realizes he was lucky to have a job with variety. "I get bored doing the same thing," he says. "I like to see something through from beginning to end. My co-op job allowed me to do that."

—*Kathleen Sullivan*

Career Counselors
Lend a Helping Hand

Like college students at other institutions, most NTID students arrive on campus uncertain of the career area they will pursue. But unlike students at most other institutions, these deaf students are the beneficiaries of a special partnership which provides them with a variety of opportunities to sample careers.

The relationship between the teaching faculty and the 14 career counselors in the Technical and Professional Education Programs (TPEP) is unique.

The close rapport evident in each of TPEP's three divisions—Art and Visual Communications, Science and Engineering, and Business—is one of several factors enabling students to define career objectives.

Career education is infused into all the technical curricula. It begins the moment students enter NTID through the Summer Vestibule Program (SVP), a five-week orientation program held in July. One of the activities provided during SVP is the career planning seminars taught by the counselors.

"These seminars are designed to help students sample various careers," says Carl Spoto, associate professor and supervisor of counselors for the Division of Science and Engineering. "In addition, they enable students to analyze their values and decide what is important to them in a career. Our job is to help students collect that information."

When SVP is over, students select a program within the three divisions of TPEP and are assigned an appropriate counselor. Those still undecided—about 50 students each quarter—continue sampling careers in the NTID Department of Career Exploration, chaired by Assistant Professor James Kersting.

When students select career areas, they are assigned to a counselor within that area.
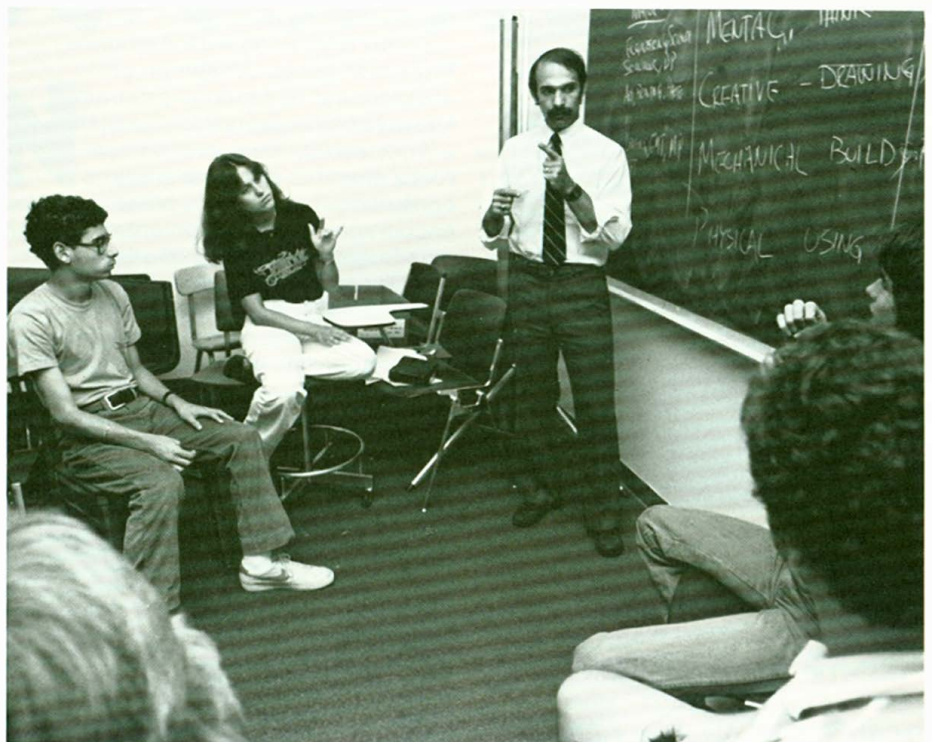
Carl Spoto, supervisor of counselors in the Division of Science and Engineering, conducts a career planning seminar during the Summer Vestibule Program.

They meet with career counselors and discuss their reasons for having selected a particular program, and their past experiences, if any, in the field. In addition, there is a formal process for each student to meet with another student in the program and the department chairperson to discuss questions and concerns.

In the NTID Division of Business Careers, the four counselors supervised by Lee Twyman-Arthur have caseloads of somewhere between 55-65 students. They concentrate on academic advising, planning schedules, and what Twyman-Arthur calls "mentoring"—providing group experiences, developmental activities, and orientation to both the Institute and the Department.

Twyman-Arthur feels that some of the more beneficial aspects of SVP are the hands-on experiences students receive in different career areas, and the opportunity to hear lectures by faculty members and to attend career planning seminars. She agrees with Spoto that the point of departure for the counselor is sitting down with the students and ascertaining "what they have come with"—their values, past experiences, and what they think about the career that interests them.

The Division of Art and Visual Communications at NTID employs a team approach with students interested in visual communications. Each quarter, the student, the counselor, and several faculty

members meet and discuss career objectives, the student's progress, and study skills.

"The student is an important part of the team and is never made to feel on trial," says Gail Rothman, supervisor of counselors in the Division of Art and Visual Communications.

Gail Rothman is the supervisor of counselors in the Division of Art and Visual Communications. Each division within TPEP has its own set of career counselors.

The NTID Art Department has a procedure called "staffing," where counselors meet with faculty members to discuss students. In both cases, the function of career counselors is to act as resources to both faculty and students.

Ultimately, the students' decisions to enter programs rest with the department chairperson. The counselors' role is to help students clarify their reasons for selecting a major, to determine whether or not they have enough information about it, and to make sure they are taking care of the required paperwork.

Sometimes, standardized tests are used to help students determine interests and aptitudes. The Institute also provides students with an evaluation of their language and communication comprehension skills, so they have a broad range of information about themselves and can determine how they will fit into the parameters of a program—are they ready, do they need remediation, or are they advanced?

To help students develop career plans, counselors encourage the acquisition of leadership skills. Some students respond best to a group counseling mode. One counselor encourages students to function as team members in Assistant Professor Barry Keesan's second-year architectural technology classes.

"Other counselors have assisted the faculty as well," says Spoto.

"We need to work together, and the faculty are extremely receptive to this concept."

Spoto is working with Associate Professor James Jensen on an architectural technology program known as "job captains." Simulating a work environment in the classroom, they run it as one would a consulting firm. Spoto's presence encourages the development of personal/social skills, and stimulates the growth of positive interaction among the would-be architectural technicians.

Peer counseling is also employed. One counselor conducts a group for women engineering students.

Since their training is in counseling rather than in specific career areas, these counselors also offer general courses dealing with topics such as sexuality, roommates, drugs, and study skills.

While all of the career counselors do some personal counseling, it is the personal counselors in the Division of General Education who provide this major resource for students.

"Students have the option of using all of our services," says Twyman-Arthur. "We try to provide a heavy dose of these services for the entering students, and then taper off toward the end of their stay here.

"By the time students are graduated, they've experimented with different careers, reinforced their career goals, and learned to accept their limitations. They realize that in order to be competitive they need to sell themselves as qualified professionals who happen to be deaf."

—Emily Leamon

Lee Twyman-Arthur, supervisor of counselors in the Division of Business Careers.

The *Human* Touch

NTID's primary responsibility is to prepare deaf students to compete successfully in a technological society—but that is not the only one.

"The early planners also recognized the importance of developing well-rounded students," says Dr. Barry Culhane, associate dean and director of General Education Administration. "The guidelines established 15 years ago for the Institute clearly stated that general education experiences supplement technical and professional training as a part of students' overall education."

Dr. James DeCaro, assistant professor and curriculum developer in the Special Programs Foundations Development Project, agrees that, "When the philosophy was formulated by Dr. Robert Frisina, NTID's first director, it was clear the Institute was going to address the individual as a whole. This would require a multidisciplinary approach to each individual."

Over the years, conscious efforts have been made to integrate the three important areas of student development—technical, personal/social, and communication. According to Dr. DeCaro, this is not an easy task.

"Sometimes I get the feeling that we divide the student. The brain goes to technical programs; the eyes, ears, and mouth go to communication programs; and the heart goes to human development programs," he says.

One person working to address the whole student is Dr. Charles Layne, associate professor and chairperson of the Academic Department of Human Development.

"We offer 36 different courses to NTID students, plus some special topic courses offered periodically," Dr. Layne says.

Courses cover a wide range of subjects such as Learning Strategies, Leadership Development, Drug and Alcohol Usage, Community Service, Interpersonal Relationships on the Job, and the Psychology of Religion.

"We maintain close working relationships with the faculty in the technical areas," Dr. Layne says, "because many human development courses are taught by people for each specific technical major. A good example is our Job Search Process course, developed and taught with the help of people in Career Opportunities. This course is tailored to fit the particular needs of a given department."

Many courses evolve from student needs, Dr. Layne notes. "Last year I had a request to tutor a student who needed to pass a civics course for high school equivalency. The student had been accepted at NTID with the stipulation that the civics requirement be met. My undergraduate studies included a heavy dose of history, so I said I would be glad to do it on an independent study basis."

Dr. Layne set up the program, acquired a history text book, and arranged weekly classes. The word spread and soon other students asked for the same course. Dr. Layne found someone who enjoyed teaching history, and the special course, The American Past, was added to the schedule on an experimental basis.

"That course has filled up every quarter since, and there is a waiting list each time," Dr. Layne says. "This demonstrates that by working with the technical area, we tapped an interest we didn't know existed."

Dr. Layne says the General Education curriculum now requires three general education courses for all NTID students. The Dimensions of College Life focuses on academic

situations, rights, and responsibilities; The Job Search prepares students for their first job or cooperative work experience; and Life After College emphasizes experiences that will help students prepare for living as adults.

Ann Areson, director of Special Programs, states that the general education link "provides a vehicle for the growth aspect of what students acquire through technical education. Students can master all the content required to be engineers, but won't be successful if they are unable to see the relationship between what they have learned and a problem on the job."

She adds that an important function of general education is to provide learning capabilities. Graduates must be able to ask questions and acquire whatever learning they need, even to the point of taking courses in the evening to keep up with their technical field.

"It's also important for our students to be ethical practitioners," Areson stresses. "In fact, ethics is included in certain technical areas, such as medical record and medical lab technologies, because of the confidentiality involved."

General education courses also expose students to areas that will affect their personal lives as they function on the job and in the community.

"They have an opportunity to learn about the sociological and historical movements of our time." Areson says. "Our graduates should be able to talk about such things as women's rights or the history of litigation affecting the rights of handicapped people. We should give them some base of understanding about the world we live in. If we accomplish this, our students won't be left out of conversations or discriminated against because they don't know their rights."

Carl Spoto, supervisor of counselors in NTID's Division of Engineering and Science Careers, agrees that the general education link provides students with the opportunity to develop more awareness of themselves.

"We have a variety of courses for pure enjoyment, and others which students may take for personal growth," Spoto says. "When I see students with leadership potential, it's rewarding to be able to recommend an experience that will help them develop those skills."

(Above) This year, students participated in a Consumer Week program as part of a general education course in Consumerism taught by Carmen Stewart, instructor in the Academic Department for Human Development. Students planned, set up, and manned the booths—an experience which benefited both them and the community. (Right) Outdoor Living students set up camp.
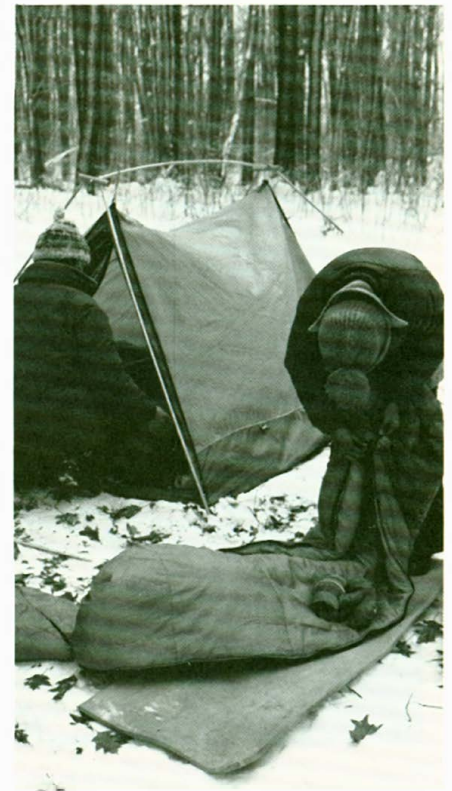
Technical programs are structured, with definite requirements, so there isn't a lot of flexibility for the student. Spoto says general education courses give students a chance to participate in the development of their individualized plan of study. It gives them the flexibility to say, "This is mine, this is what I want to do," and it adds a little bit of excitement to that particular quarter.

The theatre program develops another aspect of the total student, and its relationship with the technical program is very close.

Students Timothy Leary and Fred Carson perform in the Experimental Educational Theatre production "Once Upon a Mattress."

"We have many students interested in the technical side of the theatre," says Dr. Bruce Halverson, chairperson for the Experimental Educational Theatre. "They build sets, work with drawings (some students draft their own drawings for certain projects), create lighting designs, and work with electrical equipment in the theatre."

Slides and film are used frequently to produce designs in the theatre, and the talents of students who are photography majors are used.

An important link with the technical programs is what Dr. Halverson calls "performance procedure."

"I think we offer students a miniature work experience," he says. "When students are in a play, they are assigned responsibilities which must be met. If they don't pull their own weight, it affects many other people—as many as 2,000 paying customers, fellow actors, technicians, and everyone else involved in the production. It's not the same as in a classroom where they affect only themselves.

"During rehearsals and performances, students must be on time, must be prepared, and must work and interact with both hearing and deaf people," he adds. "This is a real-life situation where they must communicate to ensure that the common objective is shared and completed. Finally, they must learn how to present themselves well both on and off stage."

Another important link with the technical area is the theatre's use of the NTID In-House Co-op, which provides hands-on experience for students in an art studio set-up.

"We're a regular customer," Dr. Halverson says. "Deaf students design most of the posters used to advertise the plays. The work is contracted just like it would be with any art agency, giving students an opportunity to develop their skills by exposing them to different kinds of materials, activities, and people.

"Too many of our students isolate themselves once they are out in the work world," Halverson says. "I am hoping theatrical involvement will help prevent or minimize that isolation."

When deaf students complete certificate and diploma programs at NTID, they may go directly into the work force, or, if they qualify, transfer into one of RIT's other nine colleges to pursue advanced degrees.

"None of the colleges of RIT can grant a degree without including the very important area of humanities," says Lawrence Mothersell, chairperson of the General Education Instruction Department.

"This is provided by the General Education Service Program of the College of General Studies."

Deaf students enrolled in other RIT colleges require special support as they pursue advanced degrees, and they must meet the requirements set by RIT.

"Courses taught by the faculty in our department are not NTID courses," Mothersell stresses. "The faculty in our department—whether they are language specialists, literature specialists, sociologists, or historians—first, are specialists in their discipline and second, are specialists who work with the deaf."

Mothersell emphasizes the importance of general education's link in a technical institute. "I know we can graduate students well-prepared in their technical fields, which should sustain them professionally for maybe 10 years. I also know it is possible these technical graduates won't be able to discuss the current blockbuster movie, the latest book, or the political climate and current events. It is courses like ours which produce well-rounded students, and at the same time allow them to pursue a degree based on established requirements."

Perhaps the most important function of general education, Dr. Culhane concludes, is the strengthening of each individual in terms of self concept. "As students grow and gain technical expertise, they become more confident in themselves. As part of their technical education, NTID graduates will have the necessary tools to earn a living and augment a lifestyle by expanding the core of knowledge obtained at RIT and applying their general education skills to remain abreast of the demands of expanding technologies."

—*Lynne Williams*

Technical Training + Communication Skills
= JOB SUCCESS

Audiologist Marjorie Jacobs provides live speechreading instruction using on-the-job social language.

In a room in the northeast corner of the Lyndon Baines Johnson Building of the National Technical Institute for the Deaf (NTID), students sit in cubicles intently watching television screens. They are not catching the latest episode of their favorite soap or watching a high stakes quiz show. Instead, they are learning to speechread the technical vocabulary they will use on the job when they graduate. This is one example of the tie that exists between the Institute's Communication Division and its technical programs.

RIT can graduate deaf students who have mastered all the latest technological advances in their fields of study, but if they are unable to communicate that knowledge or acquire new knowledge, the time and study will be wasted. Technical courses require a broad range of reading, writing, speaking, and speechreading skills which students must master if they are going to be successful in their chosen careers.

Larry LoMaglio, English specialist in the NTID Communication Instruction Department III, and Victoria

Robinson, instructor in physics, outlined some of the problems and solutions in their paper, *English Acquisition in the Postsecondary Technical Classroom and Laboratory.*

"It is a given that English language mastery is a continuous challenge to the majority of deaf people. In addition, the special problems posed by technical English created stumbling blocks to learning."

LoMaglio and Robinson explained that in order to address this problem, "English specialists would be assigned to work in each technical department at the Institute. Each instructor-consultant assigned to a technical area was to function in as

Evaluating students' communication skills is also necessary for planning appropriate communication programs. Many of the technical majors require certain levels of English language proficiency, and the Communication Program is responsible for developing students' English language skills.

Sylvia Card, a communication assessment and advising specialist, is one of many people who works closely with students in the technical areas. Her area assignment is Data Processing, and she attends that department's weekly staff meetings in order to understand better her students' needs.

their area of expertise. I've also become more sensitive to the time limitations that exist in trying to introduce other areas of training and in expecting technical faculty to correct errors such as English grammar."

Card is enthusiastic about the continued interaction she sees. "I think the most important benefit is the sensitivity that develops and the channels of communication that are opened among the faculty."

Speechreading is a valuable communication skill for students to have when they go out into the working world. Audiologist Marjorie Jacobs has been directly involved since 1972 in developing speech-reading materials using language related to a particular technical major.

"The first program we set up was for medical technology," Jacobs explains. "We talked to faculty members Leoba Schneider and Jonona Young and asked for the words and sentences most often used, as well as situations that students would encounter on the job. We made actual on-site tape recordings of language used for on-the-job communication."

Jacobs and her co-workers then produced audiotapes for auditory training, and videotapes for speech-reading from the information gathered.

"I have always felt that learning to speechread and pronounce new vocabulary in technical areas such as biology and chemistry is very difficult, even for hearing people. It's like learning a foreign language. It takes a great deal of perseverance, practice, and usage to master the pronunciations and to speechread."

For the vocabulary exercises, speakers were videotaped full-face and in profile so students could see both viewing positions. Diacritical markings and captions were included so students could check their pronunciation. Videotapes were also produced using sentences related to most often used on-the-job social communication: "What time is the coffee break?" and "Did you have a nice weekend?"

Before students can enroll in speechreading, they must be able to demonstrate an understanding of the technical vocabulary they will be speechreading on the videotapes and in class. "You can't make the right association of ideas, and understand the speaker's meaning, if you don't know what the words mean," Jacobs explains. "We give a written vocabu-

Professor Edward Scouten helps students with their English language skills which are vital to job success.

unobtrusive a manner as possible in cooperating with technical instructors to service students in their technical writing requirements."

The need for cooperation between communication programs and technical programs is recognized by Dr. Gerard Walter, chairperson of NTID's program of communication assessment and advising. "Advisors are given assignments based on major technical areas, and each is responsible for planning the communication program for the students in that specific technical area," he says. "The key motivation to learning a language is to make it relevant to the learner's interests."

"I think the greatest benefit of having our program represented in these meetings is that there is the opportunity to exchange ideas on communication problems the technical faculty see in the classroom," Card says. "It also gives us an opportunity to understand one another's goals. I've really been impressed with the willingness of the technical faculty to introduce reinforcement of English into their daily tasks in the classroom."

Card says she has come to realize how difficult it is to incorporate communication training into the classroom. "You are asking people to learn a new set of skills that aren't in

27

Student Sara Bishop practices speechreading technical language recognition using self-instructional materials.

lary test and students must score at least 75 percent. We then work on the missed definitions before the students proceed with the exercises."

Work sheets, of varying degrees of difficulty, are part of the program. Some require only that the student fill in the blanks, others have sentences to be completed, and finally, on the most difficult ones, students must write everything the speaker says. Practice with the videotaped exercises is always followed by live practice with the instructor.

"Actually, speechreading has the connotation of being only receptive language skill training," Jacobs says. "In speechreading classes, the instructor may focus the students' attention on looking, listening, combining looking and listening, and speaking. This encourages students to utilize speech, speechreading, listening, and hearing aid use, for effective communication."

She reports that since the first programs, speechreading programs for 18 technical majors have been developed. Tapes are updated every two years to ensure the language is current in fields where technology is changing rapidly.

Speechreading, although vital, is not the only communication skill instructors stress. Writing is also important to success on the job, according to Gene Lylak, English specialist in NTID's Communication Instruction Department III.

"I was hired to develop English courses for students in engineering courses such as Architectural Drafting, Civil Technology, Strength of Materials, and Statics. All these courses require papers or lab reports based on observing experiments," Lylak says.

One of Lylak's courses stresses technical report writing, a skill necessary in many of the technical careers students enter. "I teach them how to write an introduction explaining why they are doing a particular experiment, what materials are needed, the process involved, and the conclusions drawn."

Lylak stresses that students must be able to write a report that is clear, concise, and understandable so that other people will be able to duplicate the experiment.

"The requirement for some technical courses at NTID is that 20 percent of the grade be given on the basis of the quality of English used in papers and reports. If students can't develop sufficient writing skills, their chances of passing technical courses are lowered."

Dr. John Albertini, chairperson of NTID's Communication Instruction Department II, feels that competence in English (whether spoken, written, speechread, or signed) is necessary for graduates to find satisfying jobs. "We also try to gear our content to the specific language students will be using with colleagues and superiors on the job and in social situations. Our goal is proficiency in professional English," Albertini stresses.

"Students who are told by their technical instructors that their English is important are much more motivated in their communication courses. We try to foster that motiva-

tion whenever we can. With the help of technical instructors, we determine what kinds of vocabulary, format, and language structure are needed, and then build that into such courses as English for business careers and English for art and visual communication."

Another important area of support furnished by NTID's communication programs is pronunciation. Sidney Barefoot, chairperson for Communication Instruction Department III, explains that his department has an ongoing consultant role in providing pronunciation symbols for use by faculty in their instructional materials. As instructors introduce new vocabulary, they want the symbols right next to the words.

"We've developed a package for independent use in NTID's YoYo (You're On Your Own) Room, which includes the pronunciation symbols on a type font and instructional materials on how to use it," Barefoot says.

He also mentions the support given to students who are learning to make speeches. "One of our speech pathologists, Larry Pschirrer, has been working with some engineering students on their speeches and verbal reports. Recently, this group was taken on a field trip to Albany to see some engineering projects. Their assignment, when they returned, was to meet with other students and faculty in the department and report on what they saw," Barefoot explains. "What they needed from my department was help in organization, delivery, determining who their audience would be, and picking an appropriate communication mode."

Students also learn techniques for conducting themselves in an interview situation. Last year, Barefoot reviewed videotapes of some engineering students being interviewed.

"Students were able to view the videotapes and analyze their mistakes," Barefoot says. "Then I provided help for their next interview."

As a result of this pilot program, students are learning to combine writing and speaking skills.

"Our biggest problem continues to be the wide range of speaking, listening, signing, writing, and reading skills of our students," Barefoot concludes. "I'm convinced the best way to solve that problem is the continued close cooperation between people in the communication and technical programs."

—Lynne Williams

One of the distinctive features of RIT faculty members for NTID is that many of them have come to teaching from another career. Often recruited from business and industry, they bring their expertise and familiarity with the job market into the classroom. As a result, a variety of innovative teaching strategies are employed at the Institute, many of them born of on-the-job experience.

Assistant Professor Edna Wilkinson was recruited to NTID 10 years ago from her job as a medical laboratory technician (MLT) in a Pittsburgh hospital. This year she was presented with the Dominic Europa Award by the New York State Histotechnological Society. Histotechnology is the study of tissues removed through surgery or examined as the result of an autopsy. The award carried with it a cash prize which Wilkinson has given to NTID for the purchase of equipment, reference books, and possibly an electron microscope.

The idea of coming to NTID appealed to Wilkinson because at the time, there were very few deaf medical lab technicians. "I hope our students have learned and benefited from my being here," she says.

Apparently they have, for in 1978 she was presented the NTID Student Congress Humanitarian Award, given yearly to an outstanding teacher.

"I feel," she says, "that good teaching is a combination of strictness and high expectations, tempered by a great deal of flexibility."

A measure of her ability as a teacher is that one of her students recently received credentials as a histotechnologist from the American Society of Clinical Pathology.

Histotechnology used to be part of the MLT profession, but a separate association of histotechnologists was founded at Bellevue Hospital in New York City eight years ago. Wilkinson is one of the charter members of the association.

As a deaf faculty member, she constantly is besieged by students seeking a sympathetic ear.

"I try not to assume the role of 'Mama away from home,'" she says. "I sit and listen until their hearts are satisfied, and help when I see the need."

Last summer, Wilkinson worked at the Lawrence Livermore Laboratories in California. She admits the

Meet THE PEOPLE Who Make IT HAPPEN
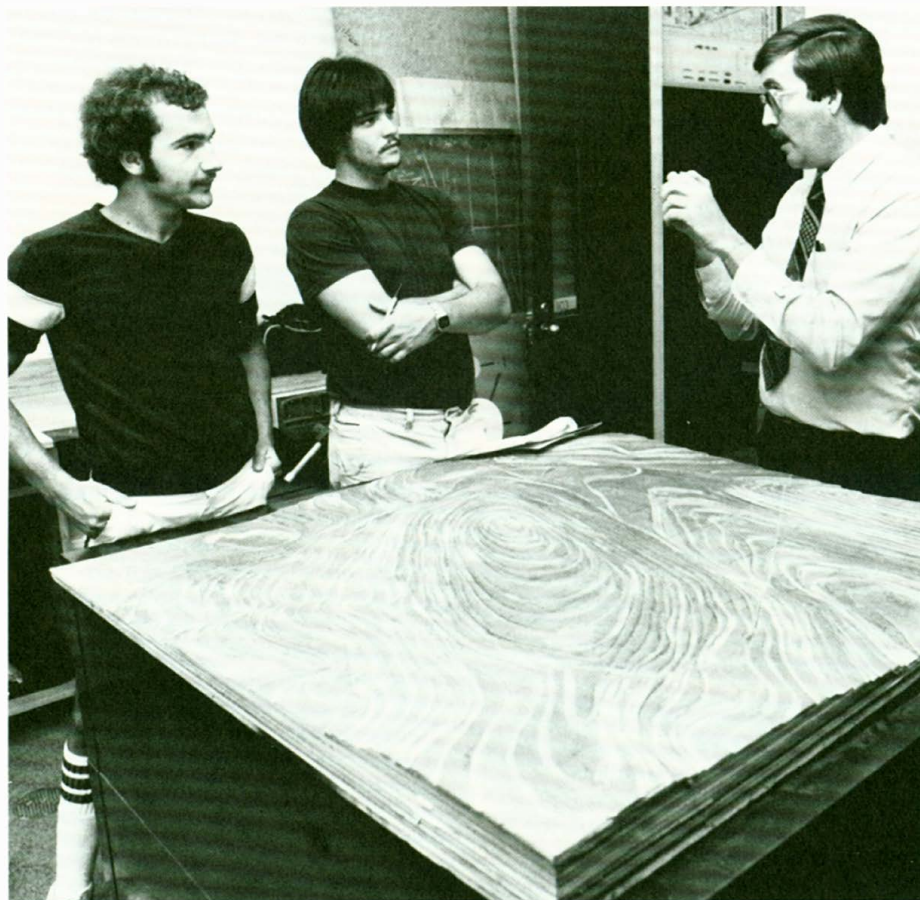
Assistant Professor Robert Keiffer shows a contour model of a highway project to students Steven Bene and Brian Shoup.

Edna Wilkinson

thought of returning full time to a lab or hospital has crossed her mind in the years she has been at NTID, but says she's happy she has stayed.

"So," says Department of Applied Science/Allied Health Chairperson Fred Hamil, "are we."

Assistant Professor Barry Keesan came to NTID in 1977 as an adjunct faculty member. He is a licensed architect and had his own architectural firm.

"I didn't expect to stay," he says, "but was so impressed with all the energy, enthusiasm, and commitment, I got involved. I truly enjoyed sign language, and was excited to learn something about the handicapped population. It's a good way to do something beneficial for others and I find this job very creative. It probably sounds corny, but I've found this position to be good for me as a person: I needed a lot of energy for it when I started, and I still do.

"The rewards are many. I find myself learning professionally from other faculty members. I teach a Projects course in which students complete different architectural assignments. It's a new experience each time—the projects change constantly, as do the students. I think I could get burned out quickly if I just gave the same lecture year after year."

The reason for teaching architectural technology as a series of projects is that it motivates students. While completing a lengthy project, responsibility is transferred from the teacher to the students.

"In the fall and winter," says Keesan, "students work according to my expectations. By the spring, they schedule themselves. They also select their own projects. Naturally, different students accept differing amounts of responsibility. Yet, I find that all of them get turned on eventually."

Assistant Professor Robert Keiffer was an engineer when he saw an ad for a position at NTID six years ago. He still maintains a civil engineering firm.

"I had no formal training as a teacher," he says, "nor had I ever met a deaf person. When I started, I was literally tossed into the classroom. However, because of NTID's excellent series of training programs in manual communication, deaf awareness, curriculum development, and media development, my teaching has improved considerably."

Keiffer now teaches second and third-year associate degree students in construction technologies. Each year he sees more and more of his students going on to bachelor's degree programs as cross-registered students at RIT.

Civil Technology covers three areas: surveying, design drafting, and materials testing. If he has improved in any way as a teacher since his shaky beginning, Keiffer says it is in covering basic skills more thoroughly in a shorter period of time.

"I have learned about clear definition of objectives, and the use of slides, overheads, handouts, and field trips. We had seven or eight of the latter last quarter. I have found the Rochester community gracious and eager to share learning opportunities with our students.

"One of the advantages of maintaining a private practice is that I'm able to keep abreast of construction projects happening locally. There's a large highway construction project underway in Greece (a Rochester suburb) that will probably be the source of several field trips this year."

Keiffer also teaches hearing students, and says he notices no major difference between them and deaf students.

"I find our students are not appreciably different from their hearing counterparts," he says, "I think most are similar in that they're capable of performing whatever you expect of them: they will work hard if they think that's what you expect. And we do expect a lot here."

Robert Morasse, an industrial drafting instructor, came to NTID six years ago following 20 years as an electromechanical systems designer in industry. After some quick observation, Morasse decided his first task would be to acquaint his students with what he calls "the socialization required in industry, because most of their historical learning experiences have not equipped them with that knowledge.

Bob Morasse

"I try to teach them that teamwork leads to quicker, richer goals. We deal with more basic ideas as well: how to integrate themselves into groups, how to ascertain their status within a group on the job, how to take a joke, or how to recognize when someone is being sarcastic."

Morasse's classes are conducted as if his students were the industrial drafting group of a major corporation. Each student functions according to his designated job description—drafter, designer, engineer, etc.

"I always wanted to teach that way," says Morasse, "so I incorporated this into the curriculum when I helped 'flesh in' courses for the associate degree program."

One of the reasons Morasse uses a team approach is because he feels it encourages students to accept their own errors as well as those of others, and helps them concentrate on "fixing the problem rather than the blame." By the time his students are in their third year, where they must grapple with conceptual design problems, he is not offering solutions all of the time, and students are forced to work out problems among themselves.

"After all," he explains, "a drafter on the job might not see the project engineer (whose role he replicates in the classroom) for as long as two weeks. I must emphasize, however, this is a gradual weaning process which has to be learned, like all the skills in life."

Since so many NTID faculty members are not educators "by trade," they are supported by the Teaching Effectiveness Program (TEP), a part of the Educational Support Services Program. TEP offers workshops to help NTID's teaching faculty develop strategies for improving their teaching.

One of TEP's bigger boosters is Data Processing Instructor Charles McLaughlin, now in his fifth year at the Institute. McLaughlin was in personnel and sales before coming to NTID. An RIT graduate, the thought of teaching at NTID intrigued him.

"TEP really can enhance learning," McLaughlin says. "It's a valuable tool, because it focuses on *your* specific needs. In my case, I was interested in seeing my classes operate in a very positive way.

"One of the helpful things TEP did," he says, "was to videotape me in the classroom my first year as a teacher. I realized how many things I could do better. For example, when asking questions I tended to look first to students who use their voices. Also, I learned that if someone asked a question, I needed to point to that student for the benefit of others.

"I was encouraged to try to increase classroom participation through group discussions. We have activities which encourage students to get involved because I'm always looking for volunteers; by the end of a 10-week course, they usually get involved!"

McLaughlin believes the best way to encourage independence in students is to inform them of his office hours, rather than to mandate they make appointments with him. He also does not believe in supplying students with easy answers, but rather in guiding students and allowing them to discover the answers.

Although the curriculum taught in the data processing area is highly technical, McLaughlin does get into personal/social issues in his classes.

"For example, I might role play a situation where I'm their boss. I let them discover who is responsible for clarifying confusion—it is *their* responsibility to learn how to communicate with their co-workers. This gives them a head start when it comes to handling themselves on the job. I also let them share with each other their own approaches to problem solving. I am the observer in these instances. Sometimes, I find they learn just as well from one another."

McLaughlin says he believes the most important factor in any teacher's relationship with students is trust: "We must respect them as adults."

Another RIT graduate, Assistant Professor Michael Krembel, has been teaching applied art at NTID for eight years. Krembel came to NTID via the business route—three years at Eastman Kodak Co. in the art department of the printing division.

Barry Keesan

He began his teaching career in RIT's College of Fine and Applied Arts as a graduate assistant, where he encountered many cross-registered deaf students. In the course of his career, he has taught every subject in the applied art field, and has helped develop curriculum.

"One of the techniques we introduced in applied art," he says, "is 'competency-based contract learning.' This is an individualized program in which a student contracts for a certain grade by completing a designated number of projects in addition to meeting several other criteria. Of course, there are many modifications to this basic concept. My Design Applications course is a series of broad subjects assigned to students as jobs would be in an art studio. I function as the art director.

"This teaching method is enjoyable for me, because it means that every day is different—a problem doesn't occur the same way twice. Since

each student is unique in his abilities, there is a different application of principles every time."

Another way which Krembel simulates on-the-job experiences is shuffling the deck every now and then. In the middle of a project, he suddenly might change his requirements—a situation which often crops up in art studios—to see how students will adjust.

This tactic encourages students' dependency on each other. Students work together on projects, each completing one segment, and they share the cost of materials that way.

"It's exciting to see students who completed five projects during the fall quarter work themselves up to 12 in the spring," he says.

There are other ways Krembel simulates real-life experiences in his classes. In addition to estimating the time it will take them to complete a job, students also have to write up a final bill similar to one that would be sent to a client. The per hour salary figure is based on that charged by real freelance artists.

"If the student does an incredible job," explains Krembel, "I give that student a raise. It really has engendered a sense of responsibility and integrity in them. We've found out that this is helpful for students dealing with prospective employers during job interviews."

Instructor Elaine Milton is yet another RIT graduate. Upon receiving her M.F.A. in photography, she took a job as a custom color printer in Boston. Eventually, she became an assistant manager in a professional photo lab.

Elaine Milton

"I came to NTID," she explains, "because one of the jobs our applied photography program prepares students for is the job I had. I thought I could help prepare students by virtue of my personal experience."

The custom color lab at NTID duplicates the process and equipment of a working lab—there are job tickets and professional machinery. Hands-on experience is combined with what Milton terms "non-traditional teaching methods." No deadlines are imposed; the goal of the courses is to produce work as good as that turned out by industry.

"By the time students graduate," says Milton, "they have production level skills, including speed. This is an unusual program, and our students are highly motivated and interested in success. Even in the classroom, a lot of them are already two steps ahead of me!"

"As teachers, all of us try to instill an attitude that students 'can'," says Associate Professor Jack Slutzky. "Deafness is merely an inconvenience. Students are under great pressure to perform and, miraculously, in the 11 years I've been here, they do.

"There are students who arrive totally lacking in self-confidence. But if they have even one glimmer of success, we reinforce it. It takes a lot of patience and pushing, but it works. I have a 16-year-old deaf son, and he has accomplished everything he set out to do.

"That same attitude has proven itself within our program. We don't accept substandard language, writing skills, or vocabulary. Verbalization is not a favor students do for us; we give no awards for communicating."

Slutzky also believes it is important for teachers to admit their mistakes to students, and says a balance between work and "play" is important.

NTID's Art Department Chairperson John Cox, an assistant professor, says, "We have made some use of a 'mastery learning' approach in our department. This involves building on success...providing a means for each student to develop full confidence in his/her own ability to do the work. Self-pacing is one strategy for implementing mastery learning. The underlying philosophy is that individuals learn differently, but in the end they must all achieve a high level of mastery in order to perform competently on the job. Can you imagine having your appendix removed by a doctor who tells you, 'I only got a "C" in my appendectomy course in medical school'?"
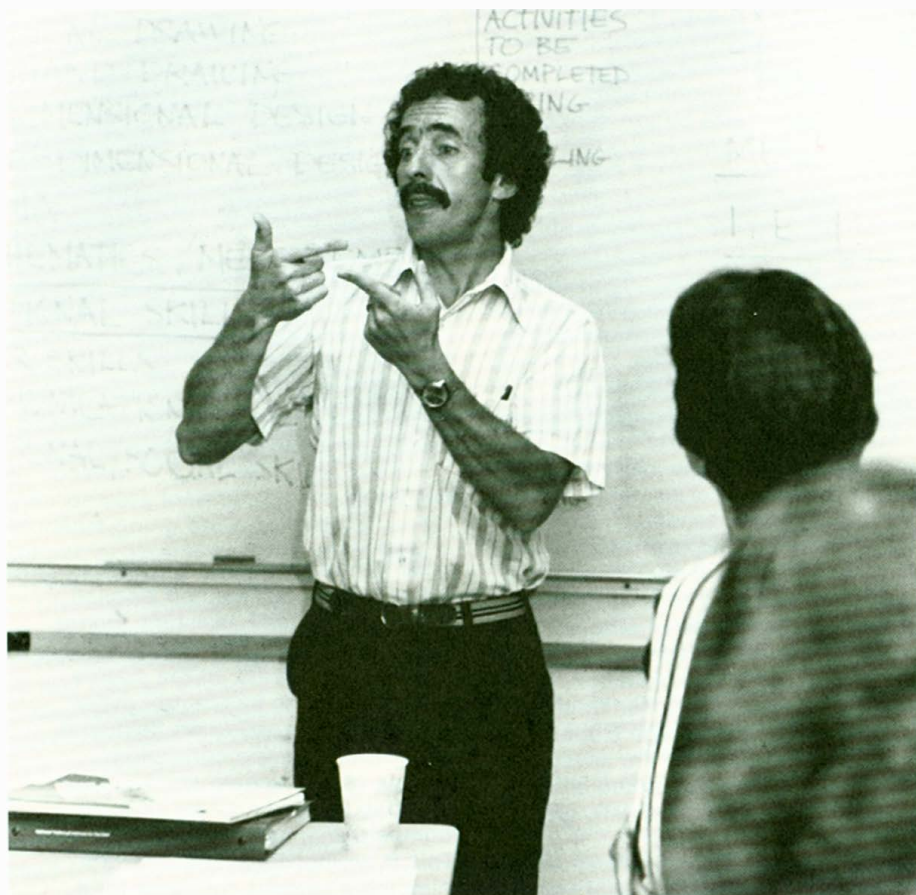
(Above) Art Department Chairperson John Cox describes the course of study to prospective art majors. (Below) Associate Professor Jack Slutzky's interest in NTID grew out of personal experiences with a deaf son.
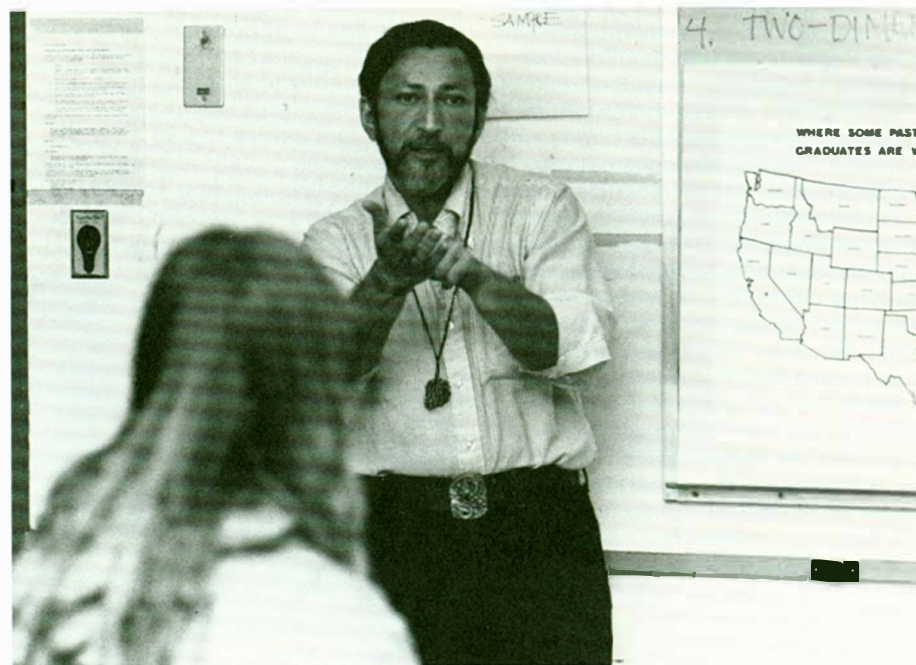
"I never once felt," says Slutzky, "that if there were something I wanted to do at the Institute, I couldn't. There are never automatic barriers. We have always been able to take risks; we depend on one another, and that flexibility has enabled us to grow. To me, the concept of overachieving is what typifies the NTID faculty."

—Emily Leamon

32

On the Threshold of an
ENGINEERING CAREER

One of the many career areas within Technical and Professional Education Programs (TPEP) is engineering technologies. Students electing this area choose from a number of construction, industrial, or electromechanical technologies majors.

Some of the programs are two-year, leading to a diploma, while three-year programs lead to an associate degree. There are no one-year certificate programs in engineering technologies, although they do exist in other divisions of TPEP.

Each year at NTID's academic awards ceremony, an award is given to a student in a certificate or diploma program. This year's recipient was Gary King, a student in the industrial technologies program.

Gary, a manufacturing processes major, will cross register this fall into RIT's College of Applied Science and Technology and begin work toward a bachelor of technology degree in manufacturing technology.

The 19-year-old is from Feasterville, Pennsylvania, a small town outside Philadelphia. In talking with him, one gets the impression that his hearing impairment is but an incidental fact of his life.

He had a mainstreamed high school experience, along with several other deaf students, in a technical school, which prepared him for the highly technical environment of RIT. He chose NTID "because it's a good school, not because it's for deaf students."

Based on his experiences in manufacturing processes and an apprenticeship he did as part of his studies, Gary is fairly certain he wants to be an engineer.

"I'm being prepared for that career," he explains, "but the specialty I choose within engineering will depend on where the major takes me. One thing I know for sure is that I want a job that involves working with my hands, no matter how far I advance."
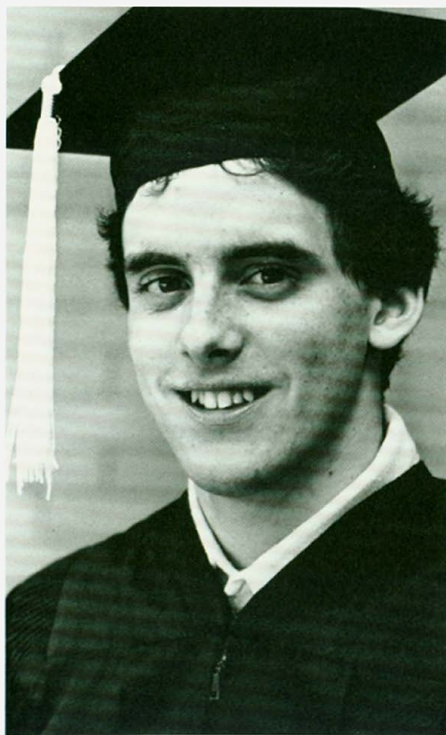
Gary King is all smiles after receiving the academic achievement award for diploma/certificate programs at the NTID Graduate Academic Awards Ceremony.

One reason Gary was educated in a mainstreamed setting is that he has two younger brothers who are both hearing. Gary's hearing impairment is the result of a premature birth.

"I'm really into the hearing world," he says. "I'm very close to my brothers, and we have many of the same friends."

This proximity to the world of the hearing also has given him a vantage point from which to observe that general attitudes toward deafness have improved "a little" in his lifetime.

"Sometimes I go to a shopping mall with friends and when I sign to them I see little kids fingerspell 'hi' to us," he remarks.

Aside from the opportunity RIT offers deaf students to learn in a mainstreamed environment, Gary highly approves of the way the dormitories are set up. They allow hearing students, many of them for the first time in their lives, to room side by side with deaf students. Conversely, hearing-impaired students are offered the chance to interact with their hearing peers, a situation Gary enjoys.

When asked why he thinks he was selected for an academic award, he jokes, "Because I take my work seriously and don't go drinking every night!"

On a more sober note, he modestly credits two members of the NTID Department of Industrial Technologies—Associate Professor Sidney McQuay and Lecturer Raymond Grosshans—with encouraging him in his work.

"They both have forced me to go further in my studies than I otherwise might have," he says. "I may even try for a doctorate."

Right now, however, his goal is to be the proud possessor of a bachelor's degree in May 1984. "Then," he says with a smile, "I'll take it from there."

—Emily Leamon

Rochester Institute of Technology
National Technical Institute for the Deaf

Public Information Office
One Lomb Memorial Drive
Rochester, New York 14623