



2000 Self-Study
Review of Existing Degree Programs

Department of Speech & Hearing Sciences
UNIVERSITY OF WASHINGTON

Table of Contents

	Page
I. Context	1
A. Name of unit	1
B. School or College	1
C. Exact Titles of Degrees Offered	1
D. Description of the field and its history at the University of Washington	1
 II. Unit Roles and Responsibilities	 4
A. Within the college and university	5
B. Opportunities these roles provide	5
C. Differences between roles and expectations	5
D. Changes influencing unit's role	6
E. Criteria to measure success	6
F. Leader in the field	8
G. Collaboration with other institutions	8
H. Collaboration with related areas on campus	11
 III. Degree Programs	 14
A. Bachelor's Degree	15
1. Objectives	16
2. Standards for Measuring Success	16
3. Involvement in Research	17
4. State-mandated measures/improving overall quality	18
B. Master's Degree	23
1. Objectives	23
2. Standards for Measuring Success	24
C. Doctoral Degree	25
1. Objectives	25
2. Standards and steps to improve quality	25
 IV. Responses to Change	 27
A. Changes over the last ten years in teaching and learning	31
B. Influence of new developments on teaching	33
C. Influence of new developments on research, scholarly or creative activity	36
D. Changes observed and anticipated in providing service	37
E. Strategies to address anticipated changes in the next ten years	41
F. Response to changing U.S. demographic trends	41
G. Personal productivity	41
1. Faculty	41
2. Staff	43
 V. Goals	 44
A. Process of setting goals	44
B. Goals for the next five to seven years	44
 VI. HECB required information	 47
 VII. Faculty Curriculum Vitae (requested maximum of six pages)	
 VIII. Appendices	

I. Context

- A. **Name of unit authorized to offer degrees:** Department of Speech and Hearing Sciences
- B. **School or College:** College of Arts and Sciences
- C. **Exact Titles of Degrees Offered:** Bachelor of Science, Master of Science, Doctor of Philosophy
- D. **Description of the field and its history at the University of Washington:**

Speech and hearing sciences were first formalized into an academic discipline at the University of Iowa during the period 1915 to 1925. Carl E. Seashore, then Dean of their Graduate School, was convinced that the most significant discoveries and developments in science would occur in what he called "the borderline regions of the academic and scientific world." In his view "speech and hearing problems were certainly not to be investigated or dealt with adequately within any one academic department, and any full scale attack on them required the active cooperation of workers in several different colleges and in both nonmedical and medical fields." Dean Seashore's conviction identifies the nature of the discipline today as well as it did at the time of the discipline's inception.

At the University of Washington, a curriculum in the normal and disordered aspects of speech and hearing has existed since 1934. From that time until 1975, this curriculum was a part of the *Department of Speech* and was identified by a separate "program" designation. Recognizing the unique interdisciplinary academic objectives of the field, the laboratory-type instruction which supports the teaching program, and the nature of research objectives and requirements, the University created a separate Department of Speech and Hearing Sciences in 1975. In the most recent rankings by *U.S. News and World Report* (the only rankings available for our field), the Department's graduate program in speech-language pathology was ranked 2nd in the nation and the audiology program was ranked 4th.

The Department's academic programs are concerned generally with the processes and disorders of human communication. Research, teaching, and clinical activities are focused in five major areas:

- the nature of language, speech and hearing as related to the characteristics of biological and behavioral systems out of which they evolve;
- the nature and characteristics of individual human communication disorders specifically related to language, speech and hearing;
- the acquisition of speech, language and hearing by children developing typically and those with communication disorders;
- the processes and procedures involved in identifying, preventing and remediating these disorders;
- the relationships among brain, mind and language.

The Department: A brief overview

Administration. The Department (SPHSC) is administered by a Chair with faculty organized into three principal "interest groups" (Basic Processes of Speech, Hearing, and Language; Audiology; Speech-Language Pathology), each of which is chaired by a group leader. (See Appendix I) Interest groups are advisory to the Chair and the faculty as a whole concerning curriculum planning, evaluation, and scheduling; faculty and TA deployment; and evaluation of graduate student progress. An Executive Committee is advisory to the Chair in matters of overall departmental planning and procedure. It serves also as the departmental Budget Committee. Membership includes the three interest group leaders, the Clinic Director, and Associate Chair/Graduate Program Coordinator. Other principal standing committees of the Department are the Clinic Advisory Committee, the Peer Teaching Evaluation Committee, and the Undergraduate Student Selection committee, each with broad faculty representation (Appendix I)

Faculty: The Department has 15.5 state-funded FTEs. As of Spring Quarter, 2001, there are five Full Professors, five Associate Professors, two Assistant Professors, three Senior Lecturers, and seven part-time Lecturers. In addition, there are three Adjunct Professors, three Adjunct Associate Professors, one Adjunct Assistant Professor, one Affiliate Assistant Professor, two Clinical Professors, and 14 Clinical Instructor appointments. Appendix I provides a more complete description of our faculty and their areas of interest. In the past ten years, The Department has had nine retirements/resignations and five new hires. At present, we have two unfilled positions.

Staff: Departmental support staff includes two professional staff members— Assistant to the Chair and Counseling Services Coordinator— and eight classified staff members—Program Coordinator, Fiscal Specialist 1, Office Assistant 3, Computer Support Analyst 2, Patient Services Representative, and Patient Services Representative Supervisor. The Department's Graphic Designer and Electronics Technician positions are vacant at this time.

The Speech and Hearing Clinic: The Clinic has an operating staff of three, including the Clinic Director, Clinic Manager and Office Receptionist. Students are supervised in their professional practica courses by thirteen clinical faculty including three Professorial faculty and ten Lecturer faculty.

The Speech and Hearing Clinic has two basic functions: (1) it serves as a "teaching lab," providing clinical education for our master's students; and (2) it provides clinical services in the form of evaluations, consultations, and individual and group treatment following the academic quarter system in the university. On average the clinic handles 600-800 outpatient visits per quarter, depending on the

academic quarter. The clinic operates on a fee for service program and receives limited gift contributions as well. (Appendix J)

Students: The departmental major is a two-year program with the majority of students entering at the end of their sophomore year. This year (2000-01), we have 113 majors including 11 post-baccalaureate students, who complete the required coursework in five quarters (two summers; one academic year) or over a two-year period. At the master's level, 20 students are accepted into the clinical speech-language pathology program each year and ten students enter the audiology program yearly. Thus, the total number of clinical master's students is 60. Students begin the M.S. program in Autumn Quarter and graduate after eight quarters including summers. This year, our Ph.D. program has 32 students (including one on leave) with an additional nine accepted for next year.

Facilities: The majority of the department is housed in two buildings, Eagleson Hall and the Speech and Hearing Clinic. Eagleson Hall houses Departmental staff, the professorial faculty, some lecturers, and some graduate assistants. Eagleson is also the location of a large newly renovated well-equipped classroom where our large undergraduate classes are taught, and the new Student Research Lab (see Section IV. A.2). The main floor of the Speech and Hearing Clinic building houses clinic facilities for speech-language pathology (therapy and observation rooms) as well as offices for the clinic staff and clinical faculty. The Student Computer Lab, (see Section IV.A.2) is also in the clinic. The lower floor of the clinic houses clinical facilities for audiology, classroom labs and individual laboratories for faculty research. A few faculty members' research labs are located in associated facilities (Kuhl at the Center for Mind Brain and Learning, Coggins and Folsom at the Center on Human Development and Disability).

II. Unit Roles and Responsibilities

A. What are the principal roles and responsibilities of your unit within your college and the University?

- **Undergraduate education:** The Department provides undergraduate coursework in basic aspects of communication sciences and disorders for majors and non-majors. (See Appendices C & F)
- **Undergraduate "service" classes:** The department offers two "service" classes, SPHSC 100 (Voice and Articulation Improvement) and SPHSC 111 (The American English Sound System) for non-native speakers of English.
- **Master's clinical education:** The Department provides scientific and clinical training for Master's students pursuing a degree in audiology or speech-language pathology. Our speech-language pathology program is currently ranked #2 in the country; our audiology program is ranked #4. (See Appendix G)
- **Ph.D. education:** The Department provides coursework and research opportunities for students in our doctoral program. (See Appendix H)
- **Services within University of Washington:**
 - SPHSC faculty members serve on committees to evaluate and upgrade the acoustics of classrooms on campus.
 - SPHSC faculty members provide ongoing in-service training and consultation with the campus Office of Disabilities Services and Disabled Student Services. In-service training is provided concerning available devices and individualized accommodations for faculty/staff/students.
 - The Speech and Hearing Clinic serves the University with its Hearing Conservation Program through Environmental Health and Safety to protect all campus employees in high noise occupations.
- **Services within the broader community:**
 - SPHSC faculty members participate regularly as faculty in workshops designed to educate staff of State Department of Vocational Rehabilitation, and State Services for the Blind.
 - The Speech and Hearing Clinic provides diagnostic and rehabilitative services for the community. Specialty clinics such as Language and Literacy, Early Child Speech & Language Development, and Rehabilitative Audiology draw patients from the entire region.
 - As an approved sponsor for our major national organization, our department co-sponsors numerous continuing education programs with other facilities such as Children's Hospital Medical Center, and Virginia Mason Medical Center.
 - Our faculty have organized and hosted national workshops for professionals, such as the regional workshop on the Diagnosis and Treatment of Children Who Stutter.
 - Our faculty routinely accept invitations to speak at organizations such as senior centers, local Self-help for Hard of Hearing chapters, UW Retirement Association, etc.

B. What opportunities do these roles provide you?

Societal Need: The discipline is anchored by concern for disabilities of individual human communication, related normal and abnormal processes, and appropriate pathways to remediation. An estimated 13% of the population has some degree of hearing, speech or language impairment. When severe, such impairment can be devastating to human development and adjustment. According to the National Institute on Deafness and Other Communication Disorders (NIDCD) approximately 25% of the working population in the U.S. have jobs that require voice use. Among adults over age 65, the prevalence of communicative disabilities associated with hearing and speech impairments is estimated to be well over 30%. Currently, about 13.1% (35 million) of the nation's population is over age 65. This number is expected to increase in the years to come. Coupled with this is the rapid growth of another "at-risk" segment of the population, minorities and the poor. The zero-to-three-year-old population is also an at-risk sector, and recent federal legislation has authorized the provision of services for early identification and remediation of problems within this group. Together, societal changes, recognition of needs, and related legislation will create a substantial increase in need for services, education and research in the speech and hearing sciences into the next decade and beyond.

C. What differences do you observe between your view of your role and the college/university expectations of your unit?

The primary difference between the Department's view of its role and the college/university expectations of the Department, concerns the professional training of audiologists and speech-language pathologists. While it may not be typical of units within the College to train individuals for professions that are habilitative and rehabilitative, it is important that this portion of our mission be implemented within the larger context of our basic science mission. The clinical training of audiologists and speech-language pathologists requires one-on-one instruction as the students begin their clinical experiences under direct supervision. Supervision of M.S. students is more costly than large classroom didactic teaching, but it is necessary to adequately train beginning students. This aspect of our graduate program constitutes a variation from the missions of other Science departments within College of Arts and Sciences.

D. What changes have occurred in your field over the past decade that have influenced your conception of the unit's role?

Over the past ten years, the scope of practice in speech-language pathology has increased dramatically. New areas of clinical practice include dysphagia (swallowing disorders), literacy, and the provision of alternative and augmentative communication. Demands for coursework in these areas have risen as some area hospitals will no longer accept students for internships unless they have taken a class in dysphagia.

The Department has met these increased instructional demands largely by hiring community experts to teach these courses as electives. We have resisted extending the M.S. program, but the students have to take approximately 16 credits each quarter to fulfill the requirements and recommended electives.

Another major change in our field nationally is the decline of professorial level faculty graduating from Ph.D. programs. Currently, approximately 50% of the faculty in our field are 55 years of age or older. Over the next 10 years, there will not be a sufficient number of new faculty to replace the existing faculty as they retire. Failure to find sufficiently qualified individuals over the past two years of faculty searches has led our Department, like others, to seek qualified individuals who have doctoral degrees in related areas (e.g., psychology, linguistics, physics, cognitive neuroscience). This is good solution, but does not address the basic problem of finding qualified individuals who are trained in the area of clinical research. The Department is currently training 32 doctoral students and the faculty are taking on more students than usual so the University of Washington can be a significant contributor to the solution.

Finally, the American Speech-Language-Hearing Association (ASHA), the national accrediting body, has mandated that the clinical doctoral degree will replace the current M.S. degree as the entry-level degree in audiology. A four-year clinical doctoral degree will increase the number of students enrolled in our program. Additional training will include cross-discipline training in the areas of business, gerontology, and others, because the purpose of the new doctoral degree is to provide a broader scope of education that prepares graduates for careers in a variety of settings.

E. What criteria are typical in your field against which you measure the success of your unit as a whole?

Success in the field of speech and hearing sciences is measured by a set of criteria much like those used in many academic departments, namely quality of the faculty, quality of the students, number and types of grants obtained, memberships on editorial boards and scientific review panels, and invitations to present at national and international conferences. Without a doubt, the single most important element in determining success is the quality of faculty. Faculty are able to obtain grants; faculty attract outstanding graduate students; and current faculty are the key to recruiting new faculty.

F. In what way is your unit a leader in your field?

The Department of Speech and Hearing Sciences is widely recognized as one of the leading research and clinical training programs in the field. The simplest and most visible indicators of this recognition are the 2nd and 4th national rankings by *U.S. News and World Report* of our graduate programs in Speech-

Language Pathology and Audiology, respectively. A long tradition of national and international leadership includes past national association presidencies, continuing leadership roles in matters of enormous national health importance (e.g., hearing screening for newborns, fetal alcohol syndrome), and *de facto* leadership in issues of curricular development and decisions of clinical practice.

Graduates. Speech and Hearing Sciences provides a significant proportion of the new doctorates in the field, with many of our graduates moving directly into faculty positions in other top-ranked departments. In a field that generates nationally only 150 new doctoral graduates annually, SPHSC, with a predoctoral class of 32 students, has an important role in sustaining the discipline. Our Ph.D. graduates are heavily recruited by other universities and are generally recognized as having high potential for scholarly productivity and teaching excellence. Our M.S. graduates fill the majority of statewide positions in school districts and hospitals). (See Appendix E.)

Faculty Recognition and Activities. The Speech and Hearing Sciences faculty are frequently recognized as national and international leaders. Departmental faculty serve as officers of national organizations (e.g., President of the Acoustical Society of America), on national grant review panels (e.g., for the National Institutes of Health and the Department of Education), as site visitors for accrediting bodies (e.g., the American Speech-Language-Hearing Association), and on many scholarly editorial boards. The UW Faculty Lecture was recently delivered by one of our faculty members (Kuhl). Many have been designated as fellows in national organizations, including the American Association for the Advancement of Science and the American Speech-Language-Hearing Association.

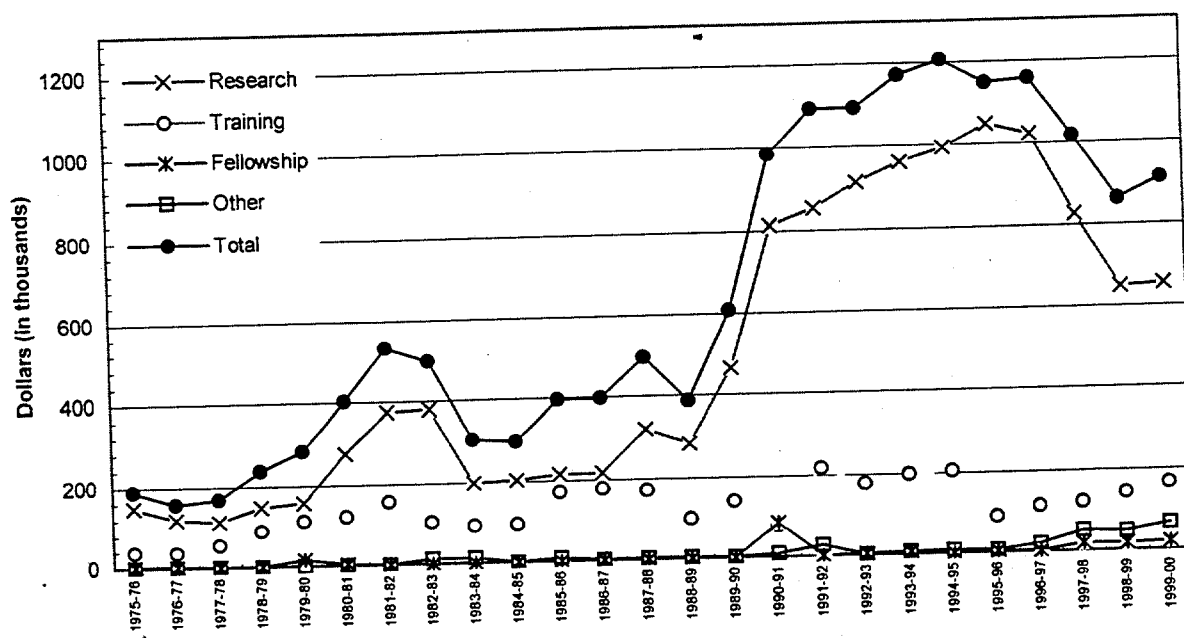
Scholarship. The scientific leadership provided by the SPHSC faculty is very strong, garnering Editors' Awards for research excellence, and national grant support for continuing work. Departmental faculty have been leaders in writing the Practice Guidelines in speech-language pathology, a major nationwide effort to establish standard practice. The faculty are routinely overwhelmed with national and international invitations to present workshops, keynote addresses, and symposia on their research areas. Recent efforts in forging new directions in clinical research have been supported by a University of Washington Tools for Transformation award. At the forefront of research capitalizing on web-based applications, SPHSC clinical scientists are serving speech, language, and hearing populations worldwide, symbiotically gathering research data and providing valuable treatment services. The SPHSC faculty are internationally recognized for their investigations of underserved clinical populations, including: Primary Progressive Aphasia, Social Communication Disorders in School-Age Children, Transgender Voice Disorders, and Communication Disorders associated with Multiple Sclerosis and Huntington's Disease. We are also leaders in child- and adult-focused clinical research, investigating innovative procedures for assessing and treating individuals with communication disorders. SPHSC faculty have taken the lead

internationally in implementation of the World Health Organization model in communication disorders. The department is especially well represented in human development, with a number of researchers participating in child research through the Center for Mind, Brain, and Learning (CMBL).

One measure of faculty leadership is success in competing nationally for scarce research grant funds. In recent years these funds have been approximately \$1 million annually. Faculty grants are detailed in Figure 1 and illustrates the 25-year trend in grant expenditures. Individual faculty grant support is detailed elsewhere in Appendix M.

Figure 1

Direct Expenditures from Grant and Contract Funds



G. In what ways do you collaborate with units at other institutions?

Over the past ten years, the Department has engaged in many collaborations with units at other institutions, both in the U.S. and abroad. Brief descriptions of four projects are provided to illustrate the nature and breadth of these collaborations.

➤ Communication of individuals with severe developmental disabilities

Professor L. Olswang is collaborating with researchers from the University of Kansas to investigate communication of individuals with severe developmental disabilities. The UW and University of Kansas have a unique collaborative relationship. Kansas has a large NIH grant being implemented in several sites across the country, including Fircrest School in Seattle. This grant supports student research

assistants who are engaged in a project designed to examine the benefits of augmentative communication for low functioning, medically at risk individuals. The strength of this collaboration is the amalgamation of views/knowledge about research methodology and research technology. Faculty from both institutions have interest in treatment efficacy research, which is at the core of our collaboration. The faculty from Kansas have expertise in behavioral research methodology with a unique population. This population and this collaboration have expanded our opportunities for treatment efficacy research, and for student experiences. Further, because the research is being conducted in a community setting (Fircrest School), we are developing important community partnerships. The Kansas faculty have developed new technologies for data collection and transmission (since all of the data are collected in Washington and analyzed in Kansas). The project is at the cutting edge of the discipline and a wonderful opportunity for all parties.

➤ **Student Exchange Collaboration: University of Sydney, Sydney, Australia**

In 1999, the University of Washington and the University of Sydney entered into a formal agreement for cultural, educational and scientific cooperation, including an agreement regarding student exchange. Under this agreement, one form of cooperation is the exchange of faculty members and students for study, teaching and research. During November 2000, Professor R. Folsom was a visiting professor at the University of Sydney School of Communication Sciences and Disorders, Sydney, Australia. The purpose of this visit was to further the ongoing negotiations for a joint student exchange between that program and the University of Washington Department of Speech and Hearing Sciences.

Discussion over the past two years had made it clear that these two programs share similar philosophies in undergraduate and graduate education as well as a commitment to excellence. In addition, effective international student exchange in the field of Communication Disorders requires a common language, as is the case with universities in Australia. Students from both institutions will be able to attend all lectures and participate fully in the student life at the two universities without language barriers.

The plan for this exchange involves both undergraduate and graduate students, drawn from either Speech/Language Pathology or Audiology. Exchanges will be for a duration of an academic year, or some proportional division of the academic year (i.e., one or two quarters at University of Washington or one semester at the University of Sydney). Undergraduates must be at the senior level and graduate students must have completed one year to be eligible for the exchange. All students must have an excellent GPA at their home institution.

➤ **Identification of neonatal hearing impairment**

Professor R. Folsom and adjunct Associate Professor Susan Norton (Children's Hospital and Regional Medical Center, CHDD) were part of a large, multi-center projects entitled "Identification of Neonatal Hearing Impairment" funded by the National Institute on Deafness and Other Communication Disorders (NIDCD). This prospective multi-center project was designed to determine the performance of the most reliable tools used in the identification of hearing loss at birth. The findings have implications for national policy regarding universal newborn hearing screening in the US and will drive policy decisions in this area. This study was implemented at six centers across the United States: The University of Washington (Professor Folsom, P.I.), CHDD, (Associate Professor Norton, P.I.), Boys Town National Research Hospital, Omaha NE, University of Kansas Medical Center, Kansas City MO, University of Southern California Medical Center, Los Angeles CA, and Women and Infants Hospital, Providence RI.

➤ **Developmental speech impairment**

Associate Professor C. Moore and his laboratory staff are collaborating with faculty at the University of Pittsburgh (T. Campbell) and the University of Wisconsin - Madison (L. Shriberg and J. Green) in a large investigation of developmental speech impairment. This collaborative effort capitalizes on the strength and experience of scientists at each institution: analysis of physiologic and acoustic signals (Washington), phonetic/phonologic analysis (Madison), and treatment of developmental speech impairment (Pittsburgh). Emerging challenges in speech research require increasingly complex analyses across multiple observational domains, so much so that few, if any, investigators are capable of addressing each domain with comparable expertise.

➤ **Language and the brain**

Professor P. Kuhl has been engaged in collaborative research involving imaging techniques to examine language processing in the brain. Language research has moved strongly in two directions in the last decade, toward international collaborations to allow the study of multiple languages and toward neuroscience. In the field of neuroscience, emphasis was placed on the development and use of new imaging techniques to elucidate the brain's processing of language. The University of Washington did not have research access to the new brain imaging tools, and that encouraged collaboration with other institutions with access to these machines, both in the US (MIT, Johns Hopkins, University of Maryland) and in other countries (Helsinki University of Technology, Finland; Max Plank Institute, Germany; Gakugei University, Japan; NTT Laboratories, Japan). The collaborations were highly successful and led to research that would not have been possible without the joint effort. The results of behavioral studies have largely been published, and those utilizing brain imaging technologies are still underway.

H. In what ways have you collaborated with related areas on this campus?

Expanding interdisciplinary collaboration is a primary mission of Speech and Hearing Sciences (SPHSC). The Department is committed to creating collaborative partnerships with those who share our vision of improving the quality of life for individuals affected by communication disorders. Given the centrality of communication for learning, educational success and socio-emotional well-being, SPHSC is uniquely positioned to team with those who desire to improve our educational system. The following is a summary of collaborations across campus.

➤ Center on Human Development and Disability (CHDD).

The Center on Human Development and Disability (CHDD) is one of twelve Mental Retardation and Developmental Disabilities Research Centers in the United States. The CHDD is committed to reducing both the incidence and the impact of developmental disabilities through the pursuit of new knowledge. In addition, CHDD educates and trains professionals and creates exemplary programs that can be used as models by communities to meet the needs of people with disabilities.

- SPHSC has been collaborating with the *Early Intervention Task Force* at the CHDD in developing a proposal for an interdisciplinary undergraduate major on early childhood development. The focus of the major would be on interdisciplinary studies related to the basic and applied sciences of child development, family, and cultural contexts for child rearing and schooling. An undergraduate majoring in Early Childhood and Family Studies would follow one of two tracks: 1) preparation for employment in human services following completion of the bachelor's degree; 2) preparation for admission to a graduate program in an allied discipline (e.g., Speech and Hearing Sciences, Nursing, Occupational Therapy, Psychology).
- SPHSC continues to enjoy a productive relationship with the University Affiliated Program (UAP) at the CHDD. The four core functions of the UAP include clinical service, interdisciplinary training of health care professionals, applied research in the area of developmental disabilities and community outreach. As these core functions are consonant with the general goals of SPHSC, several SPHSC faculty hold clinical appointments and laboratory space in the CHDD. In addition, graduate students in speech-language pathology and audiology fulfill part of their curriculum requirements in SPHSC during clinical rotations at the CHDD.

➤ **Special Education (College of Education)**

SPHSC and Special Education share a long-standing commitment of serving communicatively impaired individuals and their families. An important goal of both disciplines is to develop a deeper understanding of the nature of social communication and the clinical processes of assessment and treatment. Faculty and graduate students from SPHSC and Special Education conduct research into social communication in the world-renowned Experimental Education Unit (EEU) – a model demonstration school on the UW campus that provides integrated classrooms for nearly 200 infants, toddlers and young children with disabilities and their typically developing peers.

➤ **Rehabilitation Medicine**

The mission of Rehabilitation Medicine, in the School of Medicine, is to restore function and independence brought about by illness or injury, or of congenital origin. Physicians, nurses and other health care professionals work with each patient and family to achieve the best possible outcome. Rehabilitation Medicine is a model discipline for demonstrating the medical-behavioral approach to therapeutic intervention. SPHSC faculty regularly contribute to the Assistive Technology Summer Institute funded through Rehabilitation Medicine.

➤ **Virginia Merrill Bloedel Hearing Research Center**

The Bloedel Center brings together an interdisciplinary group of investigators to study hearing, hearing loss, and related communicative disorders. The Center is a focal point among laboratory and clinical scientists to facilitate the sharing of ideas and information for the collective advancement of auditory science and patient care. Indeed, the Bloedel Center is the largest hearing research group in the United States. Although the Center is administered through the Department of Otolaryngology (Head and Neck Surgery) in the School of Medicine, the Bloedel Center has a strong bond with the College of Arts and Sciences and SPHSC. Eleven professorial and lecturer faculty in SPHSC are Bloedel Affiliates and two departmental faculty are on the board of advisors. Professor Kuhl was selected as the Virginia Merrill Bloedel Scholar from 1992 to 1994; Professor Burns held this position from 1995 to 1998.

➤ **Program Project Grant on Hearing Development**

One of the major collaborative efforts between Speech and Hearing Science and other departments in the last ten years was the Hearing Development Program Project Grant. This research project was directed by Ed Rubel, Department of Otolaryngology. The individual grants in the program project were headed by Ed Burns, Rich Folsom, Pat Kuhl and Lynne Werner of Speech and Hearing Sciences; Ed Rubel and Dianne Durham of Otolaryngology; and Doug Keefe of Systematic Musicology. In the ten years of funding, research on this grant addressed many aspects of hearing development -- acoustics, anatomy, physiology, sensory processing, and perception. It was a highly effective approach, as evidenced by its

renewal at the end of the first 5-year grant period. Because of Dianne Durham's and Doug Keefe's departures from UW, and the imposition of new restrictions on program project grants by NIDCD, the decision was made not to submit a renewal application at the end of the second grant period. However, as described in Section IV C, collaborations in this arena have continued with the recent successful application for a Research Core Grant from NIDCD, headed by Ed Rubel, in conjunction with three members of the Speech and Hearing faculty.

➤ **Department of Psychology**

Links with the Department of Psychology include (1) the training grant funding several of our Ph.D. students; (2) Ellen Covey, Assistant Professor of Psychology, teaching one section of SPHSC 461 (Hearing Science) for several years; (3) Lecturer in Psychology, Patricia Loesche, taught SPHSC 504 (Research Methods in SPHSC) in Summer 1999; (4) research collaborations between faculty of the two departments; and (5) Affiliate appointments for faculty in both Departments (i.e., some of our faculty have appointments in Psychology and vice versa).

➤ **The Center for Mind, Brain, and Learning (P. Kuhl, Co-Director)**

The Center for Mind, Brain, and Learning (CMBL) is a University of Washington interdisciplinary research center whose mission is to foster cutting-edge discoveries in early brain and behavioral development and transfer that knowledge to parents, policymakers, educators, business people, and the media. The Center will draw its 14 research faculty from departments across five Colleges/Schools: Arts and Sciences, Medicine, Engineering, Education, and Nursing. Faculty members of CMBL will have tenure-line appointments in their home departments but will be funded half time for research by CMBL. In addition, research faculty will have access to (a) laboratory space, (b) core services, (c) brain imaging equipment, (d) equipment monies, and (e) graduate student support.

CMBL's partnerships with departments such as Speech and Hearing should enhance the probability that UW departments can attract the very best faculty and graduate students. The research facility now under construction for CMBL investigators will house state-of-the-art brain imaging equipment including functional magnetic resonance imaging (fMRI), magnetoencephalography (MEG) and event-related potential (ERP). CMBL's emphasis on neuroscience is particularly attractive for faculty in SPHSC - as methods for analysis of language processing and production evolve, our faculty and students will have access to the latest technology and findings. In 2001-2002, we will search for two new faculty whose appointments will be co-funded by the Department and CMBL.

III. Degree Program

A. Bachelor's Degree

Overview. The Department of Speech and Hearing Sciences (SPHSC) is concerned with the processes and disorders of human communication. The undergraduate program includes the study of normal hearing and language development, speech acoustics, speech physiology and perception, the nature of language, speech and hearing disorders in children and adults, social and cultural aspects of communication disorders, and the clinical processes involved in identification, prevention, and remediation of those disorders. This program of study is appropriate for students with interests in basic science, education, healthcare and psychology, as well as students going on to clinical speech-language pathology or audiology careers. The Department of SPHSC is accredited by the Council on Academic Accreditation (CAA) in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association (ASHA), the professional organization for speech-language pathologists and audiologists. SPHSC is not available as a minor. The B.S. degree offers preparation for students to enter a graduate program in speech and hearing sciences; it also serves as an appropriate major for a wide variety of other graduate programs such as special education, nursing, dentistry, occupational or physical therapy.

Admission. Admission is competitive and is based on GPA (minimum 2.50 overall GPA guarantees consideration but not admission) and a personal statement reflecting an interest in and commitment to speech and hearing sciences. Students may apply any time after they have earned 60 credits. (See Appendix N)

The Academic Program. The SPHSC major is designed to take six quarters starting with the Autumn quarter of the junior year. All majors are required to complete the SPHSC Core Courses in their first year. Students then select an option for their second year of study based on their cumulative GPA in the Core Courses and their academic and professional interests. Specific undergraduate course descriptions are provided in Appendix F

SPHSC Undergraduate Core Classes (32 credits) – Year One as a SPHSC Major (Jr Year)

250 (5): Human Communication & Its Disorders	304 (5): Developmental Aspects of Communication
261 (3): The Nature of Sound	320 (5): Anatomy & Physiology of Speech
302 (3): Phonetics	371 (3): Hearing Disorders
303 (3): Language Science	461 (5): Introduction to Hearing Science

Options. Year Two as a SPHSC Major (Senior Year):

After successful completion of the SPHSC core, students select one of two options.

Option I or the General Academic track is designed for students interested in education, medicine, dentistry, physical or occupational therapy and biological and social sciences. This option provides a comprehensive overview of the discipline of human communication and its disorders. A minimum 2.0 cumulative GPA in the SPHSC core is required to be eligible for this option. A minimum 22 credits from the following electives is required to complete this option:

305 (5): Speech and Language Disorders	425 (5): Speech, Language & the Brain
308 (3): Social-Cultural Aspects of Communication	445 (3): Models of Speech Processing
405 (3): Diagnosis of Speech & Lang Disorders	462 (3): Auditory System Dev
406 (3): Treatment of Speech & Lang Disorders	499 (1-6): Independent Study

Option II or the Speech and Hearing Sciences and Disorders track is intended for students who wish to continue on to graduate study and obtain clinical training in audiology or speech-language pathology. A minimum 3.0 cumulative GPA in the SPHSC core is required to be eligible for this option. All of the following courses are required (31 credits)

305 (5): Speech and Language Disorders	425 (5): Speech, Language & the Brain
308 (3): Social-Cultural Aspects of Communication	445 (3): Models of Speech Processing
405 (3): Diagnosis of Speech & Lang Disorders	471 (5): Basic Audiology
406 (3): Treatment of Speech & Lang Disorders	481 (4): Management of Hearing Loss

Out-of-Department Requirements. In addition to SPHSC coursework, majors are required to complete the following out-of-department requirements:

- 3-5 credit college-level math (not MATH 098, 100, 102, 103 or other historical or methodology math course) or a stat course (other than STAT 111)
- Zoology 118: Human Physiology:
- Minimum of nine credits at the 200-level or above in psychology, educational psychology, or special education, or 300-level or above in linguistics

A1. Objectives

The objectives of the B.S. program in Speech and Hearing Sciences are that graduates of the program will:

- have a general knowledge of the mechanisms involved in speech, language and hearing
- understand normal acquisition of speech and language
- analyze language in terms of its auditory, phonetic, phonological, morphological and syntactic properties
- understand the etiology and nature of communication disorders across the lifespan
- understand the principles and procedures for the diagnosis and treatment of speech, language and hearing disorders
- complete undergraduate coursework needed for future professional certification
- have the ability to carry out strategies for solving scientific problems
- have an ability to read and understand relevant literature

- have an awareness of the societal implications of language differences and of disorders of speech, language and hearing
- have had the opportunity to gain experience with a research project
- have had an introduction to the opportunities in, and requirements for, careers available to those with training in the speech and hearing sciences.
- understand the manner in which context (specifically, situational, social/interpersonal and cultural context) influences communication and disorders
- understand the social-cultural aspects of communication development and disorders

A2. Standards for Measuring Success

External measures: We believe that the most objective measure of the success of our B.S. program is what our students do after graduating. Based upon informal exit surveys it is estimated that 80% of our students enter graduate school either in speech and hearing sciences or related disciplines. The majority of graduates seek a clinical Master's of Science in speech-language pathology or audiology. This degree allows students to receive professional certification after appropriate job experiences (Clinical Fellowship Year).

A3. In what ways have you been able to involve undergraduates in research programs?

Departmental Honors Program. Academically high achieving students have the opportunity to participate in the SPHSC Departmental Honors Program. Students typically apply at the end of their junior year and if admitted to the program, participate during the remaining three quarters of their senior year. Participation includes working under the direct supervision of an SPHSC faculty member; completing a minimum of six credits of SPHSC 499H: Independent Study (ad hoc honors); presenting their research at the Department's annual Spring Colloquium, including a poster session and completing an honors thesis. A Bachelor of Science in Speech and Hearing Sciences is conferred "with distinction" to students who successfully complete this program. (See Appendix C)

Undergraduate Research Symposium (URS). Four SPHSC students have participated in the URS in the last two years (two in each year). For example, this past year a SPHSC senior presented her undergraduate research on the influence of hearing aid characteristics on music perception and another major presented her research on the universality of vowel characteristics in Jamaican Creole speech.

Paid Research Assistants: Each year a number of undergraduates garner paid positions in departmental research labs. This past year there were nine undergraduates working in various labs in the department. Examples of these lab opportunities include a student who participated in infant hearing research by helping schedule subjects and care for the older siblings of research subject while participating in data

collection in Professor Lynne Werner's lab; and a student who worked this past year in Assistant Professor Kelly Tremblay's lab, assisting with the recording and analysis of auditory evoked potential data.

ASHA Multicultural Grant. We have attempted to address diversity in our department in several ways; however, we believe that this is an area that needs more attention. We have created a course "Social Cultural Aspects of Communication" (SPHSC 308) in which students consider variables of race, ethnicity, and gender in relation to communication. Most recently, Professor L. Olswang and Lecturer J. Stone-Goldman obtained a small grant from ASHA, "Multicultural Presence and Understanding: A Model for Mentoring Undergraduate Students in Speech-Language Pathology and Audiology". The specific objectives of the grant were 1) to mentor undergraduate students of diverse backgrounds so they are better prepared to pursue a graduate degree in speech-language pathology or audiology; 2) to increase these students' awareness of and interest in clinical research in speech language pathology or audiology; 3) to identify key variables in educating and mentoring undergraduate students of diverse background in order to strengthen our ability to do so in the future; and 4) to expand our understanding of multicultural needs in service delivery.

A4. Indicate the steps the unit has taken to comply with state-mandated measures. What additional steps do you envision to improve the overall quality of undergraduate degree programs?

- **Program Plan.** All majors develop a program plan with the Undergraduate Advisor. The program plan details all SPHSC coursework for the duration of their program. The program plan allows the Undergraduate Advisor to maintain an accurate database of current majors, classes, enrollments and progress towards degree completion. A system of prerequisites ensures appropriate knowledge/skill levels before proceeding to upper division courses.
- **Graduation Efficiency Index (GEI).** The Department consistently meets or exceeds the GEI of the University (Seattle) and the College of Arts and Sciences. Data available from 1992-93 school year. (See Appendix N)
- **Focus Group.** This year, the Department has initiated a focus group to participate in a discussion and evaluation of the current curriculum. Focus group members included graduating undergraduate seniors and post-baccalaureate students who met with the Undergraduate Counseling Coordinator. The current curriculum has been in place for five years and it is an appropriate time to evaluate its effectiveness. Topics discussed included course overlaps and gaps, quality of learning and teaching, use of lecture and lab/quiz sections and opportunities for experiential learning and research. A summary of the discussion will be forwarded to the Department Chair for discussion at a future

faculty meeting. We are considering incorporating this exercise as an annual event and expanding the number of participants to all interested undergraduates and postbaccalaureates.

B. Master's Degree

Overview. The Master's and Doctoral programs consist of a wide range of coursework and seminars providing opportunities for the development of scholarly and professional competence in various areas of specialization. All procedures and policies for graduate students (master's and doctoral) are provided in the Department's Graduate Student Guide (See Appendix P). To complement departmental curriculum, close interdisciplinary relationships are maintained with other University departments and off-campus settings.

The master's degree in either audiology or speech-language pathology prepares the student to provide clinical services to the communicatively impaired. The Master of Science clinical program is accredited in both speech-language pathology and audiology by the Council on Academic Accreditation (CAA) of the American Speech Language Hearing Association (ASHA), a professional organization for audiologists and speech-language pathologists. The program allows students to complete the academic and practicum requirements for ASHA's Certificates of Clinical Competence (CCC) in audiology or speech-language pathology.

Admission. Each year, the Department receives about 250 applications for graduate study at the master's level, approximately 200 for the clinical program in speech-language pathology and 50 for the clinical program in audiology. Admission to the program in either of these two areas is highly competitive; of these applicants, only 20 (10%) are admitted in speech-language pathology and 8-10 (16-20%) are admitted in audiology. Admission is based on grade point, Graduate Record Exam scores, personal statement and letters of recommendation. If an applicant is not a native speaker of English, the Test of English as a Foreign Language (TOEFL) and the Test of Spoken English (TSE) are required.

Academic Program - Masters Program in Speech-Language Pathology

Implementation

Didactic Curriculum and Practicum Courses From 1992-1994, the Masters curriculum underwent an extensive review and a revised curriculum was put in place in 1996. The core curriculum now consists of ten required didactic courses, for a total of 40 credit hours. Students are also required to take three elective courses (one within the department, one outside of the department, and one as a choice). In addition to classroom instruction, the students take a series of practicum courses in which they learn to apply their knowledge by assessing and treating actual clients. Practicum courses are supervised by lecturers who observe at least 50% of every student's clinical encounters. Additionally, supervisors meet individually with each student at least once a week to discuss problems, progress, and clinical issues related to the client they are seeing. Some of the practicum courses (marked with an asterisk below) also include a one-hour class in which the lecturer discusses issues of relevance to all of the students enrolled in the practicum. All students have three outside placements and are supervised by speech-language pathologists who work at that facility. Practicum courses constitute 42 credit hours per student. On average, students graduating with a master's in speech-language pathology have taken 88 credits that are fairly evenly distributed between didactic and practicum courses. (See Appendix G)

Didactic Courses

Required Courses

500 (4): Clinical Methods for Documenting Change	532 (4): Neurogenic Language Disorders
501 (4): Neural Bases of Speech, Language, Hearing	535 (4): Voice and Resonance Disorders
504 (4): Research Methods	536 (4): Assessment of Lang Impaired Child
530 (4): Developmental Language Disorders	537 (4): Fluency Disorders
531 (4): Neurologic Motor Speech Disorders	539 (4): Articulation & Phonologic Disorders

Elective Courses

435 (3): Augmentative/Alternative Communication	533 (3): Medical Speech Pathology
505 (3): Clinical Research in Communication Disorders	534 (3): Dysphagia
538 (2): Management of Acquired Cognitive Disorders	542 (2-3): Counseling & Relationship Skills

Practicum Courses

In conjunction with didactic coursework, students complete a variety of practicum courses that provide experience in hands-on patient testing and integration and application of material learned in didactic courses. Students are assigned a client and are responsible for planning assessment, formulating treatment goals, and implementing a treatment plan in a supportive and collaborative context with their supervisor. Some courses are focused on assessment (e.g., 551A, 551B), others focus primarily on treatment (e.g.,

552A, 552B), and others involve both assessment and treatment (e.g., 552C, 552G, 552F). The following provides a brief description of the type of clients typical to each practicum.

Practica

552A (2): Child Speech Disorders	552C (4*): Adult & Child Fluency Disorders
552B (2): Child Language Disorders	552G (4*): Adult & Child Voice Disorders
552E (2): Advanced Child Speech Disorders	552FI (4*): Neurogenic Disorders
552BII (2): Advance Child Language Disorders	552FII (2): Advanced Neurogenic Disorders
551A (2): Assessment Child Speech/Language	552D (2): Advanced Adult Speech Disorders
551B (4): Outplacement Child Speech/Lang Disorders	591C (2): Rehabilitation Audiology
555 (1): Pre-Internship Experience	601 (9): Internship

Internships

For the internship, students spend one quarter working side-by-side with a certified speech-language pathologist providing treatment and other related services directly to clients. Affiliation agreements (contracts developed in collaboration with the University of Washington's Attorney General's office) have been established with all internship sites. Students complete pre-internship observations at multiple facilities before deciding which placement interests them the most. In collaboration with the University Coordinator (supervisor in Speech and Hearing Sciences), the students help choose the internship site that will best match their goals and interests. Approximately half of the students choose the public schools for their internships and the other half choose a hospital facility. The process is the same for both placements. The outplacement supervisor and the University Coordinator communicate at several points throughout the quarter to ensure that the student is meeting expectations and receiving adequate supervision. Students planning on a career in the school system are eligible, after completing their Masters degree, for Washington State Certification as an Educational Staff Associate.

Academic Program - Masters Program in Audiology

Implementation

The master of science in audiology prepares students for clinical careers in audiology. Students completing the program meet the academic and clinical practice requirements for professional certification (the Certificate of Clinical Competence in Audiology, or CCC-A) awarded by the American Speech-Language-Hearing Association. The typical student enters clinical practice with the M.S. as the terminal degree. (See Appendix G)

Didactic Curriculum and Practicum Courses: Education in clinical audiology is made up of both didactic coursework and clinical practicum courses. The didactic curriculum in clinical audiology is made up of 11 core courses for a total of 38 credit hours. In addition, an additional seven credit hours are selected from the elective course offerings. Students complete coursework in the following areas: acoustics; hearing development; instrument calibration; behavioral and physiological methods of hearing testing; etiology of impaired hearing; hearing aid amplification and selection; and rehabilitative audiology and counseling.

Didactic Courses

Required Courses

504 (3) Research Methods Speech Hearing Science	580 (3) Rehabilitative Audiology
521 (5) Instrumentation for Audiology	581 (3) Management Hearing Impaired Child
570 (4) Assessment of Auditory Dysfunction I	582 (4) Hearing Aid Amplification
571 (4) Assessment of Auditory Dysfunction II	583 (4) Hearing Aid Selection
572 (3) Pediatric Audiology	588 (1) Audiology Proseminar (each offering)
573 (4) Phys Assess Auditory Function	

Elective Didactic Courses

425 (5) Speech, Language, and the Brain	574 (4) Assessment of Balance Function
449 (var.) Special Studies in Speech Pathology	575 (3) Medical Backgrounds in Audiology
510 (3) Physiological Acoustics	584 (2) Industrial/Community Hear Conserv
511 (3) Psychoacoustics	589 (2) Seminar in Audiology
550 (3) Educational SLP & Audiology	599 (12 max.) Research Practicum
562 (3) Hearing Development	

Practicum Courses

In conjunction with coursework, students complete a variety of practicum courses or internships that provides experience in hands-on patient testing and integration and application of material learned in didactic courses. Internships are designed to provide a range of experience with children and adults and in both diagnostic testing and rehabilitative audiology. The master of science in audiology can generally be completed in seven consecutive quarters, with the final quarter consisting of a full-time (minimum 30 hours per week) internship experience.

The following are practicum courses in which students participate under lecturer supervision. As their experience allows, students are responsible for all aspects of the clinical evaluation or rehabilitation session. This includes history, assessment, counseling, hearing aid selection and fitting and report writing.

Practicum courses

552A Management Clinical Processes	591E High-risk Infant Follow-up - CHDD
555A Preinternship - Orientation prior to internship	591G Outside practicum placement
591B Pediatric Assessment - CHDD	591H Electrophys. Infant - CHDD
591C Rehabilitative Audiology	591I Electrophys. Adult. USHC
591D Hearing Assessment	601A Internship in Audiology

The capstone clinical experience for the master's degree is the internship - a full-time placement in an audiology facility with an on-site mentor. This experience allows the student to refine clinical skills and to develop professional relationships in the communities of choice. The internship also provides a significant portion of the patient-contact hours required by our national professional accrediting body.

Our department maintains formal internship affiliation agreements with eleven local audiology facilities and several local school districts:

Children's Hospital Medical Center	Evergreen Speech and Hearing Center
Harborview Medical Center	Mary Bridge Hospital & Medical Center
Veterans' Affairs Puget Sound	The Hearing Advantage Health Care System
University of Washington Medical Center	Providence Audiology
Virginia Mason Medical Center	Washington Audiology
Edmonds School District	Highline School District
North Shore School District	Seattle School District

The internship program has had the added benefit of strengthening collegial relationships with fellow professionals and has aided recruitment of excellent students into our master's program.

In the last ten years, we have doubled the number of our internship training sites and have encouraged the use of sites outside the metropolitan Seattle area. Students have interned in California, Colorado, New Jersey, Texas, and Wisconsin and are scheduled to intern in New Zealand, where we are establishing strong Pacific Rim ties.

One measure of our clinical program is the number of our students who compete successfully for internships. Another metric is the large number of those interns who are selected to continue into their Clinical Fellowship Year (CFY) and who are then retained as permanent employees. Our graduates make up the largest portion of the hearing health care professionals in our region.

Because of the need for specialized equipment, one-on-one supervision and clinical experience, entering class sizes are small compared to other programs in the University, typically 8 to 10 students per year. Students completing this program are highly employable, with approximately 90-95% accepting clinical

positions upon graduation. A minority of students continues directly on to advanced degrees, typically the Ph.D. in audiology.

B1 . Objectives of M.S. programs

The objectives of the clinical programs in audiology and speech-language pathology are to assure that graduates from the program are able to:

- demonstrate a knowledge foundation concerning disorders of communication
- demonstrate a knowledge foundation concerning approaches to diagnosis and intervention
- practice in a variety of clinical settings such as medical facilities, schools, and private practices
- provide clinical services to individuals across the variety of hearing, speech, and language disorders
- provide clinical services to individuals across the lifespan
- provide clinical services in a variety of work settings
- critically evaluate the appropriateness and effectiveness of diagnostic strategies and clinical intervention
- personalize their approach in clinical practice and adapt to meet the needs of the individual as well as attitudinal and environmental constraints
- demonstrate clinical decision-making skills

B2. Standards for Measuring Success

Comprehensive Examination

Students may select one of two options for degree completion: (a) a written comprehensive examination designed to assess the student's abilities to integrate information and apply it to clinical problems and procedures or (b) a master's thesis. Typically about 70-75% of students choose the comprehensive examination option. Faculty submit questions that are designed to require integration of information and demonstrate the student's clinical thinking and decision-making abilities. In the Speech-Language Pathology program, students are given a choice of seven questions related to different specialty areas within speech-language pathology and audiology. They must answer four (of six) questions in the area of speech and language and one (of one) question related to audiology. The student may fail one of the speech-pathology questions and still pass the exam.

In the audiology program, students are examined over five areas in clinical audiology. If a student fails any one question, that question is re-written the following quarter. All five areas must be passed prior to successful completion of the clinical program in audiology. There is no limit concerning the number of times a student may retake the exam. Over the past ten years, no student has failed to complete the program because of the comprehensive examination.

Thesis Option. The thesis option requires completion of a major research project under the direction of a faculty mentor in the student's area of interest. Students are encouraged to carry out a master's thesis, and approximately 25 to 30% of students do so. For those choosing this option, two graduate courses pertaining directly to research methods (504, 505) are offered. Further, most didactic courses present issues that require further investigation. The requirements are the same as specified in the Student Handbook. In recent years, the majority of student theses have resulted in published papers in peer-reviewed journals or in presentations at national conferences.

Impediments to Success. The Department has 90 graduate students with approximately 60 in the two-year master's program. Funding for these master's students is virtually non-existent. Priority for funding is typically given to students in the doctoral program. Because of our ranking among the top four departments in the U.S., our applicant pool to the clinical master's program includes the strongest students from across the country. However, due to the absence of funding, we are not competitive with other top-ranked departments in matriculating the best master's students, particularly those from out of state. We lose excellent candidates in our entering master's classes because they choose to attend universities offering them assistantships and tuition waivers.

C. Doctoral program

The doctoral program is designed for students interested in research in the discipline of communication sciences and disorders, whether basic or applied, to be implemented in university, clinical or industrial settings.

Required Courses

504 (3) Research Methods in SPHSC	564 (1-5) Teaching Practicum
560 (3) Studies in Speech Science & Disorders	567 (1) Research Seminar in SPHSC
561 (3) Studies in Hearing Science & Disorders	568 (3) Grant Writing
562 (3) Studies in Lang Science & Disorders	600 (var.) Independent Study/Research
563 (1) Instructional Development Forum	800 (var.) Dissertation
Two basic courses in Statistics at the 500 level	

Elective Courses

503 (3) Current Issues in SPHSC	519 (2) Seminar in Speech Science
505 (3) Clinical Research in Comm Disorders	525 (3) Speech Signal Processing
510 (3) Physiological Acoustics	540 (3) Phonological Development
511 (3) Psychoacoustics	566 (2) Seminar in Speech-Lang Development
514 (3) Speech Physiology	569 (2) Seminar in SLP
515 (3) Speech Acoustics	599 (var.) Research Practicum
516 (3) Speech Perception	

C1. Objectives and benefits

The major objective of doctoral training is to give students the background and skills necessary to be successful in research and in teaching. These include:

- Acquiring knowledge and appreciation for the content of the field including critical thinking, problem solving, and communication
- Developing the technical expertise necessary to support their research and teaching endeavors
- Developing a sense of membership in and contribution to the discipline

The means by which these objectives can be met are varied. They include supervised research and teaching, interactions with a mentor and other colleagues, didactic course work, seminars, directed readings, examinations, and colloquia. The specific requirements of the doctoral program are listed in the Doctoral Curriculum Guide. (See Appendix H)

The doctoral program benefits the Department in several ways. Doctoral students work in the Department as teaching assistants, research assistants and clinical supervisors. Because many of our doctoral students return for advanced studies after working as clinicians for an extended period, they bring an additional and fresh perspective to teaching and supervision beyond that offered by our faculty. A current doctoral student, for example, was awarded the Huckabay Teaching Fellowship to develop an advanced course on hearing aids and amplification for Master's level students. Similarly, students whose undergraduate training is in a field other than communication sciences and disorders bring new approaches to questions within the field, a benefit to both students and faculty. As far as benefit to the University is concerned, graduate teaching assistants staff SPHSC 100 and SPHSC 111, two courses that draw students from around the University. Recent graduates of our doctoral program are directing community services in medical centers while others are faculty members at universities across the country. (See Appendix E)

C2. Standards and steps to improve quality

We measure success in achieving our objectives for the doctoral program in terms of students' scholarly productivity; their ability to compete for fellowships, grants and awards; and their success as teachers. In addition, the number of graduates who have been successful in finding employment within the field, either in academics or in private industry, their productivity as professionals and their success in obtaining funding for their research are important measures of success.

As part of a renewal application for a predoctoral training grant which supports many of our students; the Department prepared a summary of the accomplishments of our current students and recent graduates. Among 40 current doctoral students and recent graduates, the average number of paper presentations, articles and book chapters listed on the CV prior to graduation was greater than four. While in the

doctoral program, our students have been awarded individual NRSA predoctoral fellowships, grants-in-aid from Sigma Xi, the American Speech-Language-Hearing Association, the Huckabay Teaching Fellowship, the Gatzert Child Welfare Fellowship, and travel awards to many professional meetings. Of 33 recent graduates of the department, 12 hold tenure-track positions in universities around the country, six hold research positions, six hold lecturer or clinical positions, and two are employed in private industry. (Of the remaining four recent graduates, one has changed fields and is a student and three are "unemployed" while caring for young children.) The CVs of recent graduates list publications in the highest quality journals, and among those who graduated more than a year or two ago, the number of post-graduation publications ranges from 4 to 14. Recent graduates have been successful at obtaining funding for their research, with four NIH research grants, several extramural grants from other sources and numerous intramural grants. This summary is available for viewing on the Department's DocuShare website at: http://clinic.sphsc.washington.edu/dscgi/ds.py/Get/File-1164/TraineeTable_Final.doc

We attribute our success in this realm to the adoption of an apprenticeship model with strong mentoring. Students are only admitted to the program if there is an identified faculty advisor within the Department who is willing to direct the student's program. In addition, we have developed a set of core courses, research and teaching experiences that prepare students for the reality of life beyond the doctorate. We are impressed with the degree of camaraderie and intellectual exchange that these experiences engender in our students.

There is a need to increase our ability to offer doctoral level courses in several areas, including signal processing, speech perception, speech acoustics, and speech production. At present, there are not enough faculty to teach all the doctoral courses we would like to offer along with all the courses that are required of students at all levels. We plan to redistribute teaching loads and make future hires so that appropriate faculty will be available to teach additional doctoral courses.

Finally, there is a severe shortage of doctoral level candidates to fill academic positions in communication sciences and disorders in the U.S. There are undoubtedly many reasons that students in the field do not continue on or return to doctoral study. However, we believe that one reason is that current doctoral training programs do not address the issues of central interest to those attracted to this field - those directly related to clinical treatment and evaluation of its efficacy. Our Department has great interest in training researchers who investigate questions related to clinical practice. We are currently expanding the clinical research component of the doctoral program. Increasing numbers of students have applied and graduated with a focus on applied clinical questions. We are working to fund the expansion of this part of the doctoral program through training grants, partnerships with local community facilities and development activities.

IV. Responses to change

A. How have teaching and learning for both undergraduate and graduate programs changed in your unit in the last 10 years? What further changes do you anticipate or would you like to instigate?

A1. Curriculum revisions. Major revisions of our undergraduate, master's and doctoral curricula were completed in 1996. The goals of the curriculum revision included adding more science options to the undergraduate curriculum, updating the master's program, and strengthening the doctoral program.

- **Undergraduate Curriculum.** The major goal of curriculum revision at the undergraduate level was to provide broader coverage in the speech and hearing sciences, with particular emphasis on increasing the number of "normal processes" courses. To achieve this goal, a first year course, The Nature of Sound (SPHSC 261), was developed. This course focuses on fundamental principles of sound and vibration as related to speech. It replaced the general physics requirement with a more relevant course specific to the physics of speech and hearing sciences. Other new offerings, designed to be taken in the second year of the major, integrate basic materials from introductory Departmental courses. These included Social-Cultural Aspects of Communication; Speech, Language and the Brain; Models of Speech Processing; and Hearing Development. Several courses related to specific types of disorder were taken out of the undergraduate curriculum and added to the plan of study for M.S. students.
- **American Sign Language.** During the past ten years, we have attempted to incorporate American Sign Language into our curriculum through a variety of scenarios. The motivation to do so has been student and faculty interest in offering ASL at the University of Washington. It is important to understand that ASL is successfully offered through several community institutions. Past attempts to bring ASL to the UW have included summer course offerings through our department and a University Initiative Fund proposal. We have come to appreciate that funding for the development of ASL is not likely at the UW, yet interest and demand by students remains high. During the past quarter (Spring 2001) we have begun working on a plan to develop a relationship between the Department of Speech and Hearing Sciences and the American Sign Language Institute of Seattle (ASLIS). This relationship would allow undergraduate and graduate students at the UW to take courses through ASLIS and to receive credit at the UW. ASLIS offers courses in ASL, as well as Deaf culture, all of which would be valuable for our students. For undergraduates, courses taken at ASLIS would apply towards students' foreign language requirement and UW credit requirements. For graduates, courses taken at ASLIS would apply toward elective course requirements and university credit requirements. A relationship with ASLIS has several advantages: 1) students will be able to meet requirements through these offerings, 2) the department can benefit from expertise in the

community, and 3) university and community relationships will be expanded. We are excited about this type of teaching collaboration, and believe it will have outstanding benefits for the community and the university.

Master's Curriculum

- **Speech-Language Pathology.** The primary impetus for revision of the M.S. program in Speech-Language Pathology came from significant expansion in the field's scope of practice. Courses were added to ensure that students were prepared to perform swallowing assessments and treatments, to provide augmentative and alternative communication, and to provide assessment and treatment of disorders with cognitive impairments. Changes were also made to individual courses to update information and include more multimedia in the curriculum. A weekly professional seminar was added to introduce topics that do not necessarily fall neatly into the other courses to be discussed. Using focus group formats, both students and faculty have reviewed the changes that were made to the curriculum. Based on these discussions, new changes have been incorporated as recently as this quarter.
- **Audiology.** The master's curriculum in audiology underwent a comprehensive review and revision. A review of the M.S. program in Audiology led to revision of the didactic course plan for better sequencing of basic science and clinical coursework; addition of a graduate-level course in hearing science; revised curriculum in instrumentation to focus on clinical calibration; incorporation of laboratory practical examinations in diagnostic and hearing aid courses; updating didactic content in amplification to prepare students for recent advances in programmable and digital hearing aids; addition of a course in advanced amplification and signal processing; and revision of the laboratory module in balance to provide a wider range of practical site experiences. Last year a hearing-aid-dispensing program was introduced to improve the rehabilitation process for the patients we serve and to allow our students to participate in a comprehensive rehabilitation program. Both the rehabilitation component and technical training in hearing aid fitting have been vastly improved.

The most dramatic change is the need to expand the clinical audiology training program to meet the requirements of the new Doctor of Audiology degree (Aud.D). ASHA, the national accrediting body, has mandated that the clinical doctoral degree will replace the current M.S. degree as the entry-level degree in audiology. This four-year clinical doctoral degree for clinical practice will increase the number of students enrolled in our program. Additional training will likely include cross-discipline training in the areas of business, gerontology, and others, because the purpose of the new doctoral degree is to provide a broader scope of education that prepares graduates for careers in a variety of settings. To provide advanced clinical training and practical experience, we will need to increase the

opportunity for mentoring by hearing professionals in the community, across the state and across the country. Thus, this change will require expansion of course offerings, expansion of opportunities for student clinical experience, and coordination with other Washington State universities.

Doctoral curriculum

One of the goals of our doctoral curriculum revision was to create a set of core courses and experiences that would give students a mature sense of the content and direction in speech and hearing as well a sense of camaraderie. While most of a doctoral student's program is planned in consultation with an Advisory Committee, all students are now required to take a sequence of three core courses (SPHSC 560, 561, and 562) which are intended to provide a broad, high level appreciation of the issues in hearing, speech, and language sciences/disorders. In addition, students are required to participate in the Doctoral Research Forum (DRF) each quarter. Each week one of the doctoral students makes a presentation to the DRF on research completed or in progress. Each student is required to present once each year and participate in a poster session highlighting doctoral student research held at the end of the academic year. Once they have developed a research focus, students take SPHSC 568 Grant Writing in the Speech and Hearing Sciences. This course is essentially an advanced research methods course, but also gives students practical information about the process of writing and submitting grant applications.

Another important improvement in our doctoral program has been our NIH predoctoral and postdoctoral training grant. This grant currently provides eight doctoral students support for two years, after which they are encouraged to apply for individual predoctoral training support. Our current students have been extremely successful at obtaining individual grants, including three NIH predoctoral training grants as well as several other fellowships.

As noted previously, the number of Ph.D. degrees granted in speech and hearing sciences across the country has declined. While our doctoral program already supplies a high proportion of faculty in our field, some response to the current shortage of doctoral graduates is clearly needed. The strategies that we have developed to meet this need are described in Section IV.E. 4.

Finally, doctoral students are required to take SPHSC 564 Teaching Practicum in which they gain teaching experience and to take SPHSC 563, Instructional Development Forum in which issues related to university teaching are presented and discussed. This seminar is designed to expose students to issues associated with teaching.

A2. Technology in the classroom

One of the most visible changes in teaching and learning in the last ten years has been the increased use of technology—computer-based lecture and demonstration materials, communication by e-mail, and distribution of information via the Web. Our faculty have enthusiastically adopted the use of technology in their teaching, as evidenced by the use of electronic materials in lectures, the number of course web sites that have been established to help students learn, and the use of electronic course reserves.

- **Tools for Transformation.** We have recently made several changes that have improved our ability to take advantage of technological advances in teaching. First, the Department of Speech and Hearing Sciences obtained a Tools for Transformation Grant to incorporate new technology into our research and teaching. The grant "Tele-collaboration in Speech and Hearing Sciences" uses this growing technology to support experiential learning for our students, research data collection from community practitioners in the field, and educational outreach to the greater community.
- **Student Computer Lab.** The Department developed a Student Computer Lab supported jointly by the Department, Student Technology Fees and the College of Arts and Sciences. The computer lab is located in three adjacent rooms in the Speech and Hearing Clinic with additional computers located in the clinic materials room. The lab includes 15 new computers equipped with DVD, CD-RW and/or Zip drives, printers and scanners. A transportable computer on a cart (with CD-RW drive) is also available for student/client use. Several stations in Eagleson Hall have also been set-up with computers for web browsing and e-mail. Besides word processing, spreadsheet, and presentation software, the lab has software for a wide variety of applications in speech-language pathology and audiology. (See Appendix K)
- **Eagleson 001.** Funding was obtained to upgrade our large classroom, Eagleson 001. During the year 2000-2001 the classroom was upgraded from a basic chalk-and-talk room to a modern multimedia classroom. All classroom functions from lighting to various media devices are controlled from a touch-screen apparatus at the instructor's podium. Instructors can use presentation software from the podium and project images through a video projector. The projected material can exist locally on a computer in the classroom or be accessed remotely via the Internet from the instructor's office or from another laboratory across the country. Modern television monitors allow use of videotape or DVD media. There is an excellent program sound system plus a second sound system linked to a wireless microphone for the instructor.

- **Student Research Lab.** A Student Research Lab was established, dedicated specifically to student research and funded by Student Technology Fees. The first stage of this \$165,000 facility is nearing completion. It includes workstations for speech physiology, speech acoustics, digital video editing, psycholinguistics, otoacoustic emissions, phonetic and language analysis, and auditory evoked responses. The lab includes a full complement of supporting equipment as well as a large sound-treated booth.
- **DocuShare.** To reduce paper consumption and improve efficiency, the Department acquired DocuShare. DocuShare is a web-based document management system that allows faculty, staff, TAs and RAs to store, access, and review information in a secure and collaborative work environment. DocuShare also allows the user on any system (mac or pc) to post and retrieve information in any format, without the need for FTP software, browser plug-ins, or client-side applications. Anyone can visit the DocuShare site and view all unrestricted materials. Faculty, staff, TAs and RAs have access to accounts to post, edit and share information. Course materials, frequently used forms, directories, calendars and schedules are now routinely posted on the site. (See Appendix K).

B. In what ways have new developments in the following areas influenced teaching in your unit?

B1. Interdisciplinary studies. The faculty is actively engaged in collaboration in research, and this collaboration has carried over into the classroom. Several faculty members guest lecture or co-teach with faculty outside of the department. Undergraduate, master's and doctoral students have participated in research at the Bloedel Hearing Research Center, Children's Hospital, CHDD and the Departments of Radiology and Rehabilitation Medicine.

Two interdisciplinary programs are currently being developed. The first will accompany the creation of Center for Mind, Brain and Learning (CMBL). Pat Kuhl and other CMBL faculty will be providing research opportunities in the area of neuroscience. A second activity is the creation of a new undergraduate major in Early Childhood. This major is being developed by Lesley Olswang and Ilene Schwartz (from Special Education), along with members of the Early Intervention Task Force. The interdisciplinary major will focus on basic and applied sciences of child development, family systems, and cultural context for child rearing and schooling. Courses will reflect the disciplines of psychology, education, speech and hearing sciences, neuroscience, nursing, physical therapy, occupational therapy, and sociology. The major will provide a solid basis for employment in human services or preparation for admission to graduate programs in the above disciplines.

B2. Distance learning. With the support of the UW Educational Outreach's (UWEO) Distance Learning Program, we offered our first online course in 1996: Augmentative and Alternative Communication (AAC) taught by P. Dowden. This course was developed in an online format to educate local post-graduate professionals in a highly technical and specialized part of our field for which they received little training as graduate students; to allow pre-professional students to study alongside practicing professionals and benefit from their clinical experience; and to permit an individual with severe communication disabilities to guest lecture through distance technologies. In 1997, this course won a prestigious national award from the University Continuing Education Association.

However, there are a number of institutional barriers that will prevent our department from developing additional online courses as UWEO offerings. The first is that online course credits supported by UWEO are not equivalent to other courses at the University. Full-time UW students must pay higher fees, and the course is neither included in financial aid calculations nor listed on a student's degree transcript. Some of our faculty have been actively pursuing solutions to these problems through the UW Distance Education Task Force and interdepartmental efforts.

B3. International study. Plans are currently underway to create an exchange program between our Department and the School of Communication Sciences and Disorders at the University of Sydney for faculty and both undergraduate and graduate students. To this end, L. Olswang met with David Fenner, UW Director of International Programs and Exchanges, and Vicki Reed, Chair of the School of Communication Sciences and Disorders, University of Sydney. R. Folsom traveled to Sydney to discuss and further craft the proposal with Professor Reed. (See Section II G) The faculty exchange is quite straightforward, calling for a 1-to-1 swap. The student exchange is more difficult, with issues of credit, course-content acceptance, and timing. The plan will be finalized within the year.

B4. Educational technology and experiential learning. One of the major goals of the Tele-collaboration Project has been to use educational technology to enhance experiential learning. We have developed an extensive collection of digital video clips of individuals with speech and language disorders. These computer-based collections will be fully searchable and accessible through the Web by individuals with permission. The Tele-collaboration Project has also developed several interactive online teaching modules and computer simulations that have been used to enhance courses in Augmentative and Alternative Communication (AAC).

Another major avenue for experiential learning for our undergraduate students is involvement in research. Such involvement takes several forms: many students work in laboratories for independent study credit; some students work in laboratories as paid assistants; some students complete Honors theses. In all of

these forms, involvement in research exposes students to the process of asking questions, solving problems, and systematically finding answers. The new Student Research Lab will increase students' opportunities to carry out research under faculty supervision.

There remain, however, several significant obstacles to future progress in using educational technology. The most significant of these is the building in which our Department is housed, Eagleson Hall. UW Computing and Communications estimates that the cost of providing Ethernet access to the third floor offices is prohibitively high. Thus the data for every Tele-collaboration Project described above can only be viewed by faculty while in the Clinic or in already upgraded classrooms. A second significant obstacle is the lack of support for educational technologies beyond the life of the Tools for Transformation grant. Resources for maintenance and support of faculty use of technology are lacking. A third barrier to our use of educational technologies is the equipment and wiring limitations of currently available classrooms. Teaching technology is cumbersome and inconvenient for classes anywhere but in Eagleson Hall. None of the classrooms available to us in the School of Social Work Building are equipped with digital projectors, for example. One of the changes we would like to instigate is the installation of adequate digital equipment in more classrooms.

C. In what ways have new developments in the following areas influenced research, scholarly or creative activity in your unit?

C. 1 & 2. Revolutionary advances in the discipline and changing paradigms. The faculty members of the Department are leaders in research in this field, by the traditional measures of success in research and scholarly activity - number and quality of publications, number of citations, number of grants applied for and funded. The median number of publications since 1991 is 11. The journal articles are in strictly refereed journals, considered the archival journals in our field. Contributions by our faculty appear in major reference works such as *The Handbook of Child Language*, *The Handbook of Perinatology*, *The Handbook of Perception*, *The New Cognitive Neurosciences*, *The Psychology of Music*, *Concise Encyclopedia of Language Pathology* and the *MIT Encyclopedia of Communication Sciences and Disorders*. Several books and edited books are also listed on our faculty members' vitae. These works, moreover, are widely cited. The median number of citations listed in the Science Citation Index for our faculty since 1998 is nearly 200. Eight of our faculty members have been awarded grants from NIH since 1991, and nearly all have had external research funding during this period. Thus, the faculty have been highly productive and widely recognized. While all of our faculty conduct what would be considered cutting edge research, three who exemplify the use of new approaches to speech and hearing sciences are discussed here.

- **Pat Kuhl.** Both neuroscience and computer science advances have made a profound impact on Kuhl's research. In particular, computer scientists, who have been tracking research on human speech processing to apply to computer recognition of speech, are now joining behavioral researchers in a more basic effort to use computation to study how infants learn. For example, Kuhl now has a computer scientist in her group (post-doc Bart de Boer), who is investigating whether a neural network computing device can derive the vowel systems of language when the input to the device is "parentese," language addressed to infants by caregivers. These kinds of approaches were not possible five years ago.
- **Chris Moore.** Research in speech production has traditionally been limited by the high variability of speech movement, by the intrusiveness of observational methods, and by cost. What was once available in only one laboratory at a cost of millions of dollars is now available commercially on standard computing hardware. Development of speech motor control is one of the research areas opened by these advances and is the research focus of Moore's lab group. His group has been at the forefront of laboratories capitalizing on these newly accessible techniques, observing for example the earliest vocalizations of human infants as their speech capacities begin to emerge. Moore and his students have taken full advantage of these advances to distill the essential properties of speech coordination from naturally occurring, relatively unconstrained speech.
- **Kelly Tremblay.** In the last decade, technological advances have provided numerous tools to assess the human brain. Event-Related Potentials (ERPs) are one example. ERPs provide a noninvasive technique to study how the brain processes speech sounds. Tremblay participated in ERP research that discovered that the brain changes with hearing loss. Her independent research using ERPs also shows that hearing new sounds changes neural responses of people with normal hearing. This information reinforces our professions' long-standing belief in the importance of rehabilitation and early intervention.

C3. Changing funding patterns in your field. As state and institutional support have eroded below a level of sustainability, the Department's reliance on extramural funding has become extreme. Unlike our peer departments, a regrettably large number of instructional positions in this Department are funded entirely from returns on extramural funding. Fortunately, trends in national funding for health research are sharply upward. The National Institute of Deafness and Other Communication Disorders (NIDCD) of the NIH is the primary source of extramural funding for research in speech, language and hearing. Other NIH institutes that provide funding in these areas are the National Institute on Aging, the National Institute for Neurological Disorders and Stroke, and the National Institute on Child Health and Development. The National Science Foundation, the Deafness Research Foundation and a variety of

other private foundations provide substantially lower levels of funding. For the current generation of researchers in speech, language and hearing, funding patterns have never been better. More than 30% of the investigator-initiated research proposals to NIDCD are being funded under the current levels of Congressional funding.

Beginning in 1989, four of our faculty members participated with researchers in Otolaryngology and in Music on a Program Project Grant (PPG) on Hearing Development, directed by Ed Rubel. After 10 years of productive collaboration, the decision was made not to renew this grant, in response to new restrictions on PPGs by NIDCD. However, the collaboration continues in the form of a recently funded Research Core Grant from NIDCD, headed by Rubel and including three of our faculty members. The grant provides human subject recruitment, computing, mouse genetics, and imaging to investigators across campus. Werner directs the human subject recruitment facility.

C4. New technologies. Each faculty member whose work is highlighted above has taken advantage of new technologies in his or her research. Further, one of the primary goals of the Tele-collaboration Project is to take advantage of new digital audio and video technology to allow collaborative research with other universities. Our faculty and students now have access to high speed, broad bandwidth transmission through the Internet 2 system. This real-time video transmission permits faculty to conduct research on rare or low-incidence disorders by including subjects who could not otherwise travel here to participate in such studies. Both C. Moore and M. Rogers are currently conducting research using this approach. The Tele-collaboration project is also facilitating data collection from professionals by implementing a highly flexible database that permits remote data entry by professionals while they are seeing clients, and by developing innovative web sites, which will serve to collect data from professionals or caregivers of individuals with communication impairments.

C5. Other - Increasing emphasis on multi-site collaborative research. It has become increasingly evident that no one institution can recruit the numbers and varieties of participants required to answer some critical questions about diagnosis and treatment of communication disorders. Members of our faculty have been among the leaders in multi-site, collaborative solutions to this problem. R. Folsom and Susan Norton (Children's Hospital and Regional Medical Center) were part of a large, multi-center projects entitled "Identification of Neonatal Hearing Impairment" funded by the NIDCD. This six-center prospective project was designed to determine the performance of the most reliable tools used in the identification of hearing loss at birth and to test the accuracy of these tools relative to hearing status at 12 months of age. The results have implications for public policy regarding universal newborn hearing screening.

D. What changes have you observed and do you anticipate in the next five years as your unit responds to the need to provide service to:

D1. The University of Washington. Members of our professorial faculty serve the University as members of the Faculty Senate, College Council, Virginia Merrill Bloedel Hearing Research Center Executive and Affiliate Liaison Committees, and various review committees, search committees, task forces, and advisory committees. In addition, because of our unique clinical expertise, we are able to serve the University by offering clinical services to University employees. One example is the Hearing Conservation Program, administered through Environmental Health and Safety to protect the hearing of campus employees in high-noise occupations.

D2. Your discipline or profession. Members of our faculty serve our discipline as officers and committee members in local and national scholarly and professional organizations such as ASHA and the Acoustical Society of America; they act as journal editors and reviewers; they review grants for the NIH and other agencies (see faculty CVs). Election or appointment to such positions indicates that our faculty members are viewed as leaders in the discipline.

Many of our faculty members also participate in other service activities. These include Werner's organization of a 1992 international conference on Developmental Psychoacoustics sponsored by NIDCD and the American Psychological Association, as well as Tele-collaboration web sites designed to teach clinicians in the community about assessment and treatment of various communication disorders. Tremblay co-authors a monthly column in *Audiology Today* to communicate the latest research findings to clinicians, while Susan Hamilton has organized professional workshops on the diagnosis and treatment of children who stutter. The Department has also sponsored activities to expose students from around the world to research in the field through the ASHA Research Mentorship Program and the Japanese Visiting Audiology Student Program.

D3. The broader community. The UW Speech and Hearing Clinic is a unique teaching facility attracting the majority of its client base from the Greater Puget Sound community and the University campus. With advances in Internet access and the Department's continued prominence as a leading research and teaching program, requests for clinical resources and professional assistance now come from around the world.

Dramatic changes in health care and education are expanding the Clinic's client base. Cases with more acute communication problems are referred to our Clinic. Families of school-aged children are driven to seek services outside of the public school system because of the school's large caseloads and hard-to-serve special needs. We offer unique clinical expertise in areas such as Transgender Voice Feminization, Stuttering, Social Communication, and Primary Progressive Aphasia. We now also provide a state of the

art hearing aid dispensing program. Our fee-for-service structure reduces costs of treatment and allows a longer course of treatment in the face of insurance coverage cutbacks. These factors, as well as our reputation for quality service delivery, have led to waiting lists in nearly all units.

The Clinic also serves the community by providing a resource for speech and hearing information. Several events have been held to achieve this mission, including an annual day of free hearing screening and education, participation in the Ears, Hearing and Beyond lecture program (hosted by the Virginia Merrill Bloedel Hearing Research Center), and talks to the local chapter of Self-Help for Hard of Hearing People.

E. What strategies has your unit developed to address the following anticipated changes in the next ten years?

E1. Faculty retirements. At this time, the Department does not have a pre-determined plan for the replacement of retiring faculty. Rather our approach has been and will continue to be to re-evaluate our situation, with a view to our Strategic Plan, as each retirement approaches.

E2. Increasing numbers of undergraduate students (majors and nonmajors). If additional resources were available, the Department would like to expand current courses and introduce new ones to deal with increasing numbers of undergraduate nonmajors. Because of increased demand, enrollment slots would be added in SPHSC 100 Voice and Articulation Improvement, SPHSC 250 Human Communication and Its Disorders, SPHSC 308 Social-Cultural Aspects of Communication, and SPHSC 425 Mind, Brain and Language. We would also like to add a more advanced version of SPHSC 111 American English Sounds, a course for non-native speakers. These changes will likely require additional teaching assistant positions to staff laboratory sections.

Redistribution of teaching loads and the addition of new faculty would, in part, facilitate this expansion. The number of undergraduate majors in Speech and Hearing Sciences has increased dramatically in the last ten years. At this point, however, it would be difficult to increase the number of majors further without additional resources. Many of the courses required for the major cannot be taught as large classes. Additional faculty positions would be required to permit an increase in the number of majors.

E3. Increasing demand for programs for full-time working professionals. The Department can play an important role in providing educational services to working professionals. In view of rapidly changing technology and evolution in the health care industry, national professional organizations and state licensing agencies are requiring continuing education credit to maintain credentials or to acquire board certifications. Our Department's faculty and network of supporting community facilities are prepared to address these needs of working professionals. Specialty certifications will be established within the

existing Guidelines of Graduate Certificate Programs. Surveys of interest and need would be conducted on a regional basis to determine areas for specialization. Affiliations would be secured with the appropriate national organizations to offer accredited continuing education. Summer term and other nontraditional scheduling of courses will be considered. Faculty committees will develop and administer these programs. Local facilities with which we have established relationships would be asked to participate in practical training experiences. Specialty certification in the area of pediatric aural rehabilitation is currently under development.

E4. Increased need for doctoral training to prepare faculty. As noted in Section II.D, there is a need for doctoral training in our field to prepare faculty for higher education institutions. It is projected that the number of open faculty positions created by retirements will exceed the number of doctoral graduates in the next ten years. Moreover, new demands for faculty are expected in response to changes in the entry-level degree in clinical audiology (see Section IV, A, 1, Audiology). Our doctoral program is already very strong; we train a large proportion of the faculty at programs throughout the country.

We plan to increase recruiting efforts, in part through our partnership with CMBL. In the next year, we will advertise for two positions in the area of neuroscience. These positions, co-funded by the Department and the Center for Mind, Brain and Learning, will allow us to increase the number of doctoral students in our program and to attract students with a broader range of interests. In addition, we would like to establish a specialization in clinical research. We are pursuing this goal by targeting individuals with strong clinical research orientation in making hires. We also plan to expand the doctoral curriculum to include additional courses on clinical research theory and methodology. To enhance clinical experience, rotations through clinical research labs as well as local community clinics, hospitals, and school-based settings will be established. Collaborative relationships will be strengthened, crossing disciplines and facilities to further enhance clinical research opportunities. Portions of this program will be funded through training grants, partnerships with local community facilities, and development activities.

E5. Increased need for doctoral training for industry. There is now overlap between training in language processing and in certain sub-areas of computer science related to artificial intelligence. Students are increasingly valued for their "cross-training" in these two disciplines. In Kuhl's laboratory, for example, of the last seven people to complete training, three took jobs in very good universities, while four took jobs in the speech technology industry. Our students will need to continue to take classes, keep up with new developments, and interact with students in computer science and engineering. CMBL should make this cross-training easier through its seminars and guest speakers. Further, as a faculty, we

will identify courses in computer science and engineering that will be useful to students who are interested in careers in industry and steer students with such interests toward these courses.

E6. Emerging technologies for research and training. The infrastructure established as part of the Tele-collaboration project will facilitate our taking advantage of new technologies for research and training. The faculty is committed to expanding its utilization of web-based technology for research and teaching. Faculty members are beginning to develop web-based video catalogues that will augment both teaching and research programs. The initial applications will likely be in the area of clinical teaching and diagnostically oriented clinical research. However, this catalogue will ultimately support nearly all teaching and research efforts in the Department. Additional infrastructure required by such activities cannot be expanded without additional support from the College and University.

E7. Pressures on space. As indicated several times in this document, the Department's space constraints have less to do with the quantity of space available to us than with the quality of space. Our offices, the Student Research Lab, and the classroom in which we most commonly teach are located in an old (but historic) building. The roof leaks and the water damages computers and other equipment; because of our location near University Ave., security is a major issue; and little of the space can be wired to provide access to currently available communication technology. The Department's strategy for dealing with these problems has been to pursue every available opportunity to obtain funding to update our teaching and research space. When a funding opportunity arises, we are ready to respond with a catalogue of needed improvements. Examples are the Tools for Transformation Grant, the upgrade of Eagleson 001, the Student Computer Lab, and the Student Research Lab. It is unlikely that this strategy can overcome the architectural limitations of Eagleson Hall altogether, however. Additional support in the form of upgraded space or large expenditures would be necessary to accomplish this goal.

E8. Pressures on budgets. The Department's release-recapture budget is the only mechanism for paying salaries of the majority of our clinical lecturers, most of whom work part time. For next year (2001-2002), over 90% of the release-recapture budget is allotted to lecturer salaries. Given that grant funding for individual faculty must be renewed every 3-5 years, and that there is no guarantee a grant will be renewed, our ability to support our clinical faculty is always in jeopardy. A better solution would be to have lecturer salaries become part of the Department's state-funded budget.

E9. The demand for accountability. Dealing with demands for accountability is not a new issue for the Department. In addition to the regular reviews required by the University, accreditation for our governing professional organization, ASHA, requires frequent documentation of effectiveness in training professional speech/language pathologists and audiologists. Similarly, success in placing doctoral

graduates in tenure-track academic positions and in private industry, as well as in obtaining extramural training funds, speaks to the Department's effectiveness in training doctoral students.

This year the Department has initiated an alumni questionnaire to be completed by master's graduates. This questionnaire targets the success of our program in preparing students to become competent professionals. We'll be receiving our first feedback in Summer 2001. (See Appendix L)

The Department has been less successful at documenting our effectiveness in undergraduate education. Several years ago, a plan was developed to administer exit questionnaires and to conduct exit interviews with graduating seniors. In addition, a plan was developed for requiring students to assemble portfolios to document their learning in the undergraduate program. Partly due to personnel changes, these plans were not implemented as expected. We are aware of the need to remedy this situation and are in the process of redesigning a mechanism for evaluating our undergraduate program. Having a full-time undergraduate advisor will allow us to better track our alumni and to establish a system for assessing our effectiveness in training undergraduates.

E10. Other: Recruiting and retaining faculty. Given the current shortage of Ph.D.s in Speech and Hearing Science, the problems of recruiting new faculty members and of retaining our current faculty members have become extremely serious. In general, we have been successful in retaining high-quality faculty members by making competitive counteroffers with the support of the College and University. However, in the last two years, we have been unsuccessful in our searches for two new faculty. One excellent candidate to whom we planned to make an offer was recruited to another, more highly paid, position. Because the number of candidates is small, it is difficult to find a good match to our specific needs, and good candidates typically have better salary offers elsewhere, we have yet to make a hire.

In the face of such difficulties, we have redefined one of the positions and entered into a partnership with CMBL to recruit two new faculty who can contribute to the needs of the Department while enriching the expertise and research productivity of CMBL. One of these positions replaces P. Kuhl's position in the Department now that she has taken on the Co-Directorship of CMBL; the other position is the "redefined" faculty position. We continue the search for a third faculty member as originally planned. To meet clinical teaching needs in the short term, we have put together funding for a Clinical Instructor position and hired Dr. Robert Miller who just retired from a productive career at the VA Hospital. However, such creative funding approaches cannot succeed in maintaining and building our faculty indefinitely.

F. How is your unit responding to changing U.S. demographic trends? What specific steps have you taken to make your student body, staff, and faculty more inclusive by incorporating members of underrepresented groups? What additional steps have been planned? What specific steps have you taken to ensure that members from underrepresented groups are included in the life of the department in ways that benefit your professional development and success?

We have attempted to address diversity in our department in several ways; however, we recognize that this is an area that needs more attention. We have created a course on culture, Social Cultural Aspects of Communication, in which students consider variables of race, ethnicity, and gender in relation to communication. Clinic Director and Senior Lecturer, N. Alarcon has made presentations to students in Minority Medical Affairs registered course (UConJ 100); providing an introduction to SPHSC career paths. Most recently, Olswang and Stone-Goldman obtained a small grant from ASHA designed to address the shortage of individuals from diverse backgrounds in both clinical speech-language pathology and research in speech and hearing sciences. We have been less successful in addressing diversity at the faculty level. Our efforts to attract individuals from diverse backgrounds to open faculty positions have not been particularly successful. We have used the University's and ASHA's multicultural search capacities, but they have not yielded viable candidates. The Department needs to more actively engage in developing a cultural diversity plan for expanding faculty and student representation that more appropriately reflects changing demographics.

G. Personal productivity - faculty.

1a. What steps has your unit taken to encourage and preserve productivity (in research, teaching, and service) on the part of all segments of your faculty

We have attempted to encourage and preserve productivity among faculty members in several ways. First, teaching and service assignments are made considering interests and expertise, as well as the current demands of research on each faculty member's time. Second, merit review is used to recognize the contributions of each faculty member, and every attempt is made to reward extraordinary merit. The newly implemented method of making each faculty member's goals for the coming year explicit is expected to improve the process of making work assignments and to give the faculty a stronger sense of self-direction with respect to career goals.

Each spring faculty members are required to update their basic data sheets for evaluation. Colleagues review these credentials with regard to research, teaching and service accomplishments for the past year. Peer teaching evaluations (see below) are now included in the materials reviewed by all faculty members. All faculty members, regardless of rank, rate all other faculty members in the areas of research, teaching and service. The five-point scale ranges from outstanding merit (4) to unsatisfactory merit (0), and ratings are averaged for each faculty member in each area. The average ratings are reviewed by faculty of

higher rank; full professors are reviewed by the Chair. Issues of salary disparity are also considered. The results of these discussions are advisory to the Chair regarding merit increase. (See Appendix Q for examples of the evaluation materials)

Peer teaching evaluations are conducted annually for lecturers and assistant professors and every three years for senior faculty. The materials submitted for peer review include a summary of teaching activity, materials for each course taught, a summary of student supervision, student course and teacher evaluations, written evaluations from students supervised in research or clinic, and peer evaluations based on observation of teaching. The materials are reviewed by a three-member committee that include a lecturer or senior lecturer. Each course is rated on a five-point scale on the basis of the quality of materials, the logic and design of the course, and the student evaluations. Other ratings are given for student supervision and for contribution to the teaching mission of the Department. Each faculty member receives a final score based on the average of all ratings and a summary describing the basis of the evaluation. The materials used for the peer teaching evaluation are included in Appendix Q.

G. 1b. How are junior faculty members mentored to enhance their professional development?

Each new junior faculty member is assigned a committee of two senior faculty mentor-advisors. The senior faculty members will eventually serve as the tenure/promotion committee, but in the early years of a new appointment, their role is to meet with the junior faculty member regularly to review progress and to offer advice for further progress. In addition, both committee members make themselves available to assist the junior faculty member in whatever way possible (e.g., reading and offering comments on manuscripts and grant applications; advising on issues related to funding or research methodology; observing and evaluating teaching). Junior faculty members are given lighter service loads, so that they can devote their time to getting their research programs off the ground while preparing high-quality course materials. We believe that this system has been very successful in enhancing the professional development of junior faculty members.

G. 1c. What impediments to faculty productivity exist, and what plans so you have for overcoming them?

Of course, the meager financial results of even an extraordinary merit rating limit the utility of the merit review system for encouraging productivity, and it is difficult to maintain morale in the current financial climate. It is particularly difficult in view of the fact that other institutions are able to make lucrative offers of salary, start-up funds, space and facilities to our coveted faculty members. An exacerbating factor in our Department is the small size of our faculty and the especially heavy administrative load that falls on each faculty member as a result. Our hope is that the new system of faculty "contracts" will facilitate a redistribution of responsibilities that will relieve the most heavily burdened faculty members.

Further, the addition of three new faculty members within the next year should improve the situation, especially if at least one of the open positions is filled at the senior level.

G. 2. Personal productivity – staff

2a. What steps has your unit taken to encourage and preserve productivity on the part of all segments of your staff? How are staff recognized and rewarded for their performance?

Over the last ten years, support staff positions have been restructured to meet new technologies. The current support staff includes two professional staff members— Assistant to the Chair and Counseling Services Coordinator— and eight classified staff members—Program Coordinator, Fiscal Specialist 1, Office Assistant 3, Computer Support Analyst 2, Patient Services Representative, Patient Services Representative Supervisor, Graphic Designer/Illustrator (vacant) and Engineering Technician (vacant). The Department will capitalize on the two vacancies by restructuring the positions to meet our evolving needs in the area of computer support and web-based technology.

G. 2b. What programs are in place to support professional development of staff?

The most significant reward to the staff is the respect and autonomy provided by the Chair. Support staff are considered vital to the success of the Department and their opinions and expertise are valued. They are given the opportunity to create and revise procedures to meet their job responsibilities and service delivery needs. In addition, we provide a great deal of flexibility should staff wish to participate in the UW's tuition exemption program, Training and Development courses, Computing and Communication workshops and/or external training opportunities. Several staff members have utilized the tuition exemption benefit to complete degrees, pursue advanced degrees, or take courses for personal edification. All staff members are encouraged to participate in classes offered by Training & Development and Computing and Communications to improve their knowledge and skill base as well as develop new skills to utilize available technology to enhance job performance. The Department has been successful in promoting staff in house based on professional growth, productivity and performance.

V. Goals

A. What is the process by which the unit sets its overall goals? How often are departmental goals reviewed and reassessed? In what ways do you anticipate the goals of your program will change in the next ten years?

Overall goals are set by meetings of the entire faculty. In some cases, the Executive Committee or a Departmental Committee initiates the first draft of proposed goals which are then reviewed and discussed by the faculty. We typically evaluate our goals and make changes, if desired, at major junctures in the "life" of the department. In the past 10 years, these junctures have included:

- A major curricular revision at both undergraduate and graduate levels. Planning for this revision occurred from 1992-1994 with implementation in 1995-1996. Since then, several minor modifications have been made.
- Faculty searches in 1995, 1996, and 1998 resulting in the hiring of Chris Moore, Pam Souza and Kelly Tremblay, respectively, and in 1999 and 2000 (failed searches). Whenever there is an open position, the faculty meet to discuss the long-term goals of the Department and the particular needs we hope to fill with the new hire.
- Drafting our vision and mission statements and completion of our Strategic Plan. The Department held a faculty retreat in the Fall of 1998 to discuss goals for teaching, research and service and to draw up our Mission and Vision Statements as requested by the administration (see Appendix I). These statements were the foundation for the Strategic Plan which was submitted in June, 2000.
- Yearly accreditation review by ASHA.

B. List your goals for the next five – seven years.

Our Strategic Plan (Appendix I) lists 14 goals, distributed across the areas of teaching, research, and service. Progress has already been achieved on some of the goals, particularly in the areas of web-based teaching, interdisciplinary training, external funding, and cultural diversity. The primary goals for the next five years include:

- **Retain current faculty:** As noted throughout this document, the field of Speech and Hearing Sciences is experiencing a severe shortage of faculty, due primarily to the limited number of Ph.D. students. As a result, departments around the country are trying to recruit individuals who currently hold faculty positions, particularly those from highly ranked departments such as ours. We have been told that our Department is viewed as a good target for being "raided" for two reasons: (1) we hire outstanding young faculty and mentor them well; and (2) our salaries are substantially below those offered at other institutions.

According to salary figures we were able to obtain from other programs ranked among the top ten in the country, our salaries are 20-30% below the average. We recognize that this salary gap is not unique to our Department and that the administration is trying to raise the salaries of UW professors

to be more comparable with peer institutions. The troubling part for us is that Departmental salaries are low, even within the UW. Compared to other departments in the Natural Sciences Division (the division that includes SPHSC), all but two of our professorial (i.e., non-lecturer) faculty are well below the averages for Assistant, Associate and Full Professor ranks of other departments. Overall, we fall in approximately the 33rd percentile for the College of Arts and Sciences (see figure 2). For this reason, it is not surprising that many of our faculty have seriously considered pursuing offers from other institutions.

- **Hire outstanding new faculty:** We will be searching for three new faculty in the year 2001-2002. It is essential that we attract top applicants and hire individuals who will help us fulfill the mission and vision of the Department. Once again, a reasonable starting salary and strong support for laboratory facilities will be important if we are to succeed.
- **Establish an Aud. D. program**
- **Improve the Departmental infrastructure**
- **Purchase state-of-the-art equipment for classroom teaching and labs**
- **Increasing funding to attract top M.S. students**
- **Increase external funding**
- **Find alternative sources of support (other than release-recapture) for lecturer faculty**
- **Increase efforts to secure "development" funds**

In what specific ways could the college and/or university assist you in achieving your goals?

- **Increase Departmental faculty salaries so that they are commensurate with other UW faculty in the Natural Sciences**
- **Provide support for repair/renovation of Eagleson Hall**
- **Provide tuition waivers for top M.S. applicants**
- **Support establishment and implementation of the Aud. D. program**
- **Provide help in attracting external funds**

University of Washington Full-Time Professorial Faculty Salaries Seattle Campus, Autumn, 2000 (1)

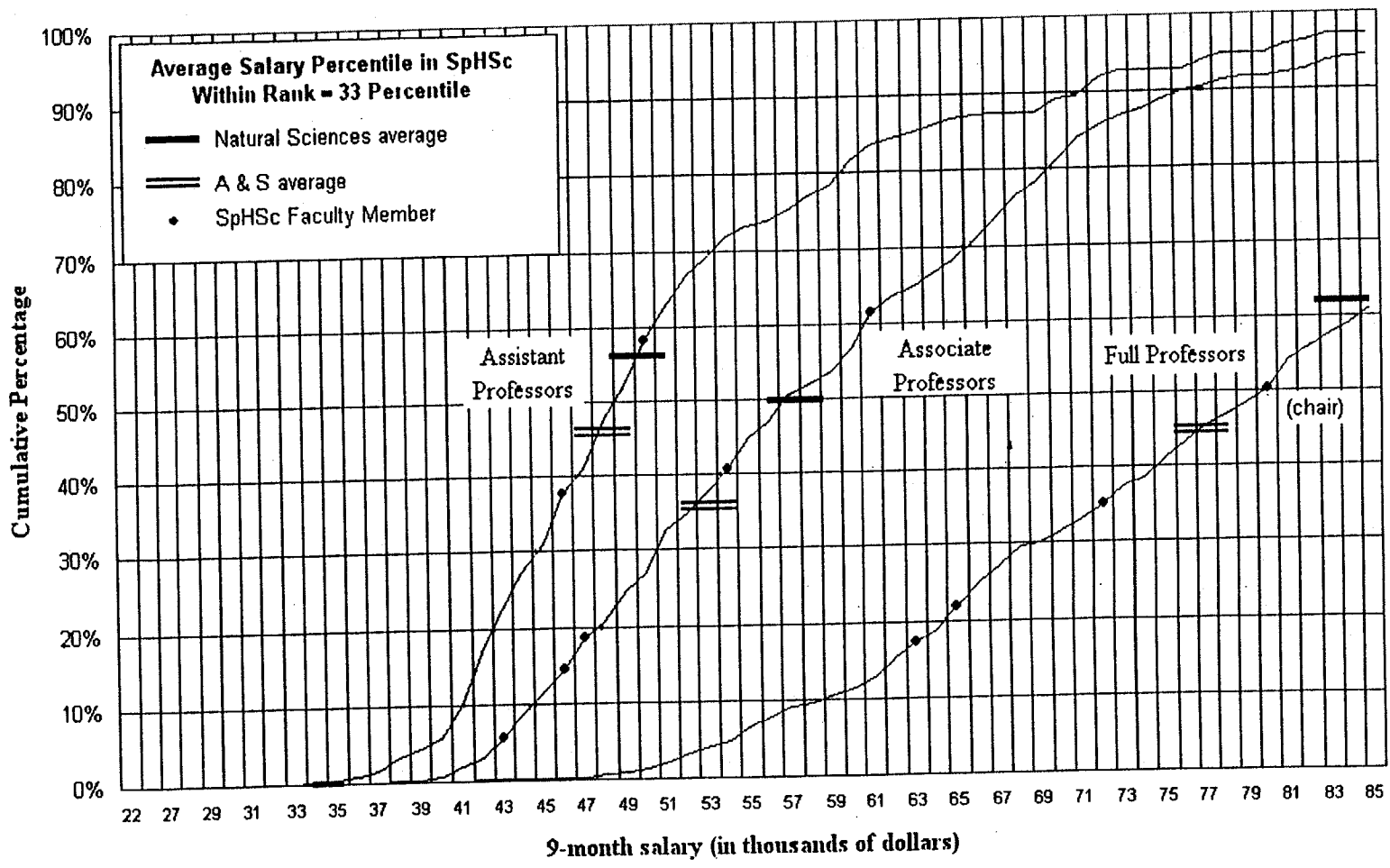


Figure 2

(1) Source material at http://www.washington.edu/admin/facbook/OldAcrobbt/vw_2000-01/loeds_faculty_salaries.pdf

IV. HECB Required Information

1. **Degree program title:** Department of Speech and Hearing Sciences (SPHSC)
2. **Year of last review:** 1989-1990
3. **Documentation of Continuing Need**

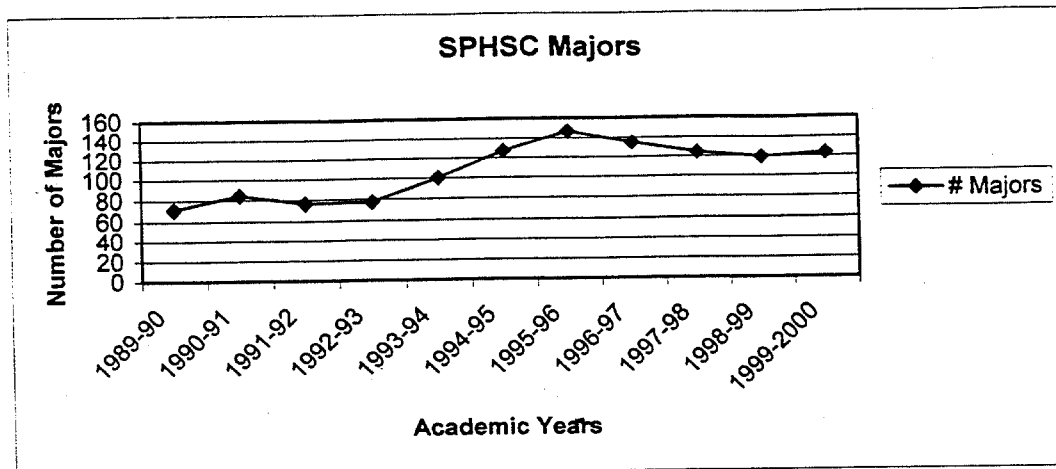
Societal Need: The discipline is anchored by concern for disabilities of individual human communication, related normal and abnormal processes, and appropriate pathways to remediation. An estimated 13% of the population has some degree of hearing, speech or language impairment. When severe, such impairment can be devastating to human development and adjustment. According to the National Institute on Deafness and Other Communication Disorders (NIDCD) approximately 25% of the working population in the U.S. have jobs that require voice use. Among adults over age 65, the prevalence of communicative disabilities associated with hearing and speech impairments is estimated to be well over 30%. Currently, about 13.1% (35 million) of the nation's population is over age 65. This number is expected to increase in the years to come. Coupled with this is the rapid growth of another "at-risk" segment of the population, minorities and the poor. The zero-to-three-year-old population is also an at-risk sector, and recent federal legislation has authorized the provision of services for early identification and remediation of problems within this group. Together, societal changes, recognition of needs, and related legislation will create a substantial increase in need for services, education and research in the speech and hearing sciences into the next decade and beyond.

Graduates. Speech and Hearing Sciences provides a significant proportion of the new doctorates in the field, with many of our graduates moving directly into faculty positions in other top-ranked departments. In a field that generates nationally only 150 new doctoral graduates annually, SPHSC, with a predoctoral class of 32 students, has an important role in sustaining the discipline. Our Ph.D. graduates are heavily recruited by other universities and are generally recognized as having high potential for scholarly productivity and teaching excellence. This is especially important given the growing shortage of qualified Ph.Ds available to current and anticipated vacancies of professorial level faculty in the next ten years (see Section IID).

Our M.S. graduates fill the majority of statewide positions in school districts and hospitals). (See Appendix E.)

Majors. Another indicator of the continuing need for SPHSC at the UW is the numbers of undergraduate majors* in our program over the past ten years as seen below:

Figure 3



Source: University of Washington Student Records System "Registered Students in Major Sequence"
*counts include postbaccalaureate students

4. *Assessment information relating to student learning outcomes and program effectiveness.*

Undergraduate

- **Program Plan.** All majors develop a program plan with the Undergraduate Advisor. The program plan details all SPHSC coursework for the duration of their program. The program plan allows the Undergraduate Advisor to maintain an accurate database of current majors, classes, enrollments and progress towards degree completion. A system of prerequisites ensures appropriate knowledge/skill levels before proceeding to upper division courses.
- **Graduation Efficiency Index (GEI).** The Department consistently meets or exceeds the GEI of the University (Seattle) and the College of Arts and Sciences. Data available from 1992-93 school year. (See Appendix N)
- **Focus Group.** This year, the Department has initiated a focus group to participate in a discussion and evaluation of the current curriculum. Focus group members included graduating undergraduate seniors and post-baccalaureate students who met with the Undergraduate Counseling Coordinator. The current curriculum has been in place for five years and it is an appropriate time to evaluate its effectiveness. Topics discussed included course overlaps and gaps, quality of learning and teaching, use of lecture and lab/quiz sections and opportunities for experiential learning and research. A summary of the discussion will be forwarded to the Department Chair for discussion at a future faculty meeting. We are considering incorporating this exercise as an annual event and expanding the number of participants to all interested undergraduates and postbaccalaureates.

Masters

- The simplest and most visible indicators of our program effectiveness is the 2nd and 4th national rankings by *U.S. News and World Report* of our graduate programs in Speech-Language Pathology and Audiology, respectively.
- One measure of our clinical program is the number of our students who compete successfully for internships. Another metric is the large number of those interns who are selected to continue into their Clinical Fellowship Year (CFY) and who are then retained as permanent employees. Our graduates make up the largest portion of the hearing health care professionals in our region.

Doctoral

- Detailed information relating to student learning outcomes program effectiveness of our doctoral program is available at our DocuShare site: http://clinic.sphsc.washington.edu/dscgi/ds.py/Get/File-1164/TraineeTable_Final.doc (see Section III.C1).

5. *Plans to improve the quality and productivity of the program*

All of the Department's plans to improve quality and productivity are captured in our 2000 Strategic Plan (Appendix I). These plans include:

- Maintain and improve teaching quality in graduate and undergraduate education.
- Strengthen the doctoral program
- Improve master's level funding to recruit outstanding students
- Enhance interdisciplinary training for careers in education
- Establish a specialized doctoral program in Clinical Audiology
- Evaluate and advance the clinical curriculum
- Increase external funding of basic and applied research
- Expand web-based technology for research and teaching
- Develop and strengthen clinical research within the doctoral program
- Enhance cultural diversity among students, faculty and clinic population
- Pursue specialty certification program and continuing education opportunities
- Develop and strengthen bonds with alumni and community
- Create opportunities for international exchanges for faculty and students
- Expand the Department's contribution to the University's teaching mission

6. *Data on number of majors and degrees granted in the last three academic years*

Student Level	Number of Majors			Degrees Granted		
	1997-1998	1998-1999	1999-2000	1997-1998	1998-1999	1999-2000
Bachelor of Science (includes postbacs)	124	119	123	64	47	61
Master of Science (Speech-Language Pathology)	37	37	40	17	21	15
Master of Science (Audiology)	15	16	15	9	5	10
Doctor of Philoshopy	22	24	25	5	4	4

7. *Number of FTE faculty and graduate assistants that teach in the department*

Faculty FTE: 15.5
 Graduate Assistants that teach: 3.5*

* Additionally, five students had a GSA appointment as a TA, at varying reduced percentages (less than .5 FTE each), earning a supplement for teaching purposes

Graduate Assistant data from Spring 2001