

The Auditory Skills Instructional Planning System at the Secondary Level

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The Auditory Skills Instructional Planning System (ASIPS), consisting of a Test of Auditory Comprehension (TAC), an Auditory Skills Curriculum, and Audio Worksheets, was designed for hearing-impaired pupils ages 4 through 12 years. The system, recently published, has been successfully implemented with this population in Los Angeles County over the past five years. During the past three years, use of the various components of ASIPS has been extended to hearing-impaired pupils ages 13 through 17 years. The TAC has been administered to more than 180 pupils with moderate to profound hearing losses. These results have been analyzed to provide both normative and criterion-referenced interpretation. Selected teachers and students were involved in implementing ASIPS at junior and senior high schools during the 1980-81 school year. The experience showed that building auditory skills can be done and can make a difference with pupils of this age. In addition, the system appears to be an effective and appropriate tool for the development of auditory abilities with these pupils. This paper will present data resulting from the use of ASIPS at the secondary level, including TAC data and a description of the implementation of the system at a junior and a senior high school in Los Angeles County.

The Auditory Skills Instructional Planning System (ASIPS) is a comprehensive educational tool for the development of auditory skills. The system consists of the Auditory Skills Curriculum, the Test of Auditory Comprehension (TAC), and mediated activities.¹ Developed jointly by audiologists and teachers of the hearing impaired at the Office of the Los Angeles County Superintendent of Schools, ASIPS was designed expressly for pupils ages 4

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¹Published components of the Auditory Skills Instructional Planning System (ASIPS) are available through Foreworks Publications, P.O. Box 9747, North Hollywood, CA 91609:

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through 12 years with moderate through profound hearing losses.

ASIPS has enjoyed a seven-year implementation at the Southwest School for the Hearing Impaired, Lawndale, California, where original development and field-test studies were done. Since 1977, the system has been a mandatory part of the elementary curriculum, supported by three educational audiologists. Currently, ASIPS is being used throughout the United States and has been officially adopted and incorporated into many educational and clinical programs for the hearing impaired.

The Test of Auditory Comprehension (TAC) was designed as a single test which would provide baseline information about a pupil's auditory functioning across a continuum of auditory tasks in order to plan for auditory training. The ten subtests, ordered in difficulty, range from gross discrimination to recalling critical elements in messages, sequencing events and recalling details of stories in quiet, and comprehension of similar stories presented with competing messages at a signal-to-noise ratio (S/N) of 0 dB.

The TAC was standardized on 750 hearing-impaired pupils across the country, ages 4 through 12 years, with moderate through profound hearing losses. The population was representative of a wide variety of educational programs, ranging from residential schools to mainstreamed settings. Results of the TAC provide both criterion-referenced and norm-referenced interpretation, including performance profiles and *T*-score comparisons.

The Auditory Skills Curriculum is a comprehensive educational instrument, with performance objectives sequenced within four major areas:

1. *Discrimination*—selective attention to sound; discrimination of non-verbal sounds; discrimination of speech on the basis of suprasegmental features; discrimination of linguistic messages with contextual cues; and discrimination of words on the basis of segmental features.
2. *Memory-Sequencing*—recall and sequencing of critical elements in messages and auditory cognitive skills presented in both structured listening sets and in conversational settings.
3. *Auditory Feedback*—preverbal behavior skills, imitation of vocal production, and independent modification of vocal production.
4. *Figure-Ground*—listening skills at varying distances in the classroom in quiet, in normal noise, in a noisy classroom, and in the presence of verbal distractions.

The philosophy of auditory training, as outlined in the guidelines section of the curriculum, focuses on the concept of the “redundancy of language.”

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This concept is incorporated into learning or training activities by first maximizing the number of cues provided to the pupil (e.g., auditory, visual, contextual, and situational) in order that chances are greatest for a correct perception to be made. Then, as the task becomes easier and more familiar through repetition and reinforcement, redundancy is gradually reduced by eliminating visual cues until the pupil's attention is focused on the auditory component of the message.

The third component of the System, recently published, is a set of mediated activities for the training of auditory skills. These activities were developed to provide sample assessment and training activities for the objectives in the curriculum, as well as to serve as models for teachers to construct their own activities. The ASIPS Audio Worksheets consist of printed material designed to be used in a worksheet holder and accompanying audio cassettes. All of the cassettes are coded with pulses for use with a program-stop tape recorder. The Audio Worksheets are presented in four volumes, encompassing 86 activities for 26 objectives in discrimination and memory-sequencing areas of the curriculum. A Teacher's Guide sheet, corresponding to each activity, provides a complete description of the activity, including: (a) statement of the objective, (b) administration procedures, (c) sample frame, and (d) complete audio script.

Assessment activities are designed according to the specifications stated in the curriculum. *Learning* activities use a subset of the items in the assessment task and have a progressive, self-teaching design. In addition, many of the activities are presented with competing messages at +6 and 0 dB S/N. These activities provide practice in the Figure-Ground area of the curriculum.

The introduction of the TAC at the secondary level occurred as a result of direct service provided by audiologists working in Los Angeles County elementary programs for the deaf and hard-of-hearing. Initial testing was done to investigate how older pupils would react to the design of the TAC (e.g., use of pictures, pointing response, primary lexicon) as well as to determine the usefulness of TAC results in educational planning at this level. Results indicated that, in general, the pupils had a positive attitude, they did not find the task too juvenile, and the results were useful both in the development of individual educational plans (IEPs) and for describing a pupil's functional auditory abilities. By 1978, the TAC had become part of the standard audiologic battery in these programs. The test is administered to all hearing-impaired pupils upon entry to a program and whenever a change of placement is contemplated.

TAC results have now been collected and analyzed for 195 hearing-impaired secondary pupils, ages 13 through 17 years (mean age of 14.2 years). The majority of these pupils were from three Los Angeles County programs: SELACO-Downey High School, SELACO-South Middle School, and Lawndale High School. All pupils were tested by audiologists according to

the procedures outlined in the test manual for obtaining the original standardization data with 750 pupils ages 4 through 12 years.²

The average TAC performance for secondary pupils across the ten subtests was quite similar to scores achieved by elementary pupils, ages 10 through 12 years. Performance ranged from 95% on Subtest I to 12% on Subtest X. The average total raw score was 73 (52%), passing 4.6 subtests. The elementary pupils, ages 10 through 12 years, achieved an average total raw score of 70 (50%), passing 4.4 subtests.

Previous data on pre-school and elementary pupils was organized into a 12-cell Age by Degree-of-Loss matrix for age groups 4 through 6 years, 7 through 9 years, and 10 through 12 years. Degree-of-loss categories were defined by the better ear pure-tone average (PTA): (a) moderate—41 to 55 dB, (b) moderate/severe—56 to 70 dB, (c) severe—71 to 90 dB, and (d) profound—91 dB and greater. As illustrated in figure 1, the secondary data has now been added to the matrix, providing cells 13-16.

Age Groups	Age 4 - 6	N = 21	N = 29	N = 53	N = 67
	Age 7 - 9	N = 21	N = 34	N = 68	N = 112
	Age 10 - 12	N = 31	N = 44	N = 89	N = 181
	Age 13 - 17	N = 15	N = 29	N = 65	N = 86
		Moderate Loss	Mod./Sev. Loss	Severe Loss	Profound Loss
		Degrees of Hearing Loss			

Figure 1. TAC results were collected and analyzed in the Age-by-Degree of Loss Matrix. The number of pupils tested is indicated for each cell.

²Test of Auditory Comprehension Administration—Interpretation Manual. Office of the Los Angeles County Superintendent of Schools, North Hollywood: Foreworks Publications, 1976, Second Printing 1980.

Figures 2 through 5 illustrate the TAC performance profiles for the secondary age pupils (13 through 17 years) as compared to elementary pupils (10 through 12 years) in four degree-of-loss categories. As with the original standardization data, no statistically significant differences were found for TAC performances of adjacent age groups.

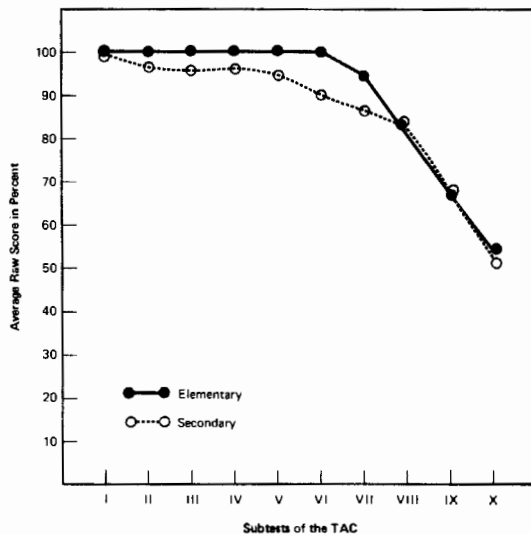


Figure 2. Comparison of TAC performance across subtests for elementary (age 10-12 years) and secondary (age 13-17 years) pupils with moderate hearing losses.

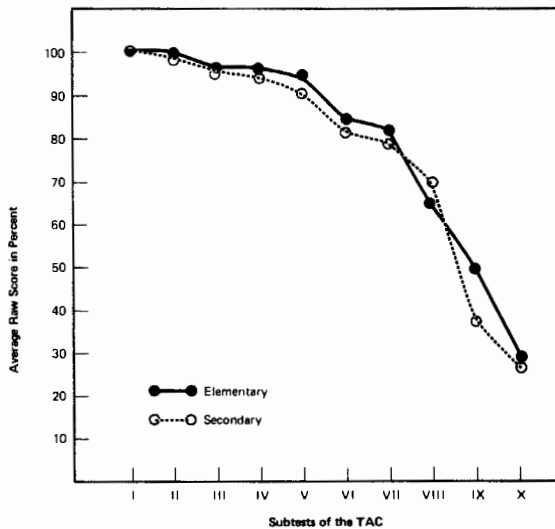


Figure 3. Comparison of TAC performance across subtests for elementary (age 10-12 years) and secondary (age 13-17 years) pupils with moderate/severe hearing losses.

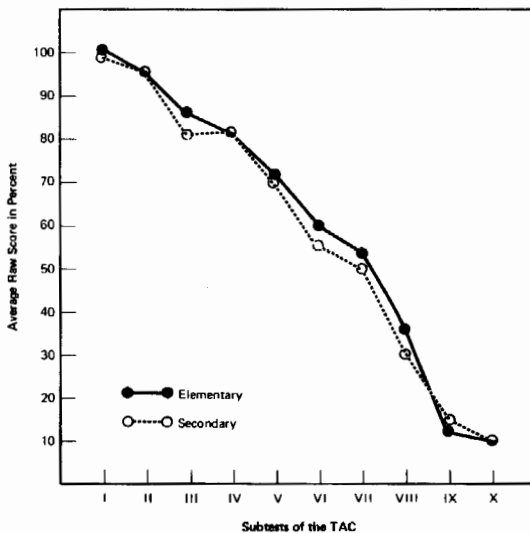


Figure 4. Comparison of TAC performance across subtests for elementary (age 10-12 years) and secondary (age 13-17 years) pupils with severe hearing losses.

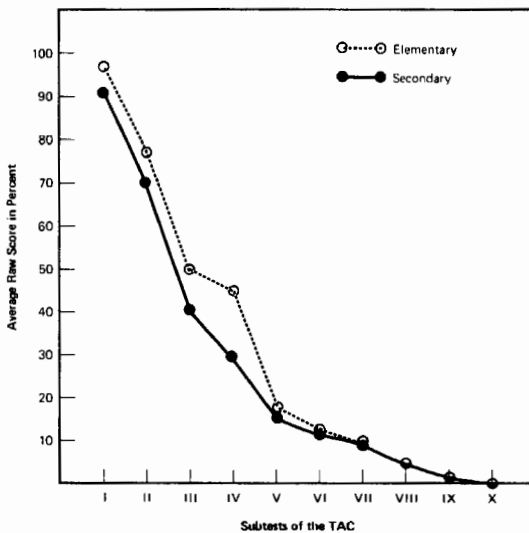


Figure 5. Comparison of TAC performance across subtests for elementary (age 10-12 years) and secondary (age 13-17 years) pupils with profound hearing losses.

On the average, secondary pupils with moderate through severe losses performed slightly better than did the elementary pupils. Performance of secondary pupils with profound losses, however, was slightly poorer than that of the elementary group. Average raw scores and number of subtests passed for: *moderate* losses were 127-8.8 (secondary) and 121-8.7 (elementary); *moderate/severe* losses were 114-7.7 (secondary) and 112-7.5 (elementary); *severe* losses were 89-5.7 (secondary) and 87-5.5 (elementary); and *profound* losses were 37-2.0 (secondary) and 43-2.4 (elementary). These results show the TAC to be an appropriate and discriminating tool for secondary pupils as well as for pupils ages 4 through 12 years for whom it was designed and suggest that the Auditory Skills Curriculum and mediated activities would be equally appropriate.

However, attempts to use the Auditory Skills Curriculum at the junior and senior high schools in previous years were stalled due to several basic differences between the elementary and secondary school programs. Four basic differences were identified:

1. Pupils' history of use of hearing aids and often negative attitude toward amplification — many of these pupils have never owned a hearing aid, and many came into the County program at the secondary level from elementary programs in districts that did not stress consistent use of amplification. Parents and staff found it difficult to insist that these students wear their aids and regarded the use of amplification as a decision the students had to make on their own.
2. Teachers — many at the secondary level are hearing impaired (generally more than in elementary programs) and are not receptive to recommendations that their students wear amplifying devices so that students could make better use of their residual hearing with systematic training.
3. Departmentalization at the secondary level — with teachers responsible for one, two, or three academic areas, the question arises as to who would be responsible for auditory training. Many teachers regarded auditory training as a separate content area that would reduce teaching time for the "basics." Also, with class schedules changing every semester, the amount of carryover of auditory training that would occur with those students no longer in classes receiving auditory training has to be questioned.
4. Services of the educational audiologist — the time allotted for service to elementary programs is much greater than that allotted to secondary programs in which the audiologist functions primarily to maintain semiannual test schedules, to prepare and attend IEP conferences, and to monitor students' amplification.

Due to these differences, the need for a concentrated implementation effort was realized by the staff of Audiologic Services and the administrators at the

high schools. The principal at the junior high school, in conjunction with a coordinator of audiologic services, prepared a grant application seeking PL 94-142 funds for the purpose of implementing ASIPS at SELACO-Downey High School and SELACO-South Middle School. Funding was received, and a team of two began the project in December 1980. An audiologist experienced in the use of ASIPS at the elementary level and a language/speech specialist experienced in working with the hearing-impaired population were selected as project managers. At a joint meeting with the project teams and school administrators, four teachers and three language/speech specialists from the two schools were selected to be included in implementation plans.

The project teams met at each site for a series of inservices, providing in-depth coverage of each component of the system, including: (a) observation of TAC administration, (b) case studies illustrating placement on the ASC, (c) review of available materials to begin work on selected auditory-training objectives, (d) record-keeping, and (e) videotape viewing of ASIPS in use at Southwest School for the Hearing Impaired.

The teams then worked to develop IEPs for approximately 40 selected students by describing (a) their level of auditory functioning (based on TAC scores) and (b) determining appropriate auditory-training goals as related to specific academic areas. These aspects served to stress the fact that auditory training does not constitute *what* is learned; i.e., it is not an isolated curriculum to be implemented apart from other academic content areas but rather is a means of facilitating learning in *all* content areas. Subsequently, arrangements were made for the project managers to: (a) observe regular classroom and language/speech sessions, (b) provide demonstration of auditory-training techniques that could help maximize their students' residual hearing, and (c) confer as teams to discuss ways for most comfortably practicing that which had been demonstrated.

Realizing the need to "sell" the idea of auditory training at these sites, and doing it with a subtle rather than with a "strongarm" approach, the original implementation plans had to be altered in various ways to accommodate changes occurring in the programs, staff, and students. The language/speech specialists remained on the project, the four teachers were reduced to two, and the group of "selected students" grew to all students being served by the language/speech specialists — nearly 90% of the combined secondary population of 140 students.

Implementation proceeded along different lines at the junior and senior high schools. The language/speech specialists at the senior high school established a Language-Speech-Auditory-Skills laboratory in March 1981. They scheduled classes of students in the laboratory for two periods per week. During the sessions, students obtained their individual assignments from the language/speech specialists, rotated among the five laboratory centers as

assigned (including the Auditory Skills center), and completed their work either individually or in a group. The language/speech specialists were able, in the absence of the project managers, to select appropriate activities for individual students and direct the students' work.

The language/speech specialists at the junior high school taught three self-contained language classes per day (approximately 24 students). During each of those periods, the students, either individually or in groups, worked on speech, language, and auditory-training objectives. A listening center was established in a quiet, remote section of the classroom for the auditory-training sessions.

The equipment and materials located in the high school laboratory and junior high school classroom were essentially the same. The equipment consisted of program-stop tape recorders, cardreaders, and response-feedback devices such as the Programmed Assistance to Learning (PAL) and Response-a-Matic (RAM), marketed by Instructional Industries, Incorporated. Both sites had complete sets of the ASIPS Audio Worksheets and a supply of worksheets duplicated for student use. Filmstrips with accompanying audiocassettes (for use with the PAL) that were developed by Audiologic Services to be used with objectives in the Auditory Skills Curriculum were also available at these sites. All auditory-training materials developed by project personnel were duplicated and shared between the two sites.

Students involved in the project had individual folders (located in the laboratory at the high school and in the classroom at the junior high school) containing information pertinent to their progress. Folders consisted of the student's Profile of TAC Performance Across Subtests (back page of the TAC response form), IPO Progress Record (in the Auditory Skills Curriculum), Daily Activity Record (also in the curriculum), and all completed worksheets. With this information readily available, project personnel could quickly plan future sessions for the students.

Looking ahead to the 1981-82 school year, it is impossible to foresee the extent to which expansion of ASIPS with the secondary population will be feasible. Special projects offered by the Office of the Los Angeles County Superintendent of Schools face uncertainty due to new funding legislation for Special Education programs. However, readdressing the basic differences noted between the elementary and secondary programs that originally caused problems in implementing the ASC at the secondary level, it is believed that certain progress has been made this year toward minimizing the effects of the following differences:

1. A student's history of using amplification cannot be altered; however, definite changes in attitude were noticed; there was (a) increased use of amplification on the part of those students who originally reported having broken hearing aids at home and (b) several students with profound hearing losses expressed the desire to obtain amplification

because they realized that they *could* hear some things.

2. Teachers, through observing auditory training in non-threatening situations such as the Language/Auditory Skills Laboratory, began to realize the potential benefits of auditory training. In addition, improved maintenance plus increased use of the group amplification system at the junior high school and, very importantly, increased expectations of teachers regarding their students' ability to use their residual hearing were observed.
3. Departmentalization at the secondary level cannot be changed; however, by involving the language/speech specialists, who serve a majority of students, continuity in auditory training can be achieved throughout the year by integrating auditory, speech, and language goals.
4. The time allocated to the educational audiologist for servicing the program will certainly not increase, but with the concentrated effort put forth during the 1980-81 academic year, the task of providing services to these sites is expected to be easier for the audiologist assigned to them.

During the short period in which the project was implemented, it was not possible to gather sufficient data to report on student progress relative to acquisition of auditory skills. Also, the large number of students involved in the project precluded in-depth evaluation and training sessions. A variety of performance objectives from the Auditory Skills Curriculum were assessed and a variety of activities were used to provide practice and reinforcement of selected skills with the students. Future work with the system should certainly attempt to document the nature and rate of progress in the development of auditory abilities with hearing-impaired students.