

## MODIFICATIONS OF A CAREER INFORMATION DELIVERY SYSTEM FOR USE WITH HEARING-IMPAIRED PERSONS

PAULA MARUT, M.A.

**Abstract**

The increased presence of microcomputers and the easier public access to mainframe computers has created a new source of support for the vocational rehabilitation services to disabled persons. Numerous software packages have been developed to address a variety of issues for nearly every disability group, as well as multiply disabled persons of all ages. One such category of software development has been in the area of career information. A commonly used term for such packages is Career Information Delivery System (CIDS). The Arkansas Rehabilitation Research and Training Center on Deafness and Hearing Impairment is conducting a research project with a CIDS package being used in the state of Arkansas. The initial purpose was to determine if deaf persons could access this career information system and gain benefit from the information provided. As a result of this preliminary research study, a number of difficulties were identified by the study participants. The package required some modification in order to enhance its utility with this population. Two major modifications were effected to address difficulties experienced by hearing-impaired users participating in the study: 1. enhanced and increased amount of information appearing on the computer monitor. 2. program modifications added occupations deleted due to the hearing loss. Additions to the CIDS package included, information files listing and describing postsecondary programs and rehabilitation facilities offering specialized support services for hearing-impaired persons thereby providing training information not previously delineated by the package.

**Overview**

Career information, exploration and guidance of deaf persons is made problematic by a variety of factors. Lack of personnel skilled in communicating with this group is a well known and pervasive problem throughout the field of deafness. Another problem and one to be addressed by this paper is the lack of appropriate career development tools proven effective when used with this population. The literature indicates that many deaf persons, especially those with additional disabling conditions are generally not exposed to the wide range of vocational opportunities available to them and subsequently tend to consider only traditional occupational areas in which such persons have been employed (Austin, 1974; Fitch, 1976; Watson, 1976; Schein, 1977; and Watson, et al., 1983b). A recent survey of career education programs conducted by the Research and Training Center on Deafness and Hearing Impairment (RT-31) identified career choice and planning as the most serious need of deaf students preparing to enter the labor market (Bullis and Watson 1985). Evaluators counselors and other professionals involved in the career planning efforts of their clientele typically utilize a vocational interest inventory as one tool to aid in identifying jobs of interest to the job seeker. Most inventories employ two basic procedures. First, the individual is requested to make choices regarding how much he or she likes or dislikes specific activities, both vocationally oriented and in some cases activities of an avocational nature. Second, the resulting responses are compared to profiles of persons successfully employed in different occupations (Anastasi, 1976). With a few exceptions, most vocational interest inventories use lists of activities requiring the individual to make choices based on what they've read. Several issues are raised regarding this general technique. One, the average reading level of deaf persons is a 4th grade equivalent (Gentile, 1971; Furth, 1973; Moore, 1982). This level of skill would be insufficient to comprehend the choices presented by these inventories. Second, in order to complete these inventories an individual

has to have sufficient information about the activities they are choosing as liked or disliked. Because of the aforementioned lack of occupational knowledge on the part of this population as well as the substandard reading skills the appropriateness of these inventories is suspect.

Searching the literature for a viable alternative to the vocational interest inventory, The University of Arkansas Rehabilitation Research and Training Center on Deafness and Hearing Impairment (RT-31) identified the efforts of the National Occupational Information Coordinative Committee as a possible source of such an alternative.

#### Description of CID Systems

The National Occupational Information Coordinating Committee, (NOICC) was established as a result of the 1976 Education Amendment (P.L. 94-482) and was assigned the responsibility to . . . "develop and implement an occupational information system at the Federal, State and local levels" (NOICC/SOICC 1982). Individual State Occupational Information Coordinating Committees (SOICC) were established in all 50 states as a result of this mandate. Subsequent amendments, the Youth Employment and Demonstration Projects Act of 1977 (P.L. 95-93), the Career Education Incentive Act (P.L. 95-207) and the Comprehensive Employment and Training Amendments of 1978 (P.L. 95-524) charged the NOICC/SOICC with the following responsibilities:

1. develop a standardized occupational information system (OIS) to serve the needs of vocational education and employment and training programs at local, State and Federal levels;
2. improve coordination and communication among the developers and users of occupational information;
3. give special attention to the labor market information needs of youth. (NOICC/SOICC 1982, pg. 1.)

Statewide Career Information Delivery Systems (CIDS) were developed in order to meet the requirements described above. As of October, 1984, forty-three SOICC's established a CIDS for their respective states. Each system shares a common group of basic objectives:

1. help students and clients learn about and understand the range of career opportunities presently available and those that are likely to be available in the future;
2. help entrants to the labor force become aware of occupations they would find acceptable and personally satisfying;
3. encourage persons in the process of career exploration and decision making to seek out vocational information on their own;
4. increase awareness of major sources of occupational, educational and training information;
5. help people learn of educational and training opportunities and their relationship to occupations they may be exploring;
6. provide support for related programs, including career education, career and employment counseling, employment and training and educational planning (Dunn, 1982).

The Statewide Career Information Delivery System (CIDS) provides comprehensive national, state, and local information to individuals who are in the process of occupational exploration and/or a job search. By October, 1984 there were 13,406 institutional user sites in operation throughout the United States and territories. A variety of locations host these systems such as, educational institutions, employment security offices, employment and training centers, vocational rehabilitation agencies, libraries, business and industry etc. Thus assuring reasonably easy access to this system by the general public.

Each SOICC was given the freedom to develop their system according to their individual needs. The 43 CIDS currently in operation do, however, share a number of specific characteristics:

1. They are computer-based but possess multiple delivery modes.
2. They deliver national, state, and local career information to users.
3. They use, to the maximum extent possible, the pertinent data and information available through the occupational information system.
4. They utilize an accessing or search strategy that sorts and selects occupations that are compatible with client-identified variables.
5. They serve users in a wide variety of settings - secondary schools, postsecondary institutions, libraries, CETA facilities, job service offices, and vocational rehabilitation centers throughout the State.
6. They are effective with persons of varying ability and experience.
7. They foster interagency and intergroup cooperation at the organizational level.
8. They are financially supported by State and local funds after the termination of Federal developmental grant monies (Dunn, 1982, pg. 2).

Discussions with several CIDS developers, both state and commercial as well as NOICC staff indicated that there is a need for modifications to be made in the existing packages in order to make them accessible to hearing-impaired individuals.

Upon review of a variety of CIDS packages, both state and commercially developed, it was ascertained that basic similarities existed across all systems. This enabled RT-31 to choose one system for modification with the results being applicable to all. This study entitled "Development and Evaluation of Computerized Career Information Delivery Systems for Hearing-Impaired Individuals" has been and continues to be conducted by RT-31. In addition to demonstrating the feasibility of adapting existing CIDS systems for use with deaf persons, the study also identified those adaptations necessary for use with this group. Because RT-31 is located in Little Rock, Arkansas the CIDS currently used by the Arkansas SOICC was selected for investigation. The Arkansas Occupational Educational Information System (AOEIS) is an adaptation of the CIDS' developed by the Maine Planning Information System and the Michigan Occupational Information System (MOIS). The basic components of the AOEIS are:

- A. The Structured Search which is designed to aid the individual in identifying interests and career goals via seven routes requiring specific decisions or choices. The seven choices comprise the individual's interest profile which will generate a list of occupational titles via a micro computer. This list of occupational titles can then be explored for the purpose of developing a career plan.

**Areas to be investigated are:**

1. **Interest:** Interest are defined in terms of a worker's preference for working with Data, People, or Things.
2. **Areas of Work:** Areas of work are defined in terms of broad career fields in which persons may be employed.
3. **Physical Strengths:** Physical strengths are defined in terms of lifting activities workers must perform.

4. **Physical Capabilities:** Physical capabilities are defined in terms of the physical abilities required of a person to perform certain job duties.
5. **Working conditions:** Working conditions are defined in terms of the physical surroundings in which workers perform their job tasks.
6. **Education:** Education levels are defined in terms of the normal training necessary to enter an occupation. There are ten levels of education from which to choose.
7. **Temperaments:** Temperaments are defined in terms of the types of situations persons must adjust to in a work setting.

Upon completion of the search, the searcher then selects occupations for further exploration. The AOEIS package uses microfiche cards as the information delivery medium. The information is presented under the following headings:

1. Occupation Title File

There are currently 386 major occupations listed with more than 1,450 speciality occupations as subheadings.

2. Postsecondary Program File

3. Apprenticeship File

4. Postsecondary School File

5. Postsecondary Financial Aid Files

- 6 & 7. School Subject Files

#### Methodology

The intent of this study is to assess the accessibility of the CID system for use by deaf persons. In this case, the Arkansas package. Three main subobjectives are being addressed.

\*Assess the understanding of those concepts presented in the CIDS by users who are deaf.

\*Identify which, if any, modifications or additions are necessary to improve the accessibility of the CIDS by deaf persons

\*Compile and/or develop any additional materials necessary to enhance the existing CIDS.

The Arkansas package was used as originally developed for one year with 46 deaf individuals. Several modifications and supplementary materials were identified as necessary based upon data gathered from the first year group.

1. Simplification of the vocabulary used in the Structured Search booklet.

2. Modification of the Physical Capabilities search route to reduce the number of job titles deleted via the Talk and Hear choice.

3. Increase the amount of information presented on the computer monitor.

4. Development of two additional microfiche files providing training information specific to deaf persons.

\*Item 1 was modified by incorporating a more recent edition of the Self Directed Search provided by the original developers. Much of the vocabulary had been streamlined and the amount of information reduced thereby simplifying the search process.

\*Item 2 involved altering the CIDS software in order to reduce the number of jobs eliminated due to selection of the not wanting to talk and hear item. Information derived from Rehabilitation Services Administration R-300 data on the placement outcomes of deaf clients closed as successfully employed during 1981 was used. Those occupations deleted by the original program based on answers related to talking and hearing were added based on successful vocational rehabilitation closures nationally.

Item 3 also required program modifications. The amount of information appearing on the computer monitor was increased with intermediate steps added to enhance the user's understanding of the search process. Care was used to avoid vocabulary and sentence structures identified as causing difficulty for deaf users.

Item 4 represents the development of two microfiche files. The Arkansas package provided training information on instate programs only and did not identify which, if any programs offered support services needed by deaf students/trainees. Both files offer information about programs nationally and delineate training and support services available to these students. The two files are, National Postsecondary Schools offering Services to Hearing-Impaired Students and National Rehabilitation Programs Offering Vocational Training to Hearing-Impaired Persons.

These modifications and additions have been used with a second group of deaf persons. The results of this effort are currently being analyzed and further information regarding this study should be available by September of 1986.

Should the findings indicate that the modified CIDS package can be more effective when used by deaf individuals, the findings and materials will be submitted to the National Occupational Information Coordinating Committee (NOICC) for dissemination to participating SOICCS. Because the AOEIS package is basically similar to the other 43 CIDS (e.g., structured searches, based on DOT worker trait groups, etc.), the findings should be of interest to the other 13,000 plus user-sites. The CIDS is already developed and updated annually by 43 states and is readily available in more than 13,000 user-sites, making it easily accessible for use by programs serving deaf individuals in other states.

Project staff will disseminate the findings of this research investigation to both, other CIDS user-sites (through NOICC), and to the field of deaf education and rehabilitation. Additionally, RT-31 encourages all CIDS developers to incorporate these modifications into their respective systems. The changes and modifications will in no way interfere with system utility by normally hearing users and may aid those persons with poor reading skills.

#### Summary

Ten to fifteen thousand deaf persons are served by the 50 State VR agencies each year. As the preceding paper suggests, deaf persons generally lack access to the timely and accurate occupational information needed to make informed career choices and decisions in their rehabilitation program. Furthermore, although an extensive system of CIDS are available (i.e., in 43 states and 13,406 CIDS user-sites) throughout the country, needed adaptations have not been made to make the systems readily accessible and of utility to deaf rehabilitation clients. We can generally anticipate good results from rehabilitation technology which take into account the particular needs of the deaf user. First, however, the computer technology and systems used in computer-assisted CIDS must be adapted to accommodate and address the career information needs of this group. The Research and Training Center on Deafness is available to serve in an advisory capacity for any CIDS developer interested in employing any of the modifications described in this paper.

## References

- Anastasi, A. (1976). Psychological testing (4th ed.). New York: Macmillan.
- Arkansas Occupational and Educational System, (1982). Little Rock, AR: Arkansas Employment Security Division, Research and Analysis Section.
- Austin, G. (Ed.). (1974). Careers for deaf people. Washington, D.C.: U.S. Department of Health, Education and Welfare.
- Boatner, E.B., Stuckless, E.R., & Moores, D.F. (1964). Occupational status of young adult deaf of New England and the need and demand for a regional technical-vocational training center. Final Report. West Hartford, CT: Vocational Rehabilitation Administration.
- Bullis, M., & Watson, D. (1985). Career education of hearing-impaired students: A review. Little Rock, AR: Arkansas Rehabilitation Research and Training Center on Deafness and Hearing Impairment.
- Dunn, W.L. (1982). Status of statewide career information delivery systems. Washington, D.C.: National Occupational Information Coordinating Committee.
- Fitch, B. (1976). Career development in elementary and secondary education. Gallaudet Today, Summer.
- Furth, H.G. (1973). Deafness and learning: A psychosocial approach. Belmont, CA: Wadsworth Publishing Co. Inc.
- Gentile, A. (1972). Academic achievement test results of a national testing program for hearing-impaired students, United States: Spring, 1971, (Serial D, No. 9) Washington, DC: Annual Survey of Hearing-Impaired Children and Youth, Office of Demographic Studies, Gallaudet College.
- Kronenberg, H.H., & Blake, G.D. (1966). Young deaf adults: An occupational survey. Hot Springs, AR: Arkansas Rehabilitation Services.
- Lacey, D. (1975). Career behavior of deaf persons: Current status and future trends. In J.S. Picou and R.E. Campbell (Ed.), Career behavior of special groups. Columbus, OH: Merrill Publishing Company.
- Lunde, A.S., & Bigman, S.K. (1959). Occupational conditions among the deaf. Washington, D.C.: Gallaudet College.
- Mindel, E., & Vernon, M. (1971). They grow in silence. Silver Spring, MD: National Association of the Deaf.
- Moores, D.F. (1982). Educating the deaf: Psychology, Principles, and Practices (2nd ed). Boston: Houghton Mifflin.
- National Occupational Coordinating Committee (1982). The status of the NOICC/SOICC network: September 30, 1981. NOICC Administrative Report No. 6, July.
- Schein, J.D., & Delk, M.T. (1974). The deaf population of the United States. Silver Spring, MD: National Association of the Deaf.
- Schein, J.D. (Ed.) (1977). Current priorities in deafness. The Volta Review.
- Schein, J.D. (Ed.), (1981). Model state plan for rehabilitation of deaf clients: Second revision. Silver Spring, MD: National Association of the Deaf.
- U.S. Department of Labor Employment and Training Administration (1977). Dictionary of occupational titles 4th edition. Washington, D.C.: U.S. Government Printing Office.
- Vernon, M.A. (1967). Guide for the psychological evaluation of deaf and severely hard-of-hearing adults. The Deaf American, 19(9).

---

Vernon, M. (1967). Psychological, educational and physical characteristics associated with post-rubella deaf children. Volta Review, 69, 176-185.

Watson, D. (Ed.), (1977). Deaf evaluation and adjustment feasibility. Silver Spring, MD: National Association of the Deaf.

Watson, D., Anderson, G., Marut, P., Ouellette, S., & Ford, N. (eds), (1983). Vocational evaluation of hearing-impaired persons: Research and practice. Little Rock, AR: Arkansas Rehabilitation Research and Training Center on Deafness and Hearing Impairment.

Watson, D., Anderson, G., Ford, N., Marut, P., & Ouellette, S. (eds.), (1983). Job placement of hearing-impaired persons: Research and practice. Little Rock, AR: Arkansas Rehabilitation Research and Training Center on Deafness and Hearing Impairment.

Author: Paula Marut, M.A.  
Deafness Research and Training  
Center  
4601 W. Markham Street  
Little Rock, AR 72205

---

