UNIVERSITY OF LOUISIANA
AT LAFAYETTE

STEP Committee
Technology Fee Application

Hearing Test Equipment
Otoacoustic Emission System

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Title: Hearing Test Equipment - Otoacoustic Emission System Date: June 1, 2010
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ABSTRACT

Most students are unaware of the condition of their hearing, and many are at risk for permanent hearing loss. An education and research program is underway as a joint project of the Department of Communicative Disorders and School of Music. The proposed equipment would create a resource where students can have their hearing tested on campus for free, and will be used to provide clinical experience and training to students who will graduate to become Audiologists and Speech Pathologists. In the process it will help promote hearing conservation awareness among the general student population.

DESCRIPTION

a. Purpose of the grant and impact to student body as a whole

The Program in Communicative Disorders offers bachelor's and master's degrees in Speech Pathology and Audiology, and a Ph.D. in Applied Language and Speech Sciences. The bachelor's degree is a pre-professional degree that is designed to lead students to an advanced degree in communication disorders. The master's degree is the entry level position for those individuals interested in a clinical career in speech-language pathology. The Speech, Language and Hearing Center offers assessment and treatment of a wide range of communicative impairments for all ages, including hearing assessment. The purpose of this grant is to provide headphones for a simple screening test, and to purchase diagnostic otoacoustic emission (OAE) test equipment. This will make it possible to provide students across the campus with free and accurate hearing testing, and to train students in the Communicative Disorders department in how to administer this type of more advanced test.

The Department of Communicative Disorders has a hearing testing facility and tests subjects by playing a range of pure tones, during which subjects are asked to indicate which tones they can hear. This process can be inaccurate, since it depends on the listener's response, their motivation, co-operation, understanding of instructions. Listeners are often are unsure of whether they hear a tone or not. Otoacoustic Emission testing, on the other hand, does not require any feedback from the listener. Instead, a series of clicks are played, and the OAE tester automatically and more precisely measures the response of the ear, with no subjective interference from the subject. This would give a more reliable measure of the subject's hearing for the student's benefit, and provide an

opportunity for students in the Communicative Disorders department to learn how to operate OAE test equipment as part of their coursework and lab work in CODI 382, CODI 386, and CODI 401, in which there are about 50 students each semester per class. Furthermore, otoacoustic emission testing takes a very short time (approximately 5 minutes) to administer compared with behavioral hearing test takes longer (20-30 minutes). In addition, OAE testing has high sensitivity and specificity to provide more information about the integrity of the inner ear.

Information about the availability of hearing testing will be made available through the Special Services department in Lee Hall in order to connect with students whose academic difficulties are suspected of relating to hearing loss. An announcement will be posted in the Student Health Center as well, and those with questions about their hearing told about the program. In addition, announcements will be made elsewhere on campus through student organizations, and any student who wishes to take a simple screening test will be able to do so on their own, or come to either the offices of the Department of Communicative Disorders or School of Music to take an online test, at which time they will check out a pair of closed-cup headphones (which block out background noise). The screening test, taken on a computer, will privately give students basic feedback on how well they are hearing, and after that, will be encouraged to schedule a time to have the OAE test confidentially performed by students from the Communicative Disorders department under Dr. Arehole's supervision in the University's Speech, Language and Hearing Center located in Burke-Hawthorne Hall. The immediate family of students with hearing loss will also benefit from testing services at the clinic. The children of students with hearing loss may be prone to hearing loss.

Many college age students, due to increased environmental noise and music listening habits, already have measurable hearing loss. Students' academic performance can be affected even with minimal loss. The simple headphone screening test and advanced OAE testing will be of value to students so that they can get a measure of how well they are hearing, and help detect early any hearing damage they may have. If hearing loss were to be detected, the resident audiologist will provide helpful information to students regarding (a) any remedial measures (b) hearing management strategies and (c) clarification of hearing status. With the awareness of any hearing loss, students may be motivated to take precautionary measures to conserve their hearing. These tests will provide a valuable baseline, so that they will have a quantitative measure for use in comparison when tested again after one or more years. You might feel that you are not hearing as well as you used to, and go talk to an audiologist about it. However, without a prior test it is harder for the doctor to see a trend. We hope that music majors will have their hearing tested at least twice, once when they enter the university, and again before they leave, and continue to have regular tests done, since hearing is such an important part of their profession and quality of life. The mere existence of the project will raise awareness in the student population about the importance of protecting one's hearing.

For more information on the project, visit: http://music.lousiana.edu/hearing.

b. Projected lifetime of enhancement

The OAE test equipment is expected to last at least for 10 years. The headphones have a warranty of two years, and, depending on how heavily they are used, may need to be replaced after that time.

c. Person(s) responsible

i. Implementation

Dr. Arehole and Dr. Willey will implement the equipment into the activities of the Department of Communicative Disorders and the School of Music.

II. Installation

Dr. Arehole and her graduate students assistant will install the OAE system in the hearing lab, and the headphones in the department's office. The headphones can then be checked out by students, and used for the online test in the adjoining computer lab.

Dr. Willey will place the second set of headphones on reserve in the School of Music, and set up the appropriate web site for the screening test in the Resource Center in the next room.

III. Maintenance

Any required maintenance on the OAE system will be done by the manufacturer. The headphones come with a two-year warranty.

IV. Operation

Dr. Arehole and her students will operate the OAE system. Students will operate the headphones and online screening test themselves.

V. Training

Dr. Arehole will train the students in the operation of the OAE system. This will be a valuable part ot their coursework. Dr. Willey will link a page of instructions from the project's website with instructions on how to take the online test, whether in one of the two department rooms, or for anyone wishing to try it on their own.

BUDGET

1. Equipment	$ 5,018.90
One Grason Stadler GSI-70 Screening System With printer……..$4,685.00	
Two AKG K271 MkII headphones ($166.95 ea.)…...$333.90	
2. Software	$ 0
3. Supplies	$ 0
4. Maintenance	$ 0
5. Personnel	$ 0
6. Other	$ 0
TOTAL	$ 5,018.90

Please see attached spreadsheet for budget details.

PREVIOUSLY FUNDED STEP GRANTS

Previous grants detailed online at http://willshare.com/willeyrk/grants

"Recording Microphones for Auditorium", 1/10, $6,940.

"Server for School of Music", 1/10, $5,303.

"Performing and Live Recording System", 1/09, $5,185.

"Recording Studio Upgrade: Developing System Input and Output", 7/08, $11.881, provided array of microphones to increase the number of tracks that can be recorded, and to experience how microphone selection and matching with preamp affect the sound.

"CD Recording System for Angelle Hall", 1/08, $1,350. Stereo recording setup for auditorium.

"School of Music Resource Center Upgrade", 7/07, $21,638.

"School of Music Pro Tools Recording System", 7/06, major renovation of recording studio facility creating professional 24-track digital audio recording system, $41,338. Created Pro Tools HD recording system, which will be compatible with the proposed system in the current grant proposal.

"School of Music Resource Center Upgrade", 7/06, software to create web sites, piano instruction, software, wireless connectivity, administration software, ethernet cabling, Reason synthesis software, $4,657.

"School of Music Resource Center Upgrade", 1/06, upgrade software and hardware, $6,055.

"School of Music Resource Center Upgrade", 7/05, upgrade software and hardware, $4,055

“Resource Center Upgrade”, 1/04, upgrade workstations, server, video transfer, and DVD authoring, $4,902.