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**AUTHOR** Siegel, Jerome  
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**ABSTRACT**

A project of the Riverside Research Institute (RRI) provided training for 10 hard core unemployed for one year in four vocational skills: computer peripheral equipment operators, electronics technicians, machine operators, and draftsmen. Selection was based on at least an eighth grade verbal and numerical achievement level, tests, and interviews. Major components of the program were: orientation to the program, on-the-job training in all skill areas, job related basic education with additional mathematics, personal and vocational counseling, and sensitivity training of RRI employees. An evaluation indicated that the primary program objective, to provide skills training and a job opportunity to someone who ordinarily would not have had this chance, had been clearly satisfied. Success was also indicated by evaluations in the areas of personnel turnover (6 of the 10 were still employed one year after the program and 2 left to attend college on full tuition scholarships); rate of learning; job performance; and adjustment to working environment (progress in this area was extremely slow, but there were gradual improvements in absentee and lateness records and in diminution of time spent with counselors). (Author/NH)

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The Role of Industry in Training  
the Hard Core Unemployed<sup>1</sup>

Jerome Siegel  
Riverside Research Institute

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The 1960's saw a tremendous emphasis placed upon manpower training programs for disadvantaged minority groups. Legislation was enacted, such as the Manpower Development and Training Act of 1962 and the Economic Opportunities Act of 1964 to establish large sums of money which was made available for training unemployed and underemployed people. This sudden explosion resulted in some of the following problems:

- (1) Training programs quickly mushroomed across the nation which were not of high quality. Most of the programs did not meet their training objectives.
- (2) Industry was pressured into hiring graduates from these programs to fill their manpower requirements. These trainees not only failed to demonstrate skills which were purportedly acquired during the training programs, but were not psychologically or vocationally ready to adjust to the world of work.
- (3) There was very little relationship between the number of trainees in various government funded programs, and the job commitments which were made by industry to hire graduates from these programs. There was frequently no reward at the end of the training session since there was no systematic effort to match training slots with position availability in industry.

The results were nearly catastrophic. Industry seemed eager to participate in upgrading and training programs, yet their reluctance toward action was obvious. In 1968, for example, the Opinion Research Corporation polled over 700 U.S. corporation leaders regarding whether their organizations should become involved

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in training programs for the hard core unemployed. The response was overwhelmingly in favor of it, yet there was no direction or vehicle provided by the government to assist corporations with this task.

In 1968, the U. S. Department of Labor created the catalyst for bridging the gap between government and industry in manpower training through the creation of a program entitled: Job Opportunities in the Business Sector (JOBS). This was a program which represented a partnership between industry, represented by the National Alliance of Businessmen (NAB) and the government, represented by the Department of Labor to create new job opportunities for those who were at a disadvantage due to lack of experience, educational skills or because of discrimination against minority groups. The essential features of this program were:

- (1) A cost sharing plan between the participating company and the Department of Labor. A company was to be reimbursed for all extra costs associated with setting up a training program including remediation, counselling, on-the-job training and sensitivity training. In return, the company agreed to hire the trainee as a full-time salaried member of the staff,
- (2) Permanent employment for all trainees who successfully completed the training program,
- (3) An opportunity to establish training capabilities and staff which could be of direct benefit to other company programs and employees,
- (4) A program which was directly geared toward company recruitment requirements.

Riverside Research Institute has recently completed such a program under an MA-5 contract with the Department of Labor. The following is a brief description of the program, some of its problems and an evaluation of its success.

## II. Description of RRI Program

### A. General Information

The training program contract was signed with the U.S. Department of Labor as an MA-5 project to provide training for 10 hard core unemployed for a period of one year in four vocational skills: computer peripheral equipment operators, electronics technicians, machine operators and draftsmen. There were two primary factors for selecting these particular technologies. The first was based upon an existing shortage of talent in these areas; the second was based upon projections as to where RRI's growth would result in job openings over the year. The proposal was submitted to the U.S. Dept. of Labor in July and an award was made in October 1969. The training program commenced in December 1969 and was terminated in November 1970. The major components of the program were:

- On-the-job training in all skill areas by existing RRI staff
- Job related basic education with the emphasis upon mathematics
- Counselling (personal and vocational)
- Orientation and group counselling sessions emphasizing the world of work
- Sensitivity training of RRI employees

The typical day for the trainee consisted of going to school in the morning for 3 hours of basic remedial work. The emphasis was upon developing his knowledge and skills to a level where he could adequately cope with the vocational job situation. The afternoons were spent with on-the-job training and a part of each afternoon was also left for individual counselling or tutoring as required.

### B. Specific Job Requirements

As part of the training program, job descriptions were established so that objectives for training could be established. These requirements are given by area of specialty:

- Computer Peripheral Equipment Operator

These employees learned to use all of the peripheral equipment associated with a general purpose computer facility including keypunch, verifier, reproducer, line-printer sorter and interpreter. The first 20 weeks combined basic education and OJT with the remaining time devoted almost exclusively to improving skills with on-line equipment. Instruction on the total data processing operation was also included.

- Mechanical Draftsman

These employees learned the skills required to translate ideas, sketches, specifications and calculations into working plans usable in an electronics or machine shop facility. Emphasis was placed upon lettering, geometrical construction, schematics, graphics and machine tool assemblies. The first 20 weeks combined basic education and OJT with the remaining time used for improving skills on the drawing board.

- General Machine Operators

These employees learned to set up and operate a number of machines including drills, lathes, milling machines and a variety of gauges. They learned to work to specifications and were able to read blueprints and specifications. They also learned a basic knowledge of materials. The first 20 weeks combined basic education and OJT with the remaining time used for hands-on experience in the machine shop.

- Electronics Technician

These employees learned the basic fundamentals of electricity and the use of all electronic tools. They learned the mechanics of electronics including the construction and mechanical assembly of a chassis. They also learned basic wiring and checkout of equipment using instruments such as a voltmeter. The first 20 weeks combined basic education and OJT with the remaining time used for direct experience in the electronics shop.

### C. Selection of Trainees

One of the most critical steps in the entire program was that of selecting the trainees. A set of criteria had to be employed which satisfied the Department of Labor definition of "hard-core unemployed" and also provided for basic skills to cope with the complex requirements of the jobs for which the training was being provided. The Department of Labor requirements were fairly minimal such that any minority group member who was poor could qualify. This included individuals who did not have suitable employment, were school dropouts or were subject to special obstacles to employment. The RRI criteria was an academic one requiring all trainees to possess at least 8th grade level achievement in both verbal and numerical skills. Due to the task requirements of the jobs under consideration, it was determined that without this educational level, the trainees would have almost no likelihood of succeeding even with fairly extensive remedial assistance.

The following procedures were followed by RRI in the selection of the trainees for the program.

(1) Recruitment - all recruitment for the program was accomplished by the Concentrated Employment Program (CEP) of New York or the New York State Employment Service. Initial screening was accomplished by these agencies as well as aptitude testing. All applicants were given the Iowa Test of Mental Ability which provides for separate scores of Verbal, Numerical and Reading ability. These scores along with the background material were forwarded to RRI.

(2) RRI Interview - The interview was conducted by a negro counsellor and myself. These two individuals represented a substantial number of years of experience in the field of counselling and guidance. We found, by and large, that our past experience was of practically no value since the backgrounds and history of these applicants were uneven. There were unexplained gaps in work records, school attendance, service records and many

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had previous records for petty larceny. So instead of looking for behavioral predictors, an attempt was made, on a very subjective basis to obtain some index of motivation and to ascertain whether the applicant was a professional trainee, i.e. moving from one training program to another as long as a stipend could be collected.

(3) RRI Testing - In addition to the Iowa tests administered at NYSES, all applicants were given the Fundamental Achievement Series. This is a test developed by the Psychological Corporation that is geared to be "culture-fair." The test is on tape so as to eliminate reading impairment as a variable and provides achievement scores on verbal and numerical ability for very applied and realistic situations. It is not geared toward academic techniques, but does utilize basic verbal and numerical skills in everyday situations. For example, one of the numerical problems provided a menu from which the examinee was asked to calculate the cost of different types of luncheons. On the verbal test, they might be asked to select the proper route that a bus should take depending upon the bus sign and a variety of different street signs. The normative data for this test is also based upon similar samples including Northern negroes from grades 8-12 and Job Corp trainees.

(4) Final Selection - The final selection was based upon the interview, FAS scores, Iowa test scores and a subjective evaluation of motivation and potential for success. The group of 10 trainees selected were from an applicant population of 27 referrals. The median age was 21; all male with 7 being negro and 3 Puerto Rican; 5 were returning veterans from Vietnam. Their educational level was higher than expected. Seven of the ten had high school equivalency diplomas with the other three having completed 10th grade. As a group they were at 9th grade in both reading and verbal skills and 8th grade in mathematics.

During the first week, they were also given the Differential Aptitude Test battery in order to assess their specific aptitudes for job assignment. They generally did best in mechanical and spatial reasoning and did poorly in numerical ability, abstract reasoning and language grammar.

#### D. Program Components

The program consisted of five components:

1. Orientation - An orientation session for the trainees was conducted which was scheduled for the first week of the program. The major objectives of the orientation was to ready the trainees for the world of work particularly at RRI, and to place trainees in their proper vocational skill areas. Through various role playing techniques, lectures, discussions and counselling, topics such as the objectives of the program, grooming, expectations, money management, job adjustments, employce-supervisor relationships, etc. were discussed. The trainees were given an opportunity to meet the various supervisors in the different departments and discuss job opportunities with them. During this period the Differential Aptitude Test battery was administered and the interests of each trainee were ascertained. The final assignment to vocational job areas was based upon interests and the aptitude profile developed from the DAT. By the end of the orientation session the trainees knew exactly what was to be expected of them and what they could expect.

2. On-the-job Training - This component represented the most time consuming portion of the program. During the first 6 months, approximately half of each day was spent at OJT with the remaining portion devoted to job related basic education. For the last 6 months, every day was primarily devoted toward obtaining the necessary hands-on experience with individualized tutoring provided on an as-required basis.

A fairly detailed curriculum was prepared by the supervisor of each of the four departments with assistance from a curriculum specialist. Most of these supervisors were actually responsible for implementing this curriculum since they served as instructors for the OJT. In addition, each trainee was provided with a buddy who was a peer working in the same department. This provided additional sources of training and information for each trainee. All of the OJT was carefully supervised by the instructor and the project coordinator. It is extremely interest-



ing to note that a significant amount of time was spent with the trainees by the supervisors, much more than was allocated for the training program. This seemed to be indicative of a level of motivation on the part of the instructional staff.

3. Job Related Basic Education - This component was subcontracted to the Manpower Training and Development Program which is an affiliation of the State Education Department and is conducted under the auspices of the Board of Education. We did not have a full capability within our own organization and therefore decided to use this group. Here the emphasis was on developing basic numerical and verbal skills. In addition to the basics in the numerical area, all of the jobs required different forms of advanced mathematics. Therefore time was also spent going into basic algebra, trigonometry, and geometry as well as shop and computer mathematics. In the verbal area the emphasis was mainly on reading and writing. Specific vocational terminology was also stressed.

In addition, RRI provided individualized tutoring on an as-required basis, particularly in mathematics. It was found that about half of the trainees required this individual tutoring in addition to the basic program conducted by the subcontractor.

4. Counselling - A guidance counsellor to provide supportive services for both job-oriented problems and personal problems constituted a very important part of the program. At the beginning of the program, his services were almost always in demand. However, as vocational, personal, and social adjustments were made, the counselling function was gradually reduced. The variety of problems handled was extremely diverse. However, the major areas of concern included attendance, lateness and personality adjustments to peers and supervisors which had to be resolved.

5. Sensitivity Training of RRI Personnel - Another one of the extremely important components of the program turned

out to be sensitivity training which provided an opportunity to communicate with all levels of personnel who were directly or indirectly involved with the program. Special conferences were set up with the goals of providing information about the program, attempting to obtain full cooperation and giving employees an opportunity to interact and express their feelings pertaining to the project. Most of these sessions were conducted at RRI, with one of the supervisory sessions conducted by Coalition Jobs. The sensitivity training sessions were structured for three different levels of personnel within the Institute.

- Management - The first was concerned with the management where the objectives and intent of the program were introduced. Potential problems were discussed including employee cooperation, disciplinary measures if needed and advantages and liabilities in conducting such a program at RRI. In general, the management of RRI was fully behind the program and supported it vigorously.

- Supervisory - This consisted of three sessions. One was conducted by Coalition Jobs and two were conducted at RRI. The objective was to try to acquaint supervisors with the program and at the same time bring to the surface any reluctance that might be prevalent. This was accomplished through role playing, discussions and realistic presentations of the potential problems that they might experience. By the end of these three sessions, supervisors admitted having a great deal more insight into the problems that they might be confronted with.

- Peer Group - This consisted of one sensitivity training session for each of the departments in which the trainees would be employed, i.e. computer, drafting, electronics and machine shop. These turned out to be not only the most difficult to handle but also to be the most worthwhile. We found some of the initial attitudes of these groups to be extremely hostile. For example, comments came to the surface like: "Why do we have to have hard core criminals in our organization?; Will they steal my tools?; Will they replace me when they get as good as I am?."

These areas were discussed and different hypothetical situations were handled in a non-directive way. Employees gained a great deal of insight into why they reacted the way they did. They realized that they were prejudging the trainees, somewhat jealous that they had never been given a similar opportunity and somewhat defensive because they perceived that their own job security might be threatened. Although it is difficult to assess the success of these peer sessions, almost all employees were extremely cooperative in assisting the trainees adjust to their new environment.

### III. Program Evaluation

This paper was presented after the training program had been in operation for 6 months. At that time, some of the early indicators of success such as turnover rate, academic progress, adjustment to the working situation as measured by supervisor's ratings and learning and development in the particular skill areas were all positive and reflected highly encouraging signs of a successful program. However, rather than present incomplete data, the author edited this paper 6 months after the presentation and can therefore, provide data based upon a completed training program one year after its inception.

One is always faced with a difficult choice regarding criteria in evaluating a program of this type. The primary objective of the program was to provide skills training and a job opportunity to someone who ordinarily would not have had this chance. This criterion has been clearly satisfied. Of more crucial importance are the indices by which most employees are evaluated, namely performance measures of progress, improvement and motivation. In this regard, the criteria discussed include personnel turnover, rate of learning, job performance and adjustment to the working situation.

- **Personnel Turnover**

One year after the program, six of the original ten trainees are still gainfully employed at the Institute. This turnover rate is approximately the same as the annual rate for RRI personnel in similar labor categories. The turnover rate of 40% compares favorably with that of other MA training programs which for the most part have averaged 50%. It should also be noted that the reasons for termination are exceedingly critical. Two of the four trainees left to attend college on full tuition scholarships at Syracuse University and Penn State University. Therefore, with regard to the criterion of turnover, it was only 20% for the program if one considers negative reasons for dismissal which in one situation was excessive absenteeism and in the other, an inability to adjust to the working situation.

- **Rate of Learning**

Two primary measures of learning were employed during the course of the program. There were bi-weekly evaluations from the remedial instructor which were based upon progress and improvement in both verbal and mathematical skills throughout the program and also reflected sustained motivation on the part of all trainees who remained with the program.

An additional indicator of learning rate and progress was the administration of the Fundamental Achievement Series test which was given at the start of the training program and six months after the program had commenced. The results are presented in Figure 1. The norms were based upon eighth grade in a northern city school system. One can observe increases in the percentile scores for the trainee group for both numerical and verbal skills. The verbal test showed only a slight improvement in performance whereas there was marked improvement in the numerical area. This is easily accounted for by the fact that most of the remedial effort was concentrated in numerical skills because of the mathematical nature of the tasks to be performed.

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Insert Figure 1 about here  
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- Job Performance

Two primary factors were used to evaluate the job performance of the trainees. Supervisors provided monthly reports which required ratings of each trainee on factors related to job performance such as quality, quantity, dependability and overall progress. These evaluations reflected continued improvement of all trainees until asymptotes were reached about 8 months after the program had commenced.

The second factor was the actual productivity of each trainee. In the drafting and computer sections, trainees were spending 50% of their time doing productive work within 6 months after the program began. They are fully productive employees at the present time. The machine shop trainees did not start becoming productive until 9 months after the program had commenced. At the present time, they are 50% productive spending the remaining portion of their time still learning to become prototype machinists. The electronics trainees were 50% productive after 9 months of the program and are presently fully productive employees of the Institute. They still spend much of their own time learning electronics theory and application. Therefore, on the criterion of work productivity, almost all of the remaining trainees are fully productive employees.

- Adjustment to Working Environment

There were several rating procedures involving the employee supervisors, the program counsellor and the project director. Objective measures of absenteeism and lateness were also recorded. Although progress was extremely slow in this area, there were gradual improvements in absentee and lateness records as well as a diminution of time spent with counsellors and supervisors discussing personal, vocational and social problems. There were, however, long periods of continued frustration on the part of supervisors and trainees regarding expectations,

following of procedures, peer relationships and a general adjustment to the world of work. Through individualized counselling of both supervisors and trainees, a gradual adjustment was effected. At the present time, complete adjustment both socially and vocationally have taken place. Two trainees were dismissed because of their inability to adjust to the work situation in spite of intensive counselling.

#### IV. Problem Areas

A number of problem areas did emerge during the course of the program. The first concerned the supervisors. They became extremely frustrated at the inability of some trainees to make immediate adjustments to a new situation. Considerable time had to be spent counselling the supervisors how to deal with specific situations. Supervisors, as well as peers seemed to be "oversensitive" to the trainees and occasionally overreacted to situations involving trainee performance and disciplinary measures.

A second problem concerned the trainees. They had an extremely poor lateness and absentee record during the early portion of the program. Frequently, personal problems would arise that they attended to during the working day without exploring other alternatives. Oversleeping and transportation problems resulted in extreme lateness. These problems were finally resolved through counselling and role playing sessions where the position of the supervisor was clarified.

For a period of time during the early portion of the program, peer groups represented a serious morale problem as a result of the presence of a training program. It was finally discovered that they felt the trainees would ultimately replace them and therefore a considerable amount of job insecurity and competition was created. This was also resolved by counselling of supervisors on how to handle these situations.

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A number of problem areas were also avoided by:

- Obtaining the full support of management personnel prior to the commencement of the program.
- Dispelling the stereotype of the label "hard-core unemployed" during the sensitivity training sessions.
- Emphasizing individualized counselling, tutoring and a general "open-door" policy for all trainees and employees associated with the program.

### V. Conclusion

I'm sure there could be a good deal of controversy with respect to whether this general area of work represents an area that the human factors community should be involved with. My contention is that it does. For example, we have been defining some of the job requirements and job specifications and personnel subsystem work in military programs. We have been doing a reasonably good job since we started selecting pilots during the second World War, by the use of pursuit rotor tasks, and many human factors people have been involved in setting up and implementing selection programs. We have been very much involved in defining and establishing training curricula and also trying to measure the effectiveness of various training programs. Those of us who have been trained in the industrial area have also done a considerable amount of job counselling and sensitivity training. At one time or another we have also been involved in program evaluation.

I am firmly convinced that this approach represents a real and significant solution to the problems of unemployment and poverty in our country today. As human factors scientists, particularly those trained in the behavioral sciences, we have the knowledge to convince management of the merits of this approach and to back up our convictions with action. I do believe that our "hard core unemployed" are trainable. This program, I believe has demonstrated this fact. I think all of us can play a significant role in solving this persistent and ever present urban problem.

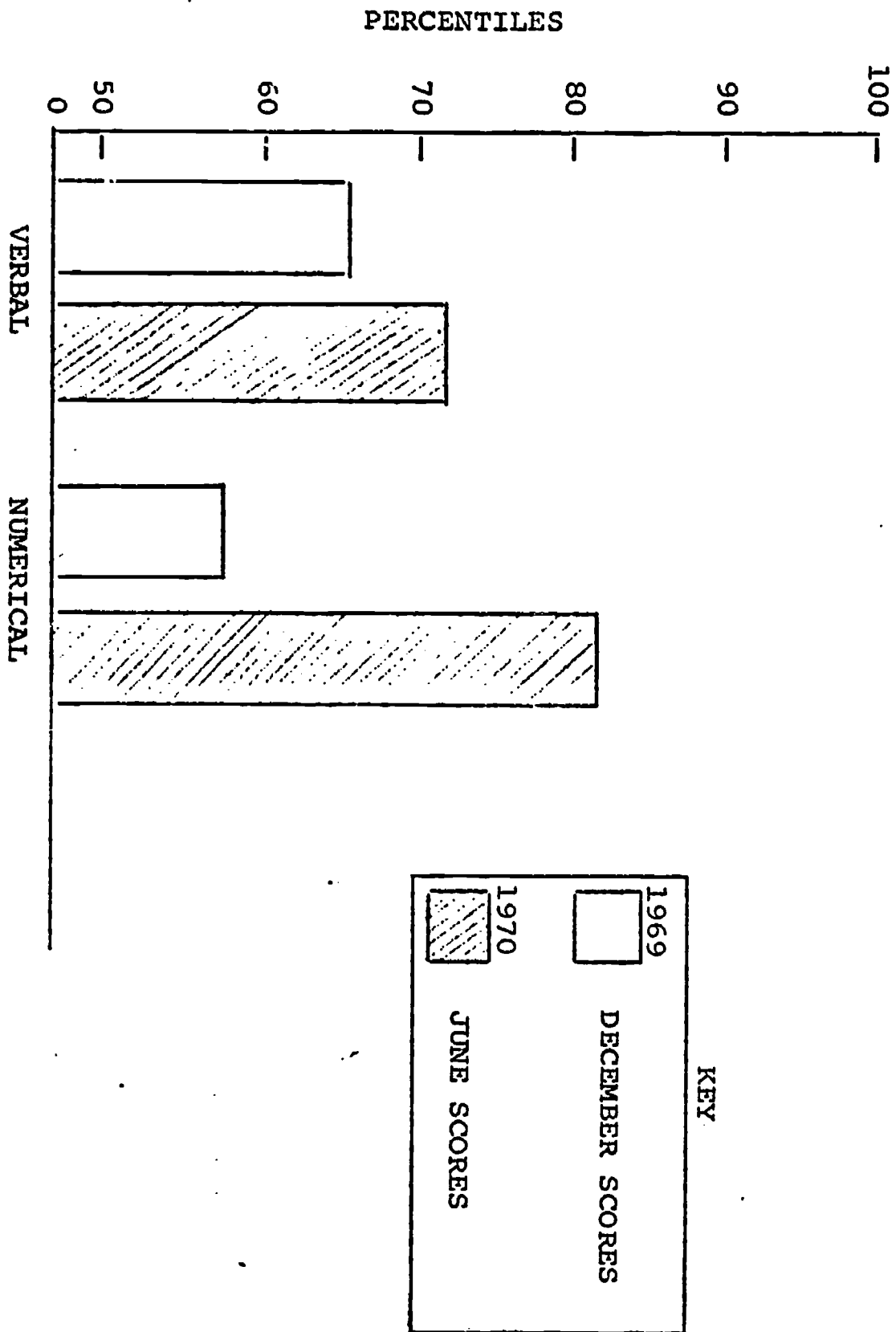


Figure 1 - A comparison of percentiles for 10 trainees tested at the beginning and six months after the start of training. These norms are based upon a Northern City school system using eighth grade students.