DEAF PEOPLE IN COMPUTER PROFESSIONS

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In aiming for better things for better living, modern technology has significantly affected almost every aspect of human life. One of the most important technological developments truly having a revolutionary impact on society is the computer. The waves of vibration created by this revolutionary computer are most profoundly felt by the silent world of deaf people. For them, the computer professions open up a potential field of employment opportunities. As a professional computer programmer active in the Association for Computing Machinery (ACM), I have come in contact with numerous computer programmers and systems analysts. This number has included those who are also deaf. It is my association with these professionals and my research into the opportunities and problems of deaf people in the computer professions, that form the basis for this article.

Scattered throughout the United States today, are some 150 deaf people who are gainfully employed as computer programmers. Approximately half of these programmers are employed in the metropolitan Washington, D.C. area. This employment rate may seem impressive to many; however, for deaf people the statistics are not impressive enough. Although they did make a breakthrough in the computer field in 1955, The number of deaf computer programmers hired each year remained static at one or two a year for many years subsequent to this breakthrough. Only in the last few years has the hiring rate increased to an annual average of ten. Acceptance in the computer field has truly been a slow one for

deaf people. The difficulties and frustrations encountered by these potential programmers qualify, quite frankly, as discrimination.

Today, the true worth of deaf programmers in automatic data processing (ADP) is beginning to be recognized by many employers in the Washington, D. C. area. It has become relatively easier for the well trained deaf person who lacks ADP experience to find immediate employment in this area, both in private industry and in the federal government. Deaf people are slowly being recognized by the computer society, as the qualified, capable employees they truly are. Consideration of their capabilities, however, indicates that the pace of this recognition must be stepped up.

The general work habits and accomplishments demonstrated by deaf professionals, in general, point to the competence and responsibility which these people bring to their professions. These work characteristics were explored several years ago by Professor Alan B. Crammatte of Galludet College, Washington, D. C. Professor Grammate's study of deaf persons employed in various professions was based on "extensive and retrospective interviews with eighty-seven profaundly deaf persons employed as professionals" Crammatte, 1968). The study examined on-the-job problems of work performance and association with co-workers, and the means of communication frequently used in the working environment. The results shed light on several questions vital to employers of deaf people including those in the computer field:

1. What quantity of work do the deaf programmers produce?

Although no standards, *per se,* have been established for measuring productive output, personal observation of numerous deaf programmers indicates that they maintain a high rate of productivity with a capability of meeting realistic deadlines. In addition, Professor Crammatte's research, dealing with a comparison of the production of deaf workers with

the production of their hearing co-workers, as perceived by their supervisor, shows that 90 percent of the deaf workers are doing as well as their co-workers, while 64 percent are considered superior workers.

2. What quality of work do the deaf programmers produce?

My association with, and research of, deaf computer professionals reveals that they consistently produce good and often superior work. They possess sound judgment and logical minds. They are well informed on all aspects of their assignments. This professional knowledge leads other, hearing, programmers to seek them out for technical advice.

3. How adaptable are the deaf programmers?

Deaf programmers demonstrate a talent for absorbing training and experience intensively in the fast-changing technological developments of the computer field. They exhibit flexibility in meeting changing work requirements and in making adjustments to conditions of work. They seem to possess an inherent ability to promote harmonious relations and co-operative attitudes among their supervisors and fellow workers. Professor Crammatte reports that the attitudes of hearing workers toward their deaf-co-workers were rated by 82 percent of the hearing employees as favorable or strongly favorable.

4. How good are the office and attendance records of deaf programmers?

Once again, personal experience indicates that the deaf programmers conform to patterns of good office conduct. Their attendance records are comparable to those of the general population of employees.

5. To what degree are the deaf programmers making professional advancements?

Deaf people in the computer field have regularly been earning promotions. Some have also been given outstanding

performance ratings by their superiors. Others have received bonuses for their quality work.

In addition to displaying average to superior ratings on the more general aspects of professional work performance, deaf people tend to exhibit a capacity for the computer professions which is at least equal to that demonstrated by the hearing population. There are no known foolproof measurements to determine if an individual is qualified to be a computer programmer. Some employers state that a strong mathematical background is essential to programming, yet they hire musicians. A college diploma is preferred by many computer companies, but they do hire high school graduates. Other companies emphasize that computer training or courses in computer technology are prerequisites, yet they are employing those with no prior training or experience. Most professional computer programmers agree that an aptitude for mathematics is not as essential for a programming position as many companies would have job seekers believe. Experience and observation indicate that the important requirement is a sound, logical, orderly mind!

Never has the possession of normal hearing been designated as one of the qualifications of a programmer. It never should and probably never will be, since the job assignments of computer programmers do not necessarily require much public contact, frequent conference attendance, oral communiation, or excessive use of the telephone. Examination of each task a computer programmer performs, reveals the task's hearing and speech requirements:

a. Computer system design—some requirement;

b. Program flow chart preparation—*no* requirement;

c. Input data collection and preparation—*no* requirement;

d. Program coding—*no* requirement;

e. Program debugging—*no* requirement;

f. Program testing—*no* requirement;

g. Accuracy checking of output—*no* requirement;

h.   Documentation—*no* requirement; and

i.   System turnover—some requirement.

In addition, the following points hold true: (1) almost all project requests, by which the services of a programmer are requested, are submitted in great detail in written form; (2) no oral communication or hearing is required for communication between man and the computer; and (3) the working tools of a programmer consist of paper, pencils, and punched cards. Communication between deaf and the hearing people that is required or beneficial to completion of the programming task, is successfully accomplished in various ways, depending on the deaf individual's preference. These means include lip reading and oral response, handwriting, and sign language.

Not only is a loss of hearing nonhandicapping for most programming positions—it *can* be an asset in programming. The detailed work inherent in coding computer programs and in seeking out errors in program logic, requires the programmer's intense concentration. Loss of hearing greatly diminishes the numerous distractions of most working environments. For the deaf programmer, this means a better environment is available to him for this required concentration than is available to his hearing co-worker.

Since the qualifications of a programmer are, in large part, no different for deaf than for hearing people, it is obvious that computer programming is a profession appropriate for many who are deaf. Not only is it appropriate, but it is a worthwhile goal. It provides excellent work conditions, good salaries, and generous fringe benefits. Because it is a new and growing field, opportunities for advancement are plentiful. Progress is governed only by the initiative, dedication, and fortitude of the programmer. Why, then, is the hiring rate for deaf computer programmers so low? The answer concerns three critical areas of difficulty:

a.   Job application forms

b.   Interviews

c. Misconceptions of deafness.

The third area is the most critical one because it underlies the difficulties encountered in the first two areas.

From the view point of the job seeker, job application forms are intended to sell the applicant's employability. It is not too difficult to fill out an application form. All it requires is that the applicant list his qualification—background, education, training, experience, and personal characteristics. Unfortunately, job applications have always contained some phrases or questions that can cost a job opportunity. For those who are deaf, that question is "Do you have any physical handicap?" This question is disturbing because it leads to the misunderstanding that deafness is an occupational handicap or even a hazard. Many personnel officers, who are not trained to deal or who have limited experience with deaf people, automatically reject applications in which this question is answered affirmatively. There have been some recent improvements in application forms, especially in the federal civil service. The question "Have you any physical handicap, chronic disease or other disabilities?" which appeared on the old standard form (SF-57), has been eliminated on the new form (SF-171). This change has helped considerably to pave the way for many deaf people to obtain government employment. It is an appropriate aim to see that companies in private industry also do away with such questions on their application forms.

Interviews give the personnel officer an opportunity to question job applicants. With deaf people, however, these interviews often quickly dissolve into unscrupulous personal scrutinizing. At times, the interviews are more interested in probing the deaf person's habits of living than in determining their capabilities. Many personnel managers are not trained to cope with deaf applicants. This impedes the free communication that should exist in an interview. In such situations, the personnel officer is "likely to be unfavorably impressed if the interview is made more difficult and awkward because of the failure to understand each other" (Crammatte,

1968). The deaf applicants interviewed by Professor Cram-
matte revealed that the greatest single difficulty they met in
their working lives, was breaking the ice on their first job
applications. The study also revealed that the leading problem
of deaf applicants in securing their first job was that of dis-
crimination. The problem seems to be that personnel officers
want to avoid, or are resistant to, hiring deaf people because
they fear that communication difficulties will cause on-the-
job problems. The groundlessness of this fear has already been
pointed out.

Other attitudes, equally unfounded, permeate society.
Stereotyped views of the abilities of deaf persons and social
taboos associated with them, lead the public to conclude that
they are limited in intelligence and ability. Professor Cram-
matte's study has shown that "there is no such valid stereo-
type, 'the deaf.' It can never rationally be said: The person
is deaf, consequently he has this or that personality trait,
mental capacity or attitudes" (Crammatte, 1968). There is
ample evidence in the accounts of proven achievements of
deaf programmers to refute such misguided attitudes and
thinking.

It is of great concern to those who wish to promote the
cause of deaf people as computer professionals that some-
thing be done to alleviate these adverse conditions. But what
can be done? Providing deaf persons with appropriate train-
ing, ensuring that their application forms do, indeed, sell their
employability, and preparing them to make the most of in-
terviews are steps in the right direction. More research on
deaf people who are presently employed in the computer pro-
fessions is also necessary. However, the most important means
of remedying the employment problem of deaf people in the
computer professions, is to make those companies and agencies
in the computer business aware of the qualifications and ac-
complishments of deaf people who have already found a place
in the computer professions. This remedy will provide a means
of overcoming the barriers of misconception and discrimina-
tion that exist today.

Currently there are several organizations "striving to eliminate social and economic barriers which handicap deaf persons." One of these is the Council of Organizations Serving the Deaf (COSD). COSD is "enlisting the support of organizations of the deaf and the general public in developing economic, social, cultural, and other opportunities for the deaf." In Washington, D. C., another organization, the local Chapter of ACM, has recently established a Special Interest Group for the Deaf (SIGDEAF). This is the first organization for deaf professionals in the computer field. Its purpose is not only to provide its members with a medium for exchanging professional interests and keeping abreast of technological developments, but also to make it possible for them to integrate into the computer society and to make their capabilities as programmers known. It is the hope of SIGDEAF members that the obstacles which the deaf pioneers in the computer field encountered will be matched by opportunities for future deaf aspirants.

REFERENCES

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