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ABSTRACT

To identify and describe secondary vocational education programs that have been successful in increasing the total placement rate when compared with other courses of instruction, 445 programs were selected through a literature search, mail and telephone inquiries, personal contacts, and other means. The evaluation of each program was studied, particularly the followup of graduates. In addition, on-site evaluations were made by project staff of evaluation problems in 30 programs. The project staff was unable to show that any of the program met the study's criteria for success. Nearly one-half of the programs did not have comprehensive followup information on their graduates, and no trends could be detected nor suitable comparisons made of those approximately 148 programs that had nearly complete followup records. In order to obtain detailed information on graduates, more complex, fine-grained followup would be required. It was also recommended that a randomized group be selected for followup and that the same procedure be applied to select a comparable group of nonvocational graduates. (Author/SB)

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FINAL REPORT

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A STUDY OF SELECTED PROGRAMS FOR VOCATIONAL EDUCATION IN SECONDARY SCHOOLS

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U.S. DEPARTMENT OF

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This study was the work of a team which included at various times Penelope K. Trickett, Moira P. Rose, G. Brian Jones, and William E. Stilwell, as well as the authors.

David G. Hawkridge
Project Director

SUMMARY

The aims of this study (which was a sequel to two similar studies of compensatory education programs) were to identify, select, analyze, and describe vocational education programs at the secondary level that had been successful in increasing the total placement rate when compared with other courses of instruction. The total placement rate was defined as the combined rate of placement of graduates in employment and further education.

It was expected that the study would provide descriptions of successful programs to serve as models for replication.

Through a literature search, mail and telephone inquiries, personal contacts, and other means, a pool was established of 445 programs thought to be likely candidates for the study. Most of the programs in the pool were recommended by professional vocational educators, either at State or local levels, or in universities, who suggested that these programs were worth reviewing. The evaluation of each of the programs in the pool was studied. In particular, questions were asked about the follow-up of graduates. Some 30 programs were site-visited by AIR to examine their problems of evaluation at first hand.

The AIR team was unable to show that any of the 445 programs met the study's criteria for success. Nearly one-half of these programs did not have comprehensive follow-up information on their graduates, making it impossible to determine the placement rates. An additional one-third of the programs had nearly complete follow-up records on their graduates, but no trends could be detected from their data, nor were suitable comparison groups of nonvocational graduates available for any of them. It became apparent that there were problems of evaluation design and data collection to be solved before any of the programs could show increases in total placement rate when compared with other courses of instruction.

In fact, the criteria of increased total placement rates of graduates in employment and further education, stated in strictly quantitative terms, were not at all useful in measuring the success of vocational programs.

Even if comparable, contemporaneous groups had existed, and even if complete follow-up of both groups of graduates had been possible, the criteria still would have to be supplemented by criteria which took into account qualitative placement factors, such as initial job earnings, on-the-job competency, job retention, progress within the job, and mobility within a range of jobs related to the training provided by the vocational program.

It was concluded that to obtain this relatively detailed information on graduates, more complex, fine-grained follow-up would be required. Furthermore, to insure an adequate response to follow-up requests, it was recommended that a properly randomized group of manageable proportions be selected from the program for follow-up, and that the same procedure be applied to select a comparable, contemporaneous group of nonvocational graduates. This type of design would permit factors outside the program which may be unstable over time (fluctuations in the local labor market, for one) to operate on both groups.

More comprehensive and fine-grained follow-up would permit far more detailed conclusions to be drawn about a program's relative success than is possible based on the comparatively coarse and subjective measures that are currently being applied.

Since many local vocational program evaluators are apparently eager to adopt improved evaluation procedures such as those recommended in this report, it was further recommended that training in evaluation design be provided to local evaluators.

INTRODUCTION

Background

The aims of this study were to identify and describe successful vocational education programs in American secondary schools. The programs described were to serve as models for school systems seeking to improve the quality of the education they offer.

These aims were established following the pattern of earlier studies by AIR, during which selected successful compensatory education programs were described (see Hawkridge, Chalupsky, and Roberts, 1968; Hawkridge, Campeau, DeWitt, and Trickett, 1969). The criteria of success for the compensatory programs were different from the criteria for this study, being based on cognitive achievement as measured by standardized tests. No compensatory program was accepted for description unless data available indicated that pupils in the program had achieved statistically significantly better gains on standardized tests than had controls, or than national normative figures.

The aims of the present study were also influenced by a study by Decker (1968). Decker's study aimed at identifying and analyzing effective vocational education programs for disadvantaged students in secondary schools, but used as its criteria of effectiveness reductions in dropout rates and increases in standardized test scores. In Decker's work, over 200 programs were examined but none could be identified as "truly exemplary." For the present study, the scope was widened to include programs not specifically for the disadvantaged, and the criteria were altered, as will be shown under the next section of this report.

Limits of the Study

Vocational education programs have been funded by several Federal agencies, as well as by States, local school districts, and private bodies such as foundations. The study did not include those programs funded by the Department of Labor, the Office of Economic Opportunity, or similar labor-oriented agencies at State or local levels, but restricted itself

to programs operating in publicly or privately owned schools. Thus programs such as the Neighborhood Youth Corps and those funded under the Manpower Development and Training Act were omitted.

In order to avoid replication of effort, the study did not collect data from programs already subject to scrutiny by Project METRO, a major survey now being conducted, and referred to below in the discussion on normative data.

The study was further limited to vocational education programs in secondary schools, and specifically to programs serving pupils in grades nine through twelve. (In an ungraded program, the age of 18 years was taken as the upper limit.) Programs that terminated before 1964 were not considered.

Programs mainly developed for social rehabilitation of handicapped or delinquent youth were omitted from the study as it seemed very likely that any described would not provide models suitable for generalization to pupils not in need of such rehabilitation.

No geographical limits (within the nation) were placed on the study by restraints of time or funds. If the initial screening had yielded more programs which looked likely to meet the criteria, they could have been visited and closely examined.

Naturally, the study was limited most by its criteria. The primary criteria were related to follow-up of graduates of vocational programs; thus the search for programs which might meet these criteria was directed towards the more likely candidates, as will be demonstrated under Methods and Procedures below.

Related Research

This section of the report will review literature dealing with evaluation of vocational education. Its main purposes are to point out the present state of evaluation in vocational education and the kinds of problems which have frustrated such assessments.

A few readers may already be familiar with this literature and with the problems which characterize vocational program evaluation, but others are urged to read this review. It contains some very important points which are related to the way the AIR study was planned and the way it turned out.

The review deals first with general statements about evaluation in vocational education and with evaluation criteria and procedures which have been proposed in the literature.

Next, the review describes specific evaluation methods used in three large-scale studies of vocational education. Findings are not dealt with at all because it was felt that for the purposes of this report, background in methods and procedures which have been used in evaluating vocational education would be more relevant and useful. Accordingly, descriptions of specific evaluation techniques are deliberately detailed to help the reader appreciate the care with which these three major studies were planned and the difficulties in implementation which were bound to affect the credibility of their findings.

Reviews of evaluation reports of single programs have not been included here, but three case studies of programs visited during this AIR study can be found in Appendix A.

Finally, this literature review is not a critical one. No attempt has been made to judge the success or failure of the evaluations or of the programs whose evaluations are described.

General statements on evaluation in vocational education. Coster and Ihnen (1968) reviewed program evaluation in vocational education and concluded that not only have "value judgments . . . weighed heavily in the assessments of objectives . . . [but] further, objectives have been

stated in rational rather than empirical terms. Rarely have objectives been stated as measurable products involving a component of time [p. 418]." The evaluation of vocational education, these authors charged, has been subjective rather than objective and has reflected more concern for the process of vocational education than for its product.

In 1968, the Advisory Council of Vocational Education published its general report (Advisory Council, 1968). Although this report covered a broader area than the Coster and Ihnen article, its conclusions with respect to program evaluation were very similar. For example, the report suggested that "objective dimensions should be developed at the Federal level, involving appropriate State and local representatives in order to provide an objective evaluative system that can be used in each of the States and which can be combined into a national evaluation [p. 139]." This suggestion indicated that in fact little work on an "objective evaluative system" had yet been done. In fact, the Council stated that because of the reporting systems used in vocational education, "it is difficult to assess exactly what has taken place [p. 139]."

The Council also recommended that each State conduct a periodic and statewide review and evaluation of its programs. "As nearly as we can determine, only a very few States have conducted a formal evaluation of their programs since 1917 [p. 203]."

The report of the Council showed that the funds allocated to research in vocational education were used for a wide range of activities, only one of which was evaluation, and that the actual appropriations have fallen short of the 10% originally allocated by the Vocational Education Act. In 1968, for example, only 6.8% of the funds were appropriated. In 1967, the appropriation was only 4.8% of the funds.

Sharp and Krasnegor (1966) surveyed the use of follow-up studies as evaluation tools. They found that follow-ups were common in some parts of the country but virtually nonexistent in others. Moreover, when follow-ups were conducted in certain regions, they often omitted some of the programs. Thus, follow-up coverage has been uneven. Graduates of certain

curricula such as trades and industry or agriculture were most likely to be followed, whereas graduates of other programs (e.g., home economics, health occupations) were least likely to be followed.

In addition, follow-up studies often did not yield as much information as they could. Sharp and Krasnegor noted that follow-ups would be more meaningful if vocational graduates were matched with similar non-vocational graduates. This might enable researchers to determine the effects of the different curricula. Moreover, most follow-up studies described the high school graduate at a certain point in time. Thus, no data about trends were available. If follow-up studies were conducted at regular intervals, researchers might have a better idea of the long-range effects of vocational education. The authors presented a model for effective follow-up studies which they hoped would produce more interpretable results.

On a smaller scale, Kaufman and Lewis (1968) surveyed reputedly successful vocational programs in three selected cities in Pennsylvania. A team of specialists visited the schools and prepared reports dealing with six aspects of the schools' programs. Kaufman and Lewis reported that for each of the programs the weakest aspect was evaluation, taking evaluation to mean follow-up studies. According to the investigators, the evaluations conducted by these better-than-average programs were not done satisfactorily or in a systematic manner.

Evaluative criteria and procedures proposed in the literature. The need for evaluation procedures to be built into a program from its inception was emphasized by Sweany (1966), who said that programs should be planned so that they insure adequate feedback to the teacher about the effectiveness of the curricula. Sweany suggested various goals and characteristics of vocational education programs which might be evaluated.

Bushnell (1966) also stressed that only through evaluation can vocational education be improved. He pointed out that without evaluation one cannot select the most effective techniques and programs. Future areas of research on vocational education were suggested in his article.

Loomis (1969) indicated that the long-range objectives of vocational

education were not clearly understood. This weakness was sometimes reflected in uncoordinated efforts and weak leadership. To combat these problems, Leonis suggested that a greater stress be put on feedback and evaluation systems. He specified eight factors which determined program effectiveness, including the relevance of high school training to formal on-the-job training and the extent to which the program relieved unemployment. The initiation of follow-up procedures was suggested.

More specific suggestions have been given by other authors. Popham (1969) reviewed the criteria generally used by vocational-technical teachers to evaluate curriculum materials. He considered the criteria inadequate and proposed that new criteria emphasizing behavior change and learning be deve-oped and used.

Hurt and Barkley (1969) presented detailed suggestions concerning the assessment of various home economics programs. Their paper included a step-by-step analysis of the evaluation procedure. Types of evaluations and program criteria were also discussed. To determine the long-range effectiveness of home economics programs, the authors suggested using a longitudinal follow-up procedure. Graduates should be evaluated at various intervals; they could then be compared to a similar group of former students who did not take the program. Suggested reading for anyone interested in performing evaluations was also provided.

Byram and McKinney (1968) have written a manual for evaluation of vocational education at the local school level. They suggested many kinds of assessments, such as employer feedback and citizens' committee appraisals. Follow-up as a form of evaluation was considered in detail. Readers were told how to conduct a follow-up and what kinds of information to expect a follow-up to provide. In addition, the manual's appendixes included forms and instruments developed as evaluation tools for local vocational schools.

Methods employed in major evaluation studies. Kaufman, Schaefer, Lewis, Stevens, and House (1967) surveyed nine communities in Maryland, Ohio, Pennsylvania, and New Jersey. The stated purpose of the study was to assess vocational education as compared with other high school offerings and to determine the extent to which vocational education was meeting the

needs of the students and the community. The investigation concentrated on three major issues: the adequacy of vocational education, the image of vocational education, and vocational education for groups with special problems. Data on these issues were collected from four different sources. First of all, the programs themselves were examined by an independent team of experts. In addition, graduates of the vocational program were followed, interviewed, and compared to graduates of academic and general programs. Interviewers talked with employers who had hired graduates of the programs; union officials were also interviewed.

The nine communities were chosen because they had vocational education programs commended by professional educators. (Kaufman et al. do not say whether the academic and general curricula used for comparison were also considered to be better than average.) Three large cities (500,000 or more population), three medium-sized cities (100,000-499,999), and three small cities (25,000-99,999) were selected.

Selection procedures were different for high school graduates in the small and medium-sized cities than for high school graduates in the three large cities. In the small and medium-sized cities the investigators went through the school follow-up records of the graduates of classes 1960 through 1964. All of the graduates who had gone on to college were eliminated. Of the remaining students, they selected 900 in each city to be sent letters requesting participation in the study. These students were selected so that approximately one-half of them would be vocational education graduates, one-fourth would be academic curriculum graduates, and one-fourth would be general curriculum graduates. From the 900 letters, approximately 600 contacts were expected. This prediction proved to be quite accurate. Sixty-eight percent of those sent letters returned the enclosed reply card. The remaining 32% of the graduates were not sampled. In total, 2,831 graduates were selected in this manner for interview (in person or by mail, see Chapter 2, page 5.

In the three large cities the investigators anticipated that they would have difficulty locating and interviewing high school graduates. They therefore decided to combine the graduate and employer interviews by writing to various employers and asking to interview them and three of

their employees. (The selection of employers is discussed below.) Employers who had agreed to the interview were asked to supply employees who had been graduated from the selected high schools between 1960 and 1964. If such graduates were not available, other graduates of the cities' schools were selected.

Kaufman et al. report that this technique yielded enough graduates in two out of the three large cities but was less successful in the third. Therefore, in the third city a direct follow-up of high school graduates was conducted. This method was so successful that the number of interviews obtained in this city was increased to 1,249 in order to offset the lower number in some of the other sample cities. Kaufman et al. do not report how this substitution was accomplished; however, since these investigators reported that they had adequately sampled the other two large cites (in which the average number of interviews was 591), it seems likely that the increased sampling of the one large city offset the lower number of interviews in the six smaller cities. For the six smaller cities the number of interviews had averaged only 470.

In the small and middle-sized cities, letters were sent to all major employers asking for interviews. Thirty-nine percent of the employers agreed to cooperate.

In the three large cities, the investigators got lists of employers from the State employment security office. The employers were grouped by their major Standard Industrial Code classifications and the percentage of the labor force in each of the classifications was calculated. Employers were then selected from each classification in proportion to its contribution to the total labor force. By this method, large businesses were selected for sampling. In order to sample smaller businesses as well, ten types of small businesses (e.g., beauty shops, radio and television repair shops) were selected for sampling. Ten employers in each of these businesses were selected randomly from the telephone directory yellow pages and asked to cooperate. One hundred small businesses were contacted in this way. Since employers in large cities were asked both to be interviewed and to let three of their employees be interviewed, the researchers were not surprised when only 21% of the employers contacted in this way agreed to cooperate.

Lists of unions were not randomized or controlled in any way. The investigators simply asked the school which was being evaluated to furnish the names of any union officials of whom they knew. In some cases the school officials did not know the unions and did not know where to obtain a list of them. The investigators had wanted to contact 5 to 10 officials in the small cities, 10 to 15 in the medium-sized cities, and 15 to 20 in the large cities. They reported that they were unsuccessful in this attempt. In all, 90 officials were contacted. Kaufman et al. did not state which cities (or what size cities) these union officials represented. The average rate of reply was low, and this rate varied from city to city.

One of the two purposes of the survey was to study and assess vocational programs and the extent to which they were meeting the needs of the students and the community. In order to meet this objective, the investigators sent out an independent team of experts to evaluate the selected programs. The team prepared a narrative report on each program studied. In addition, to provide for uniform assessment, an evaluation instrument was developed. In its final form it consisted of several hundred rating scales which applied to various aspects of the programs.

The second objective of the study was to assess the vocational-technical curriculum as compared with other high school offerings. To make this assessment, high school graduates, employers, and union officials were questioned. Most of the high school graduates located were interviewed. They were asked questions about their high school experience and about the jobs which they had held since graduation. The more mobile graduates were not interviewed; instead they were mailed a questionnaire which was essentially a simplified and shortened version of the interview. The questionnaire also included a set of questions on geographic mobility which was not included in the personal interview. More than 11,000 graduates were mailed questionnaires and 30% of the questionnaires were completed and returned. Kaufman et al. made a comparison of the mail and personal interview data to detect similarities in responses obtained by the two methods.

If a graduate was interviewed, his direct supervisor was asked to fill out a Supervisor's Rating Scale. The supervisor rated the graduate on his job preparation and job performance. Graduates who were sent questionnaires did not get a supervisor rating.

To assess the image of vocational education, employers and union officials were interviewed whenever possible. In addition, questionnaire information was solicited from those who were interviewed. Labor leaders seemed reluctant to grant interviews. Kaufman et al. noted that even when interviews were conducted with union officials, many proved incomplete because the attitude scales which the interviewer left with the union official were rarely completed and returned. Whereas 52% of these rating scales were returned by employers interviewed, less than 5% were returned by union officials. In total, 658 employers and 77 union officials were interviewed.

Eninger (1965) selected and studied a random sample of 100 schools geographically stratified throughout the United States. The study tried to fill two needs. First, Eninger's survey covered all geographic regions of the country except Alaska and Hawaii in order to permit generalizations to be made about vocational education in the United States. Second, the survey began in 1963--the year that the Vocational Education Act was passed by Congress. Eninger studied graduates of the classes of 1953, 1958, and 1962. By describing vocational education as it existed before the 1963 Act, Eninger sought to provide a norm against which changes in vocational education could be measured in the future.

The study described the post-high school experience of vocational curriculum graduates. It compared vocational and academic course graduates from the same school and graduating class in terms of post-high school occupational, educational, and related experiences. In addition, the study considered several broad issues: How does choosing a general or a vocational curriculum affect a student's post-graduation experiences? What are the differences between graduates of vocational and comprehensive high schools? Does the size of the high school attended affect the graduate's future? In what ways do year of graduation, geographical region,

post-graduation mobility, and race affect post-high school occupational and educational experience?

The survey covered 50 vocational and/or technical high schools and 50 comprehensive high schools offering three or more programs of trade and industrial education. Schools were stratified according to total enrollment, type of school (vocational-technical, vocational, technical, comprehensive), and geographic region. They were then randomly selected within each stratification category.

Geographic stratification was done by portioning the United States into eight regions and calculating the percentage of the national population in each part of the country. Schools in each region were then sampled in proportion to their population. For example, New England contained 10.8% of the national population and represented 11% of the students in Eninger's follow-up. The total enrollments of the sample schools and the type of school represented also closely paralleled the proportion of such schools in the total population.

Questionnaires were mailed to 10,758 trade and industrial (T & I) curriculum graduates and 3,494 academic curriculum graduates. Only males were surveyed since they seemed more likely than females to be employed and seeking employment ten years after high school graduation. For each school the maximum number of graduates to be sampled was calculated. This number was a function of the number and kinds of vocational programs offered by each school. Whenever possible, the research personnel tried to sample an equal number of graduates from each T & I course offered.

One survey questionnaire for academic graduates and another for vocational graduates were developed. A number of vocational educators were asked to review the questionnaires and to suggest necessary changes. The instruments were also pretested on local high school graduates to insure that the questions were easily understood and not open to misinterpretation. The questionnaires lent themselves to a longitudinal or historical analysis rather than a point-in-time description. For example, a graduate was asked to report on his job history rather than on his current job only. The questionnaires covered three general areas: occupational history, educational history, and present interests, activities, and affiliations.

At this point, two pilot studies were conducted to determine the best ways of getting a high return rate on the questionnaires. Subjects for these pilot studies were 1953, 1958, and 1962 graduates of nearby comprehensive and vocational schools. In the first pilot study, they were sent either long or short questionnaires, and they were either offered or not offered a material incentive to return the questionnaires. Neither the length of the questionnaire nor the offering of an incentive had a significant effect upon the return rate. However, the year of graduation did significantly affect the return rate of those graduates successfully contacted; the more recently a person had been graduated from high school, the more likely he was to return the questionnaire.

The second pilot study compared (a) the effects of the high school letterhead versus the research institute's letterhead in the introductory letter and (b) the effects of a closely massed mailing schedule of six reminders versus a more widely spaced schedule. The research letterhead and the massed mailing schedule were found to be effective for increasing the return rate.

The information reported in the main study was based on a 50.5% return rate from vocational graduates and a 51.5% return rate from academic graduates. Those people who were sent questionnaires had been carefully selected to be representative of vocational and academic curriculum graduates. However, since half of the selected graduates did not reply, it was quite possible that those who did complete the questionnaire were not totally representative of vocational and academic education graduates. Eninger considered this problem carefully and in detail. An analysis of the returns revealed several biasing factors.

As the pilot tests had indicated, the more recent the student's graduation, the more likely he was to be sampled. Graduates of the class of 1953 were least likely to be contacted and also least likely to to return the questionnaire when located.

In addition, there were significant differences between schools in terms of percentages of returned questionnaires. For example, for the class of 1962, one school reported a return rate in the 91-100% range. On the other hand, for that same class, another school reported a return

rate in the 11-20% range. Obviously, one school was being over-sampled while the other was not sampled enough. These differences between schools were even more striking for the classes of 1958 and 1953. Moreover, when these differences were based on the number of graduates assumed to have been contacted, the range of differences was even greater.

Factors responsible for the between-school differences in the return rate of questionnaires included geographic regional differences, size of school, type of school (vocational or comprehensive), graduates' loyalty to the school, type of curriculum chosen (vocational or academic), and race of graduate.

This selective bias in the return rate meant that the graduates who returned the questionnaires represented a very different set of people than the group composed of all the students who were sent the questionnaires.

To reduce this bias Eninger employed a sample correction procedure. Questionnaires had not been received from two groups of graduates--those who had never been successfully contacted (address-unknown cases) and those who had been contacted but who had never returned the completed questionnaire (nonrespondent cases).

In order to reduce the first source of bias, a random sample of address-unknown cases was selected. The research personnel then intensified their efforts to locate these graduates and to obtain a completed questionnaire from them. From these selected graduates the researchers hoped to get a completion rate of 90% or better. The small sample obtained this way could then be taken as an estimate of what the returns would have been like if all of those not located had been able to return questionnaires. Similarly, the researchers intensified their efforts to get a small, randomly selected group of nonrespondents to complete questionnaires.

In the study a 5% sampling was taken of address-unknown cases. This meant that if 100 vocational curriculum graduates of the class of 1962 were not located, the investigators randomly selected five 1962 graduates and then intensified their efforts to locate and get completed questionnaires from them. These five responses would then be counted as 100 responses on the assumption that they were typical of the address-unknown graduates.

By this means Eninger sought to reduce the bias in his follow-up information. He points out, however, that this correction procedure is not perfect. If the randomly selected sample is not typical of the population it is seeking to estimate, any error or bias is multiplied many times. Thus, although the correction procedure tends to reduce bias, it probably does not eliminate it.

Eninger also noted another source of potential error in the correction procedure. Whereas the uncorrected sample consisted only of questionnaire responses without any interaction with research personnel, many graduates in the correction sample gave their responses with the aid of an interview. These two slightly different information-getting techniques might very well have influenced the answers received. For example, a graduate might have been more inclined to divulge certain kinds of information in an impersonal questionnaire than in an interview.

Although these difficulties were recognized, they were impossible to circumvent. Eninger stated that no feasible alternate procedure existed. Because of the problem of systematic biases both in the corrected and uncorrected sample data, both sets of data were presented in the report.

In 1966, Altman and Morrison reanalyzed Eninger's data. Eninger's emphasis had been on evaluating the post-high school experiences of T & I program graduates as compared to academic program graduates. He had not evaluated specific high school vocational education programs nor had he been interested in qualitative differences between vocational programs given by the various schools. Altman and Morrison wanted to identify characteristics of successful vocational and comprehensive schools and to compare these with characteristics of relatively unsuccessful schools. They aimed especially at finding community factors and school-community interactions which were related to the success of the school. They stressed those characteristics of the interaction which could be controlled by the schools.

Eninger had collected extensive follow-ups on graduates of 50 vocational and 50 comprehensive schools. The later investigators immediately eliminated 16 of the vocational schools and 18 of the comprehensive schools from their study. Twenty-seven of these schools had fewer than 15 graduates

in T & I each year. This number was too small to provide stable placement indexes for these schools. Three more schools were not considered because most of their graduates were Negro and had relatively unsuccessful placement. No matching Negro schools with good placement could be found. Finally, the investigators eliminated four schools which were located in large metropolitan areas where a meaningful network of community organizations and school-community relationships could not be established.

From the remaining schools, the researchers selected the eight vocational and the eight comprehensive programs whose graduates were the most successful. In a similar manner, they picked 16 relatively unsuccessful programs.

As criteria for success, Altman and Morrison used four measures indicating the successful placement of graduates. These measures estimated initial placement time, the relatedness of jobs to initial training, job satisfaction, and job security. Each measure was computed for the individual graduates. The school's score was the average score for all graduates from whom these data were available. Only graduates of the class of 1962 were considered. Their experiences seemed to be the most relevant since information about the schools and communities only began to be collected in 1965.

Once the appropriate schools had been selected, at least five people were interviewed at each school: the principal, the coordinator of the T & I curriculum, the head of placement, a guidance counselor, and a teacher.

Employers of the 1962 graduates whose questionnaires were used were also interviewed. In addition, local firms which might be expected to employ T & I graduates were also contacted. For every trade that the school taught, the Employment Security Office identified potential employers. Then the employers were categorized with respect to the number of people they hired in that trade. At least one employer of large, medium, and small numbers of T & I graduates was interviewed.

For every T & I course offering of the school, one labor union representative was interviewed. This representative was generally the

union president or business agent. The appropriate union located nearest to the school was selected.

In order to choose the most relevant community organizations, the investigators made a ranked list of nationally prominent "service, civic, social, and fraternal organizations whose objectives logically implied the possibility of influence on the placement and employment experience of school graduates [p. 6]." In each community the interviewers selected the ten organizations which were highest on the list and available in the community.

In all communities the manager of the local Employment Security Office was interviewed.

At this point the investigators pulled together all the material they had collected and used a variety of statistical and analytic techniques to find relationships between the school-community interaction and the employment success of graduates. The result of this analysis was a lengthy consideration of the characteristics of the schools, the characteristics of the community institutions, and the nature and frequency of contacts between the schools and their communities.

Decker (1968) was also interested in identifying the characteristics of successful vocational programs; however, his investigation differed from that of Altman and Morrison in several important ways. First, Decker was concerned only with vocational programs for disadvantaged youth. His definition of disadvantaged incorporated definitions used by the Office of Economic Opportunity, the Office of Education, Title I (ESEA), and the Division of Vocational and Technical Education of the Office of Education. These definitions took into account economic deprivation, educational background, health, cultural isolation, and lack of motivation. Second, Decker, unlike Altman and Morrison, did not have previously collected data available to him. Because he did not have this storehouse of information, both his selection procedures and his criteria had to differ from those employed by Altman and Morrison.

Altman and Morrison had looked at 66 programs reviewed by Eninger and had selected 16 "good" programs, with "good" defined on a relative scale.

Of those programs reviewed by Eninger, the 16 "good" programs were better than the 50 other programs. Thus, these "good" programs were not necessarily the best programs in the country.

Decker tried to use an absolute criterion rather than a relative one. First, he said that an effective program should "have been in existence for some period of time, ... have been able to demonstrate reasonably well in about every criterion selected for study, and show a marked change and/or improvement in student behavior and achievement [p. 7]." Next, he searched for such programs. Obviously, Decker's search techniques differed from those employed by Altman and Morrison, who looked at programs Eninger had previously selected as typical of vocational education. Decker was not limited to information already collected. He reviewed more than 200 vocational education programs before selecting 40 for close study. To locate programs, Decker contacted State directors of vocational education, staff members of the U.S. Office of Education, foundation executives, and professional associations. Information about programs was gathered through mailed questionnaires, telephone queries, literature searches, interviews, and site visits. MDTA, Neighborhood Youth Corps, and Job Corps programs were excluded.

Decker had difficulty in applying his criteria; he also pointed out the lack of time for the study. The investigation started on March 11, 1968, and in late May the schools began to close. During these two-and-a-half months, the research team had to identify and screen programs. In addition, seniors in the programs selected for intensive study had to be tested. The problem was compounded by the Easter vacation and the April disorders which closed schools in several of the cities studied. Many programs had to be excluded because they could not provide sufficient data by June 5, 1968.

Research teams selected 40 programs to visit. To collect information in a standardized fashion, interview guides were developed. Interviewers collected information on the characteristics of the program, the students served, the enrollment procedures, and the administration of the program. The visiting team observed the students, facilities, and "climate" of the schools.

To evaluate the programs objectively, the team looked at placement statistics, dropout rates, student achievement, and program costs. Seniors were given Stanford Achievement Tests. The school was provided with a data reporting form for each student in the program. The school first listed the student's age, race, and sex. The form asked for the kind of program in which the student was enrolled and the student's scores on standardized tests before and after being enrolled in the program. Information about the student's IQ, grade-point average, and personality could also be included.

After this information was collected, programs were grouped in terms of the students they served. These categories included inner-city dropouts, rural and small-city dropouts, mentally retarded youth, delinquents, and non-English speaking students.

The primary criteria used by the research team referred to the program's impact on educational achievement, and on job training and placement. In order to study achievement, the team usually relied on a preprogram-postprogram comparison. Seniors in the graduating class of 1968 were studied. When preprogram achievement data were not available for this population, the researchers tested students in grades 10 and 11 and compared their scores to the scores of the 12th graders. The researchers had wanted to compare school-administered tests with Stanford Achievement Test results, but they were often unable to do this since many programs did not administer tests.

In order to evaluate the program's placement procedures, the researchers compared the achievement scores of students placed in low-skill jobs and students placed in high-skill jobs. The investigators were looking for a correlation between achievement in school and placement in a skilled job. The team also looked at the placement and achievement of students of different sexes and ethnic groups within the same program.

A cost-benefit analysis of each program had been planned, but the investigators were hampered by lack of time and data. Many programs did not have follow-up information about the earnings of their graduates. Some of these programs were in their first year of operation; others had never conducted a follow-up.

In addition, cost-per-student information was often unavailable. In some cases the investigators could not have access to this information because of school board disclosure policies; in other cases, the amount spent for one particular project could not be determined from the available information.

Because of these problems, the investigators decided to compare the cost per pupil of programs for the disadvantaged and regular high school programs. This information was gathered from 7 intensively studied programs and 32 programs not intensively studied.

Of the 40 programs intensively studied, 30 were chosen as case studies to be included in the report.

* * *

It should be clear from the above review of related research that evaluations of vocational education have encountered considerable problems. Many of the same problems are reflected in the findings and conclusions of the AIR study reported on the following pages.

The next chapter of this report deals with the methods and procedures employed in the AIR search.

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METHODS AND PROCEDURES

Selecting Programs for the Study

During the first months of the project, various techniques were used to search for leads to promising vocational programs. These techniques included a computer-based search of ERIC materials, a general literature search, consultation with experts, mail inquiries, and notices in appropriate educational journals requesting program information.

A record-keeping system was devised for identifying and describing the vocational programs. Three kinds of cards were prepared for each program: bibliography cards, program personnel cards, and program description cards. The bibliography cards gave author, title, and publication information for program documents. The program personnel cards provided names and addresses of persons who could be contacted for further information. The program description cards provided a place to record basic program information.

The computer-based search of ERIC materials. The most rapid, comprehensive, and efficient way of identifying relevant vocational programs was the ERIC/DIALOG Online Retrieval System. The system's hardware consisted of a terminal (with a keyboard input and video display) coupled to computer storage containing the material to be searched. The terminal was housed in the ERIC Clearinghouse for Educational Media and Technology at Stanford University. The computer, containing an ERIC data base of more than 12,000 report citations (from issues of Research in Education through December 1968) was housed at Lockheed Missiles and Space Company facilities in the Stanford Industrial Park, Palo Alto.

Commands were typed on the terminal keyboard in DIALOG retrieval language to define the nature of the search. These commands were the index terms used in ERIC. The computer relayed, via the terminal's video screen, the number of documents it had identified for each command term. For example, in the ERIC data base there were 765 references for the index term "vocational education."

Next, the computer was told that the AIR user was interested in only some of those references. In this operation, called the "coordinate search

technique," the computer was commanded to combine certain sets of references identified by individual index terms. The result of such a combination was a new, smaller set of references which fitted the combined terms.

At any point in the search, an additional feature of DIALOG allowed the user the option of viewing index terms alphabetically adjacent to the entered term. That is, a portion of the relevant page in the ERIC index term dictionary could be displayed on the screen. The user could scan the display, select terms, and expand the search to include index terms which had not occurred to him initially.

Through all of the procedures described above, increasingly relevant sets of documents were identified. Because the AIR user was in direct communication with the computer, results were available in seconds or minutes instead of days or weeks. Once the desired references were displayed, the computer was commanded to print out a permanent record.

Additional literature search. Because the computer data base included only those documents entered in ERIC by December 1968, a search of the 1969 issues of Research in Education was completed. Over 570 abstracts of documents dealing with vocational education were examined. Thirty of those documents referred to specific vocational programs for high school students, but only 20 of those programs had been evaluated. An examination of issues of Abstracts of Research and Related Materials in Vocational and Technical Education (ARM) and of Abstracts of Instructional Materials in Vocational and Technical Education (AIM) from 1967 to the present was completed. Both of these publications are specialized supplements to Research in Education. The AIM index is published at the Center for Vocational and Technical Education in Columbus, Ohio; issues of AIM were examined during a visit to the Center by an AIR staff member. The search of the ARM and AIM indexes yielded a few more high school vocational programs which had been evaluated.

In addition, 1968 and 1969 issues of Vocational Guidance Quarterly and American Vocational Journal were reviewed for names of the most recent high school vocational programs which had been evaluated. This review

helped in identifying a few programs. Some additional programs were found during the review of general materials and books about research and theory in vocational education.

Consultation with experts. An initial AIR planning meeting was held during the first month of the study. At this meeting, project staff became acquainted with other vocational education research projects undertaken by AIR. At this meeting possible criteria for program selection were discussed, and opinions about the current methods and problems of evaluating vocational programs were expressed.

During the second month of the study, while the literature search continued, an AIR staff member interviewed several experts in the field of vocational education. A list of persons visited is presented in Appendix B. The main purpose of these visits was to discuss criteria for selecting promising vocational education programs. Also, some specific projects which had been evaluated were identified, and new sources of information were uncovered.

Concurrently with the above visits, Dr. Robert Darling and Dr. Robert Barnes of the Vocational Education Section of the State Department of Education in Sacramento, California, consulted with the Project Director at the Palo Alto office of AIR. At this time, many avenues for finding promising vocational programs were explored.

A two-day conference of experts in vocational education was held at AIR's Palo Alto office during July, the third month of the study. (See pages 30 to 35 for details of this conference.) While the main purpose of the conference was to discuss the criteria for the study, the experts provided names of other institutions and individuals to contact about specific programs.

Mail inquiries to administrative units. During the third month of the project, about 160 letters were sent to State Departments of Vocational Education, to State Research and Coordinating Units, to State Advisory Councils, and to private foundations such as the Carnegie and Ford Foundations. This initial mail inquiry, based on names and

addresses provided chiefly by the Bureau of Vocational and Technical Education at USOE, asked for names of promising vocational programs at the secondary level. The letter was modified after the AIR conference with experts to include the main selection criteria: placement of pupils in jobs or further education. Many leads to promising vocational programs were received from these administrative units.

Notices in appropriate journals. A notice was placed in several publications requesting persons to contact the Project Director if they knew of programs at the secondary level which had been successful in placing pupils in employment or further education. American Vocational Journal, School Shop, Phi Delta Kappan, and the Vocational Guidance Quarterly were among the journals which carried this announcement.

Mail and telephone inquiries to specific programs. With the aid of a Magnetic Tape Selectric Typewriter, over 500 letters were written to specific programs identified by the various search techniques already described. The purpose of the letters was to ask program personnel to state whether or not they had records which would show that their program had increased the numbers of pupils who were placed in jobs or who continued on to further education. Follow-up telephone calls were made to the personnel of specific vocational programs who did not reply to our letter or who provided inadequate information. Over 250 telephone calls were necessary to track down such nonrespondents.

Site visits. In the event that a program still looked promising after studying available documents and communicating with program personnel, arrangements were made for a site visit by a two-man AIR team. The team talked with program personnel, following a flexible routine which concentrated first on obtaining information on the evaluation. While at each site, the AIR staff searched for comparison data by contacting local branches of State employment offices, or any other sources suggested by local program personnel. A more detailed discussion of attempts to locate comparison or control data can be found on pages 38 to 41.

If the evaluation of the program's success seemed reliable, the team would then obtain a more complete description of the program's overall operation. Although none of the programs visited could show that the primary criteria for this study had been met, complete descriptions of a few programs were collected as valuable background for other sections of this report.

Establishing Criteria

The original criteria suggested for this study stated that the search would be for programs which had been successful in one or more of the following ways:

(a) improving retention rates (i.e., decreasing dropout rates);

(b) producing measured benefits of achievement;

(c) assuring the employability of graduates.

This section of the report will deal with how these criteria were modified and refined.

During the first two months of the contract (May and June 1969), the three original criteria were discussed at length by AIR staff. In mid-May, for example, in order to avoid unreliable data, "measured benefits of achievement" was interpreted to mean benefits of cognitive achievement as measured by standardized tests. The AIR staff believed that the most reliable data would be available from such tests.

The original wording of (c), "assuring employability," implied that a program should guarantee jobs for every one of its graduates. This seemed an unrealistic criterion, since placement rates are subjected to many influences beyond the sphere of a program itself. On the other hand, model programs would be expected to show positive trends in placement. "Assuring the employability of graduates" was therefore altered to read "increasing the employability of pupils." Subsequently, the phrase "or raising the proportion of pupils proceeding to further education" was added to (c), because expanding opportunities for further education in America have prompted vocational education programs to persuade graduates to continue their education. A model program should be successful in increasing the total placement rate, including those going into further education as well as those going into jobs.

If a model program is to be <u>better</u> at placing its graduates in further education or employment than are other programs or institutions operating under similar conditions, then comparisons must be made.

Without a comparison being drawn between what a new program can do and what previously existing services and facilities can do, there is no basis for choosing between the new and the old.

The AIR views of the criteria were influenced during May and June by meetings with officials of the Bureau of Vocational and Technical Education at USOE, with staff of the Center for Studies in Vocational and Technical Education at Madison, Wisconsin, and of the Center for Vocational and Technical Education at Columbus, Ohio, and with Dr. Louis Dacker and Dr. Max Eninger.

In the third month of the contract (July 1969), a conference was held at Palo Alto, attended by the USOE project officer, the AIR project staff, and five consultants prominent in the field of vocational education (see Appendix B). At the conference there was considerable discussion of the criteria. AIR staff pointed out that the study should not have criteria that would result in no programs being shown as successful, any more than it should have results showing all programs as successful. Each of the criteria for the study was discussed in turn. Some of the remarks of the Project Director should be quoted at this point:

"Measures of achievement: We understand that USOE would like us to regard standardized tests as the measures of achievement in this study. Standardized tests have several characteristics: they are composed of items which have been carefully selected as measuring performance of pupils in certain ways; they have been field tested on large normal samples; the method of administration for each is exactly and unambiguously stated; careful instructions are given for scoring them; population norms are normally established for them; their reliability and validity have been determined, and are known to be high. They include tests of skills, abilities, achievement, and performance.

"Our preliminary studies of vocational programs indicate that standardized tests are not widely used in them. In many instances they are not considered appropriate; standardized tests at present available usually measure types of educational achievement which are not central to the goals of vocational programs. Perhaps they should be; after all,

reading skills are essential to many courses in vocational education. But unless standardized tests have been used in a fair number of vocational programs, they are of little value as a criterion of success.

"Buros' Mental Measurements Yearbook contains many unstandardized tests relating to vocational education. Unfortunately, few are used at all, and the ones that are used seem to be specific to only a small number of localities, usually including those of their authors!

"No doubt there are many locally constructed tests that have been used but which have not reached the pages of Buros. Some of them are excellent, and may grant entry to certain trades to those who perform well on them. Many professional and technical associations have devised their own examinations, of course.

"There are undoubtedly many direct measures of achievement in vocational education, but all except standardized tests lack national recognition or national norms.

"We are well aware of the shortcomings of standardized tests, particularly for measuring achievement at the tails of the distribution, as in compensatory education programs. Standardized tests still represent, however, the best single group of predictors of scholastic performance which we have. Their prediction of on-the-job performance by those who leave high school is not very good, but we have no better in-school measures. To argue at this stage that other measures should be used is a waste of effort, since others have not yet been developed. On the other hand, we should be careful not to overvalue present standardized tests so that funds do not become available to develop better ones.

"If standardized tests are not to be used as the criterion of achievement in vocational education, what other measures are there? Certainly there are no other direct measures, applicable during the time a pupil is in the program (in school, that is) which can easily supplant the standardized tests.

"There are, of course, indirect measures of the program's success, and the other three criteria fall in this category.

"Dropout rates: Dropout rates, however they are calculated, can represent only one aspect of a program's success, and there is little evidence that a program's increased holding power is closely related to improved performance (or greater employability). The improvement of a dropout rate presumably shows that the program has succeeded in interesting pupils sufficiently for them to stay in high school instead of dropping out. But securing pupils' interest does not guarantee that they have been educated vocationally. If a program succeeds in persuading pupils that school is a better place than the working world, it may have merely postponed their crisis of expectation. It may simply preserve them a year or two longer within its protective pale without equipping them better to face what they must meet ultimately.

"But that is a very negative view, and there is only a little evidence (in the reports we hold) to support it.

"If we assume that a reduced dropout rate is a valid index of success, we must be sure that it is soundly computed, and based on reliable data.

"A pupil is considered as belonging to a class from the date he presents himself at the school until the time he permanently leaves for one of the causes recognized as sufficient by the State. The date of permanent withdrawal is the 'date on which it is officially known that the pupil has left school, and not necessarily the first day after the date of last attendance.' This definition is open to abuse, since officials can deny knowledge of a pupil's departure for months after he has really left, thus improving the dropout rate.

"USOE also lists 19 reasons for dropping out: physical illness, physical disability, mental illness, mental disability, behavioral difficulty, academic difficulty, lack of appropriate curriculum, poor pupil-staff relationships, poor relationships with fellow pupils, dislike of school experiences, parental influence, need at home, economic reasons, employment, marriage, pregnancy, other known reasons, unknown reasons, new residence (school status unknown). (Death of pupil is listed separately, not being a reason for dropping out.) Each of the 19 is carefully defined.

"This range of reasons raises some serious questions. Many of the reasons for dropping out are only partly connected with schooling; others have no connection at all. A program which fails to improve a dropout rate may have had to counter a sharp increase in jobs available to dropouts in the area. Another may have witnessed a general exodus of people from the school district.

"Thus changes in dropout rates need to be viewed against the background of what has happened in a school district during the lifetime of a program. Such details are not always included in the reports, and may be hard to obtain.

"Employability: This criterion seems to be the obvious one--the utilitarian one by which vocational programs should be judged. Can graduates of a given vocational program succeed in the world of work?

"Unfortunately, we are still faced with the question of what comprises success. Immediate employment? In what kind of job? How long retained in the job? Was the job related to the vocational training the pupils received? (Job advancement and acceptance of increased responsibility might also be considered.)

"What records of employment are available? What of graduates who cannot be traced? Is the local sample available likely to be a biased one?

"Eligibility for further education: Eligibility in this context may mean qualification or acceptance. We are talking about eligibility for, or actual enrollment in, further education.

Qualification: The Regents examination in New York State, or 12th grade completion certificates in many districts, or other paper certifications which are gained by high schoolers before proceeding to college, might be used as the criterion for qualification. The members in a program gaining qualifications would be counted.

Acceptance: Here there might be no qualification gained in some cases, but graduates would be admitted to institutions of higher or further education. Acceptance would be the criterion.

"The type of further education provided might be important. What qualified a pupil to be scored in this category? Part-time further education? Full-time? Episodic? Is formal registration enough or must attendance records be examined? Just as for employability, what is the state of the records likely to be available?"

In the general discussion of criteria at the conference, it was emphasized that success was relative, and that a program had to be considered in relation to its context for one to judge properly its success.

At the conference it was agreed that the ultimate criteria of success for vocational programs were: (a) placement in jobs related to the vocational training provided; and (b) enrollment in further education courses related to the vocational training provided. It was acknowledged, however, that placement in other jobs, and enrollment in other kinds of further education courses, should be considered as criteria too, since the overall aims of programs were to increase general employability and participation in further education. It was agreed that the primary criteria (ones that must be met by model programs) should be that the program examined had increased:

(a) placement in jobs; and

(b) placement in further education.

Some programs might induce greater increases in (a) than in (b), and vice versa. The AIR staff decided to use the term total placement rate for the overall percentage of graduates placed. Later, it was found that besides those placed in further education or in jobs there were some graduates who had gone into military service or had become homemakers, and a very few who were unemployed. Because the search was restricted to program graduates, that is, students who had completed twelfth grade, not many cases of unemployment were likely, a fact of importance later in the study.

The secondary criteria (ones that did not have to be met by model programs) were that the program examined had:

(c) improved attendance and retention rates; and

(d) improved scores on standardized academic achievement tests.

The task of establishing what constituted an increase in total placement [under criteria (a) and (b) above] was left to AIR. The project staff realized that total placement rates were very much open to the influence of local factors. For example, if the major employer in a small city opened a new factory during the life of the program, the total placement rate would be affected, and the program could scarcely claim full credit. Similarly, if a local junior college closed down for lack of funds, or dropped some of its courses, the total placement rate would be affected.

Ideally, it would be desirable to conduct a follow-up of graduates that would yield a 90% or greater return of replies, showing the total placement rates for both a program group and a suitable, contemporary comparison group. These might be termed the "raw" rates. The only independent variable in the evaluation design would be the treatment available to program and nonprogram students. Program students would be "matched" with nonprogram students on such variables as socioeconomic background, age, sex, and scholastic achievement. In such an ideal situation, a simple but appreciable (say not less than 5%) difference in the raw rates for the two groups, in favor of the program group, would be acceptable evidence of success.

It was supposed that increases in total placement rate might be detected in four ways:

(1) The ideal, experimental-control comparison (already described). An example is shown in Figure 1. It should be noted that three different "classes" are included in the graph in Figure 1. Of course, if the class varied from year to year, those variations should influence both program and control groups equally. Figure 1 shows the program succeeding in all three years, increasingly so.

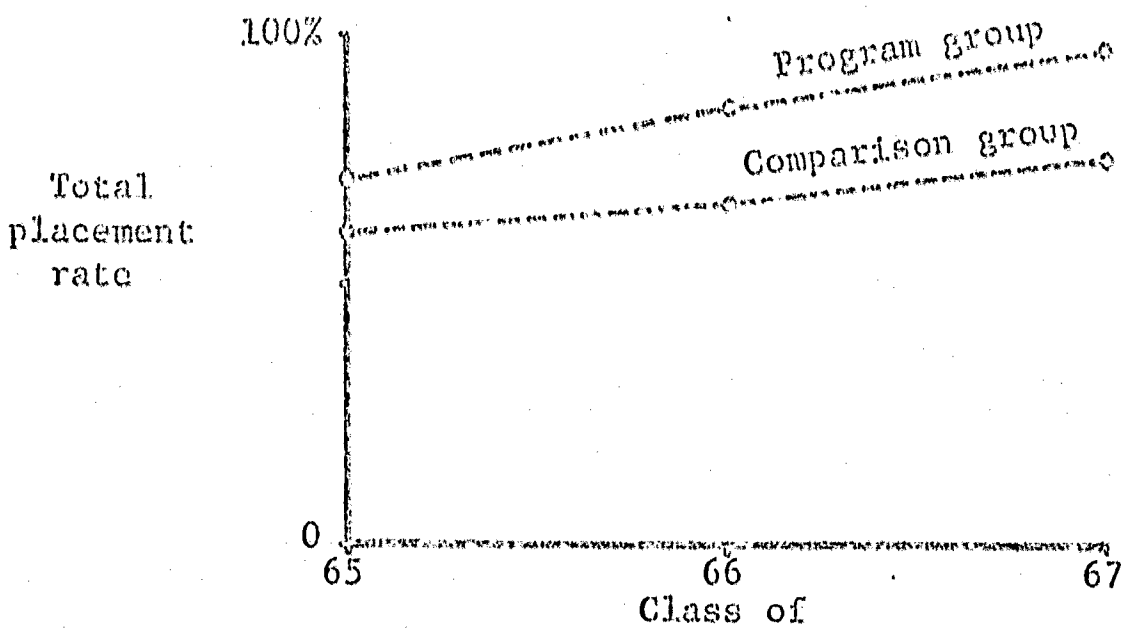

Fig. 1. Evaluation Type 1.

(2) The comparison between a program group and a similar group which graduated before the program began. Here is a case of different "classes" in different years being compared, a much more difficult task than the first kind of comparison represented. An example of the "raw" rates is shown in Figure 2.

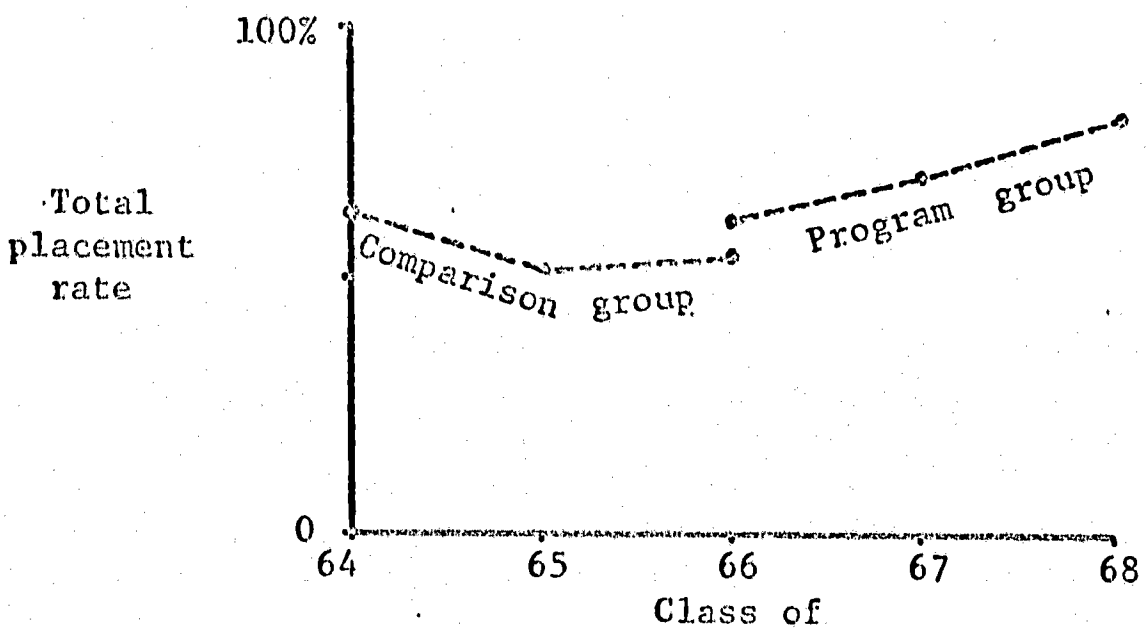

Fig. 2. Evaluation Type 2.

Such raw rates might be adjusted by factors shown in Figure 3, if any way existed to compute the exact influence of each of these factors upon the various graduating classes. To undertake such computation, it would be necessary first to have normative data, and second to assign weights. A search for normative data was indeed made by the project staff, as will be explained below.

(3) The comparison between placement rates for the <u>whole high school</u> during the program and before it. Again external factors that might have changed over time have to be taken into account if possible. This type of comparison raises even more problems than (1) and (2), however, since there may also have been factors operating differently on the nonprogram portion of the high school. Furthermore, the nature of the high school intake may have changed. Adjusted rates are essential if this type of comparison is to be made.

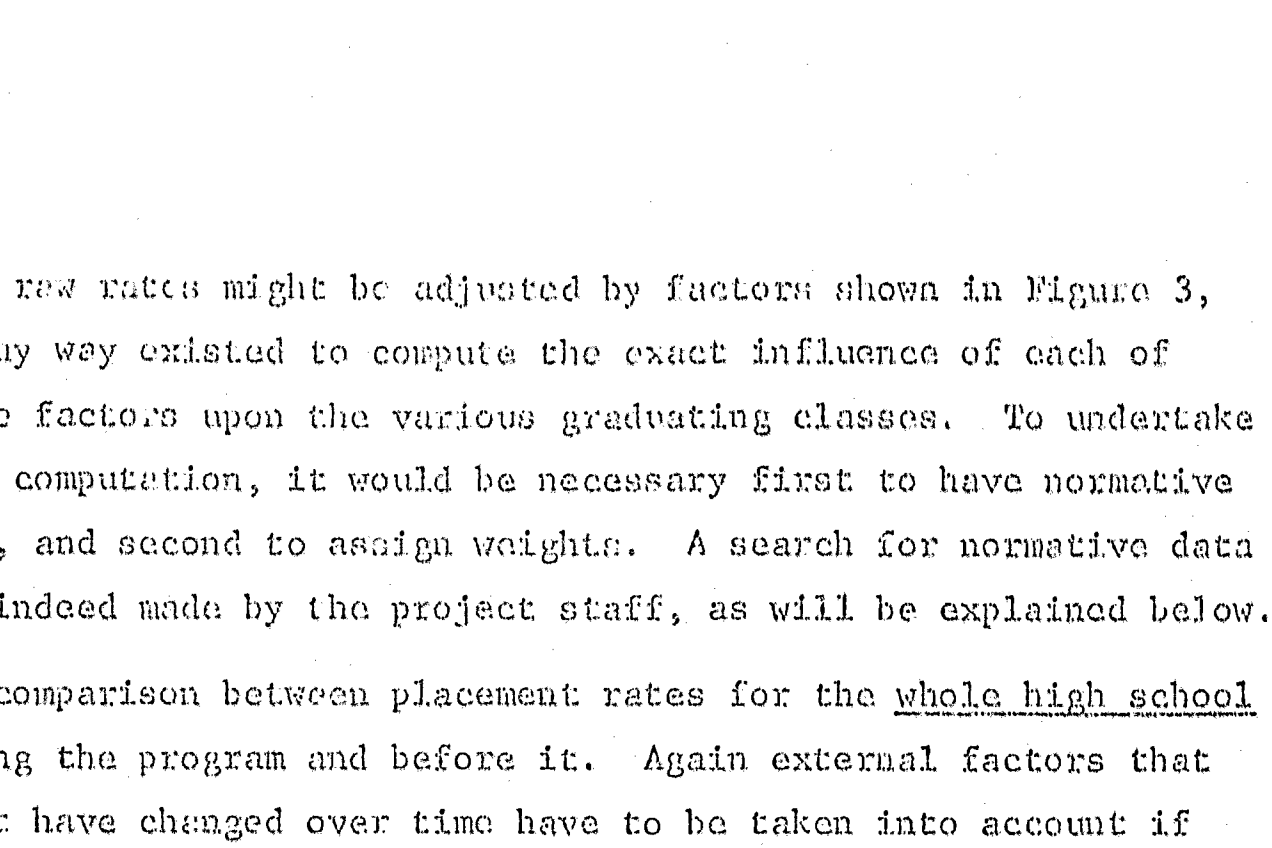

Fig. 3. Hypothetical relationships between program total placement rate and other factors external to program.

(4) The comparison between placement rates for program students only, over a period of years during which major changes in the program have occurred. Here it is assumed that the student body involved remains similar from year to year, so that any increase can be attributed to the program changes. External factors might be taken into account through "adjustment."

The Search for Normative Data

Except for the first one, the kinds of comparisons that have been suggested in order to show increases in total placement rate require normative data as a basis for adjusting the rates. Adjustment is essential because influences on programs fluctuate over time.

This section of the report will examine the nature and quality of normative information, and its availability at the Federal, State, and local levels.

In the Department of Labor, the AIR staff contacted Manpower Programs, the Bureau of Labor Statistics, and the Office of Information Publications and Reports. The Bureau of Labor Statistics furnished several Monthly Labor Review reprints concerned with the employment of youth, and suggested that staff members visit the Government Documents Section of the Stanford University Library. Based on an examination of the documents found at Stanford, and those received from the Bureau of Labor Statistics, the AIR staff concluded that Federal norms on employment of high school graduates were not available. The most suitable document was the Special Labor Force Report No. 100, based on the current Population Survey conducted by the Bureau of the Census. Though covering the employment of high school graduates and dropouts in 1967, this report includes persons from 16 to 24 years of age, which extended beyond the age limitations of the study. The other national agencies surveyed through the Stanford facilities and during later telephone contacts included the San Francisco Regional Office of the U.S. Office of Education, the National Center for Educational Statistics, the current Population Survey, the Social Security Administration, the Bureau of the Census, and the U.S. Training and Employment Service.

Similar steps were taken to survey possible sources of normative data at the State and county levels. The survey of documents at Stanford University revealed that several States publish statistical yearbooks which cover the number and sex of high school graduates, but none deal specifically with employment rates immediately after graduation from high school.

Next, the search was intensified by telephoning State agencies, using California as a model. Several agencies within the California Department of Employment were contacted, including Employment Service Information, the Director of the Youth Division, and the Library and Labor Statistics division of the Department of Industrial Relations. Although these agencies are concerned with employment among high school age youth, no data were available specifically on the employability of high school graduates.

Similarly, sections within the California Department of Education were contacted, such as Reference Services, Educational Research, Occupational Preparation, and the Coordinating Council of Higher Education. The results were again negative, since these agencies focus mainly on high school graduates continuing on to college after graduation.

The contacts made at the State level proved profitable, however, in that several school district studies and private research organizations were mentioned. Sources specifically referred to were: the Carnegie Commission in Berkeley; the San Mateo Career Information Service; the Arthur D. Little & Company in San Francisco; the METRO Study in Pittsburgh; the Department of Industrial Relations at the University of California, Berkeley; and guidance and research centers in local school districts.

As the search continued in this direction, guidance and research centers appeared to be the best source of the type of employability data needed in the AIR study. Guidance and research centers in some high school districts had systematically followed graduating classes, usually over a period of from two to five years. However, this information could not be generalized beyond the school district, due to the uniqueness of

community population and industrial characteristics. Obviously, data from a follow-up of high school graduates in a middle-class suburban community could not be reliably used as a basis of comparison for graduates from lower-class urban high schools.

Since the follow-up of the other private corporations and research sources produced negative results, the AIR staff concluded that normative data were not available at either the Federal or State levels, and that the data which existed at the local level did not allow generalization.

Next, the AIR staff reviewed the research literature in vocational education and contacted by mail and telephone several investigators who had previously conducted national evaluations of vocational education. The most relevant single study found was Eninger (1965, 1968), which is reviewed in an earlier section of this report. Eninger (1968) summarized the importance of his study by saying that "it provides a benchmark of data against which changes in vocational education can be measured in the future [Ch. 1, p. 1]." While his work would appear to fit the normative needs of the AIR study, several points must be considered.

First of all, the last graduates included in the Eninger study were from the class of 1962, and the 1963 Vocational Education Act prompted many changes in vocational education. Since the AIR study was restricted to vocational education programs between the years 1964 to 1969, data obtained prior to 1964 could not be used.

Second, Eninger's data covered the entire United States, and could only be compared to another study of national scope. Consequently, this normative information could not serve as a basis of comparison for single vocational programs, which were the concern of the AIR study.

The other studies reviewed, including Kaufman, Schaefer, Lewis, Stevens, and House (1967), Kaufman and Brown (1968), and Altman and Morrison (1966), did not contain normative information relevant to the AIR study. Although Kaufman et al. (1967) reviewed employment trends for different size communities, this information was acquired from the 1960 census, which was too old for our study.

Other mail and telephone contacts also produced negative results. The U.S. Office of Education forwarded summary tables showing the status of vocational completions during 1968, but these data could not be adjusted in terms of contemporary employment influences.

Eninger informed the project staff that normative information is being collected for Project METRO, which is an investigation of vocational graduates in 13 American cities. Unfortunately, this information was not available in time, and there is some doubt whether it would have suited the purposes of the AIR study.

Other personal contacts produced similar results--no normative information useful to this study could be located.

Upon completion of the intensive phase of the normative search, the AIR staff tentatively concluded that no reliable comparison information could be obtained from Federal or State sources, or from private research organizations or individuals. The likelihood of finding such data locally was still considered significant, however, and the AIR staff continued to investigate leads on normative information as the survey of vocational programs continued.

Using the criteria, by then well established, the AIR staff began site visits in September, and by the end of the month had completed visits or calls to a wide diversity of vocational programs. Not one of the programs contacted seemed likely to be able to meet the criteria, for reasons discussed under Results later in this report. The Project Officer at USOE, when questioned, confirmed that he wished AIR to proceed using the same criteria. The AIR staff agreed to do so, but indicated that they would both intensify and extend the search on account of the apparent paucity of suitable programs.

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RESULTS

One of the original aims of this study was the description of those programs that met the criteria for the study. It was intended that programs that had been successful in increasing the numbers of pupils placed in employment or further education should become models for others to imitate or replicate.

No programs were found that could meet the criteria, hence none will be described. Such a result needs some explanation: it says something not only about the programs at present operating in the United States but also about the criteria and the difficulties likely to be experienced by evaluators in meeting them.

First-hand investigation of some 30 programs and examination of the evaluations of several hundred others gave the AIR project staff opportunities to identify problems of establishing programs so that they can be properly evaluated, and opportunities to analyze problems of evaluation itself. In this section of the report, the programs studied will be discussed, and publications in which attempts to meet the criteria were reported will be reviewed.

The Programs Studied

Of the 445 vocational education programs contacted during the search, a large proportion (43%) did not have comprehensive follow-up information on their graduates. That is to say, 43% of the programs had not found out what 75% or more of their graduates were doing. (The level of 75% was selected arbitrarily as representing a comprehensive follow-up.) Some of the programs in this category had not operated long enough to have follow-up records. Others had follow-up records for one year or several, but in many cases follow-up was done quite informally when information was volunteered by graduates returning to visit instructors. Elsewhere, graduates were asked to complete and return questionnaires that had been mailed to them, but insufficient data were obtained about nonrespondents.

Programs that did not have comprehensive follow-up information were not investigated further. As was pointed out earlier in this report, when follow-up yields a very incomplete return, it is very likely that persons who do respond are a special group (e.g., better jobs, no complaints) and not representative of all persons who were in the program at the same time.

Comprehensive follow-up information (from more than 75% of the program graduates) was available from 34% of the programs contacted. For a large number of the programs in this category, response rates were over 90%. These programs may not have been representative of all vocational programs, however. For example, conditions under which many of these programs operated facilitated attempts to locate graduates and obtain requested information. Such conditions included relatively small, stable populations in places where location of graduates was known, and where good employment and educational opportunities existed so that graduates did not have to seek these outside the community.

The programs in this category, that is, those with comprehensive follow-up records, seemed to offer the best chance of detecting trends, including increases, in the total placement rate (placement in employment or further education). But in no cases were trends detectable because virtually no graduates were unemployed. That is, either the graduates were in the armed forces, were married and had become homemakers, or, of the remainder available for work, all had been able to secure jobs or to continue their education. Before dropping such programs from further study, however, the AIR project staff asked the program personnel if increases in placement could be shown by comparing the graduates of the vocational education programs with similar graduates who were not in the programs. In no case was comprehensive follow-up information available on an appropriate sample of nonprogram graduates.

The balance (23%) of the programs contacted were not studied either because their funds were from labor-oriented sources, or because they were found not to be at the secondary level, or because they were terminated prior to 1964, or because they had fewer than 25 graduates, or

because their comprehensive follow-up records had not been analyzed yet by program personnel.

The problem of determining whether or not a program met the search criteria ultimately hinged on the absence of any suitable baseline against which to measure the effectiveness of the program. Without baseline information like that provided by appropriate comparison groups or suitable national, State, and local normative data, evaluation information on vocational education programs is severely limited. (See pages 38 to 41 for discussions related to this point.)

Problems in Meeting the Criteria

It should be noted that a great many of the program personnel contacted during the AIR search were not at all on the defensive, so far as the AIR staff could judge, when asked about the graduates of their programs. Many of them pointed out that they were required to make some kind of report to their respective State departments of education, usually in terms of numbers of graduates gaining employment in occupations related and unrelated to the vocational education provided. The program personnel were ready to supply such figures, whenever they had computed them. In some cases, where the figures had not been computed, they offered to compute them for AIR.

But when the program personnel were asked whether they could show that their programs had increased placement in employment or further education, they were both quick to understand the question and to say that they wished they had data to show such increases. In other words, the atmosphere among local vocational education directors seemed to be one conducive to follow-up types of evaluation and the directors seemed open to suggestions about how it might be done. It was equally apparent, however, that very few of them had considered evaluation as requiring a comparison between program and nonprogram graduates.

The AIR project staff became more hopeful in their search when they encountered isolated programs in which there had been attempts to meet the criteria. Several of these should be summarized here to indicate

the types of problems that prevented these programs and others from being characterized as "successful" by the AIR study.

In a vocational education project in Illinois, the director knew before the program began that there would be about 100 pupils dropping out that year, and he selected 50 potential dropouts for the program. He expected to be able to select another 50 for comparison purposes, but could not do so because of lack of cooperation from high school faculty. In the second year of the program, he had difficulty in securing pupils for the program because a nearby college instituted a high-status program for culturally deprived youth. The college program had the effect of inducing pupils to ignore the vocational program and to favor the college preparatory program. By the third year all possible "comparison" pupils had been absorbed into the program.

In another vocational project, this time in Missouri, a total of 400 pupils were selected and divided randomly into control and experimental groups. Parents of pupils selected for the experimental group did not in all cases give permission for their children to be in the program, however, and bias was introduced into both experimental and control groups by this factor. No fewer than 46 pupils had to be dropped from the experimental sampling and replaced by others from the control group. During the program, 124 pupils were lost from the experimental group.

In a Kentucky program, pilot and control classes were selected in a number of schools, but pretesting revealed rather large differences in several subject areas between the two groups of classes. No other classes could be selected as controls.

A Minnesota program serving 531 pupils employed an experimental-control design, but there were only 21 pupils in each group. The groups were matched on sex, age, last school attended, and date of registration for the program, but there was no evidence that they had been randomly selected. The analysis based on these two groups showed that the program had had no effect on total placement rate.

A city in Oklahoma conducted follow-up of all its high school graduates, thereby providing a basis for comparing vocational and other

graduates, but did not draw any comparison because the vocational students were not identified as a separate group.

In California, one program director expressed interest in the AIR criteria and went to considerable trouble to compare program and non-program graduates. The work experience program placed 72 pupils (out of 224 applicants) in jobs while they were still in secondary school. The evaluation consisted of follow-up of these 72 pupils and of another 72 chosen at random from the other applicants who had failed to get work experience. In this case, a bias operated against the comparison group: since they had not been selected while in school for work experience, presumably they were inferior in some way to those chosen, hence they were not an adequate group for comparison. They were the rejects.

In Connecticut, the director of a program wished to establish a control group but was not permitted to do so by community pressure. The community demanded that all eligible pupils be admitted to the program.

In Wisconsin, some programs had followed-up all their graduates and there had been follow-up of nonprogram graduates. For both groups, the total placement rate was close to 100%. The program directors reported in several instances that even nongraduates (dropouts) were employed the moment they left school, because of the high local demand for labor.

The examples quoted above are not typical of the 445 programs studied by AIR. In most of the 445, little or no attempt was made to select any kind of comparison group for follow-up. The criteria and evaluation designs actually used by vocational educators were clearly different, at the time of this study, from criteria set by people outside vocational education, and different from those established for the study. The next chapter discusses the differences, and suggests possible courses of action.

DISCUSSION

Summary of the Chief Outcomes of This Study

The chief outcome of this study by ATR was that none of the 445 programs studied could be shown clearly to have increased the placement of graduates in employment or further education (total placement rate).

The reasons why none of the programs could show increases in total placement rate were related far more closely to problems of data collection and evaluation design than to merits or shortcomings of the programs themselves.

Where data collection had been reasonably comprehensive, valid comparisons were still almost impossible to make. Comparisons between different groups at different times, or between the same group at different times, were invalidated by factors outside the programs, such as fluctuations in the local employment situation or the availability of college education. Comparisons of contemporaneous groups were usually invalidated by the groups being too dissimilar, for a variety of reasons, as shown in the last chapter.

In the few instances where valid comparisons could be drawn, no increases were found because almost all high school graduates were placed in employment or further education regardless of whether they received vocational, academic, or general education.

In other words, the combined criteria of placement of graduates in employment or further education are apparently not very useful in determining the success of a vocational program, however close placement may be to the objectives of vocational educators. The strictly quantitative criteria used in this study must be modified.

Suitable Criteria for Vocational Education

Thus the question must be asked: What are suitable criteria for judging vocational education? The word "suitable" implies that value-judgments must be made about what does or does not appeal to various authorities.

There is much evidence that vocational educators have in general employed criteria which gain little acceptance among people who want to

be shown the greater benefits that vocational education is claimed to provide. These critics point out that vocational courses cost considerably more than conventional education, yet there is no hard evidence from 50 years of vocational education in the United States that conventional instruction could not have been at least as beneficial.

The claims made by proponents of vocational education can be examined and from them "suitable" criteria can be drawn. The claims of the opponents of vocational education can be examined similarly, and criteria can be drawn from them too. These criteria will be seen as "suitable" by the opponents. If there is any common ground between the two groups, if there are any criteria on which they are likely to agree, then every attempt should be made to conduct studies around those criteria.

The views of the proponents of vocational education are exemplified by statements in the General Report of the Advisory Council on Vocational Education to the U.S. Office of Education (Advisory Council, 1968). In its report, the Council defines vocational education as "the educational content and process through which one learns to become a competent worker [p. xix]." The Council says that vocational education's "primary responsibility is to help people enter the world of work or to make progress in it, to their best advantage and that of society [p. xxi]." And that "vocational education will provide the hard-core essentials which will make it possible for him to find employment in a number of specific jobs related to the area of his vocational employment [p. xxii]."

In view of these statements of the Council, it would be reasonable to suppose that the following criteria would be acceptable to the proponents of vocational education:

(1) That vocational education will produce workers who are more competent than comparable graduates educated under other programs.

(2) That vocational education will enable its students to enter the world of work more easily than comparable graduates from other programs.

(3) That vocational education graduates will make better progress in the world of work than comparable graduates of other programs.

(4) That vocational education graduates will be equipped to find employment in jobs related to their training more easily than comparable graduates of other programs.

The report of the Council contains lengthy excerpts from a review of vocational education made by a Panel of Consultants in 1961-62. As of that date, very few studies had offered any information about such criteria as those drawn from the Council's report. The Panel stated that "limited data are available on placement of graduates, from scattered surveys made on different bases, with consequent lack of comparability. Few data are available on earnings of vocational education graduates [Advisory Council, 1968, p.4]."

The literature review of related research (see pages 5 to 21 of this report) indicated the paucity of studies since 1962 that attempted to measure program success by one or more of the four criteria above.

The proponents of vocational education would be sorely pressed to show from existing data that any of the four criteria were being met, even by an individual program. It is true that in a number of States statistics are now collected indicating the vocational direction taken by graduates of vocational programs. From these statistics, judgments can be made about the proportion of graduates each year who proceed to jobs related to their training. Such figures might be thought to indicate that the fourth criterion listed above was being met, but the figures do not do so because there are no equivalent statistics for nonvocational graduates. All the figures can show is that the vocational programs had some influence on the job choices of pupils. The exact nature of this influence is hard to determine because the figures are derived from very broad job categories, i.e., a graduate from a trade and industrial program has a vast range of jobs that he may choose from that are classified as "related" to his program. Moreover, it is not necessarily to the credit of vocational education that it influences a high proportion of its graduates to enter and remain in jobs related to the training provided; the same graduates might have done better by changing fields. (Such a criticism applies to any form of specialized training, of course.)

When evaluations of individual programs are examined, the lack of reliable evidence about the effectiveness of vocational education is most noticeable. The reason for this lack of evidence has lain in the approach of vocational educators to evaluation. Essentially, their approach scrutinizes the activities of the program. Effects of these activities on graduates of the program are usually not studied, or, where they are evaluated, no basis for comparison is provided.

As recently as 1967, one State Department of Public Instruction issued a set of evaluative criteria for vocational technical programs (Reynolds, Grobman, & McGee, 1967) that reflected well the standpoint of many proponents of vocational education, since it was reviewed by a large group of vocational educators. The chief procedure for evaluation suggested in this publication was that an evaluation team should visit the program and make judgments based on the criteria included in the set. The set had eleven subsets: all referred to aspects of what occurred during the program's operation, such as its administration, the school plant employed, the school library available, the student activities, and guidance services, as well as six broad areas of vocational education (e.g., business education). Obviously the authors of this set of criteria did not intend to evaluate what happened to graduates after they had been in the program. Their approach was close to that used by accreditation teams, and similar to those suggested by other sets of evaluative criteria developed for various areas of vocational education by other bodies (see Byram & McKinney, 1968, p. 3, for a list). Their evaluations could not possibly provide objective data (or soundly based recommendations) derived from follow-up studies.

A more balanced model for evaluation, incorporating both assessment of in-school practice and evaluation of graduates in the world of work, was offered in Byram and McKinney's (1968) handbook. One section of the handbook dealt with follow-up studies in considerable detail. What was missing from this publication, however, was any mention of the need to establish and follow-up a suitable comparison group. The type of follow-up suggested by Byram and McKinney would yield no information about the effectiveness of vocational education compared with other courses of

instruction, although the handbook, if used, would result in very much better evaluation than that commonly done at present.

The opponents of vocational education do not believe that it can achieve its declared goals. Drucker (1968) asserts that "the skills that 'vocational education' teaches are obsolete. They are the craft skills of yesterday. The one thing that is predictable is that by the time the students graduate into jobs . . . they will no longer be done the way we are teaching these crafts in our vocational schools [p. 297]." Others claim that the increased enrollment in vocational education is no indication of its excellence (without suggesting why). They point to evidence in many communities that vocational education enjoys less prestige than college preparatory courses. They declare that children should not be shunted into vocational education courses when these children may indeed be capable of college work (which they assume to be more desirable). They assert that vocational education does not keep up-to-date, that obsolete equipment is used and procedures are taught that have been superseded by automation. They cite evidence that money spent on placement and guidance services achieves better results for their children than vocational education. In fact, the high cost of vocational education is the chief cause for attack; the opponents virtually demand cost-benefit studies.

Cost-benefit studies could be designed to compare the costs and benefits of one vocational program with those of another vocational program. But that is not the kind of cost-benefit study that is being demanded. Rather, the costs and benefits of one vocational program should be compared with those of nonvocational instruction. A prerequisite of such a cost-benefit study would be that benefits had in fact been derived from both courses of instruction. The present dilemma is that there is little or no evidence of benefits from vocational education in terms of the quantitative criteria adopted for this study.

There is scarcely any evidence that vocational education programs have had an impact, as measured by lifetime earnings or any other quantitative index. The reason why this is so is that the required

comparisons have not yet been drawn between vocational programs and other types of education.

The common ground that apparently exists between proponents and opponents of vocational education regarding criteria is that vocational education programs should benefit students more than nonvocational programs, and that the benefit should become visible in the students' careers after they leave the programs. Neither proponents nor opponents of vocational education can "prove" their arguments because of the lack of reliable data. In other words, the fundamental question has to be made more specific: Can we find out whether vocational education benefits students more than nonvocational education after they have finished their schooling?

Evaluation Using Suitable Criteria

The most simplistic view of evaluation in vocational education is one which considers each program to be isolated from its environment. A program is then thought of as a closed system, in a state of equilibrium, in which teachers interact with students to produce trained students. No credit or blame is attached to factors such as the national economy that operate outside (but upon) the system. This simplistic view is quite inadequate if the question is whether vocational education benefits students after they finish it.

It is necessary to consider each program as an open system, maintaining itself through continuous inflow and outflow and never in a state of equilibrium. As many measures as possible must be taken of inflow and outflow, but the constantly changing interactions between components within the system are so complex that it is scarcely possible to track them.

To speak in practical terms, inflow for a program must be described as carefully as possible by identifying the students' and teachers' characteristics, by noting the context of the program, and by analyzing the procedures, equipment, and techniques employed. Outflow for a program must be similarly gauged: again students' and teachers' characteristics have to be identified, to see how they have changed. But for vocational education the gauging must occur some time after schooling has been completed.

Dyer (1969) calls his model of educational evaluation the "student change" model, and it has similarities to the one discussed above. He restricts input and output to student characteristics, however, since he is looking only at student change. The "surrounding conditions" (context) he identifies in terms of home, school, and community. Observable activities in the school system he terms the "educational process." Dyer emphasizes, however, that the use of his model (described in outline in his 1969 paper) will only provide some useful hypotheses for upgrading schools, but he suggests that there is no time to waste actually testing these hypotheses. Instead he would try to persuade the school that was "worst" according to his analysis to adopt ideas from the school that was "best." Such adoption might begin to close the gap between the two schools. Dyer restricts his examples to ones drawn from conventional schools, but his model could be adapted to vocational education provided dependable follow-up data were available.

Analysis of inflow and outflow was what the AIR project team had expected to be able to undertake for at least a few vocational education programs. But with outflow defined strictly in terms of the total placement rate in further education or employment, no analysis was feasible, as has been indicated. The only instance (that was encountered during this study) of a plan for program evaluation that would permit such analysis was one prepared by Green (1969) for use by New York area occupational centers. Of the programs that were site-visited, one had originally had the opportunity to set up similar, contemporaneous program and comparison groups, but had not done so.

Even if the ideal situation existed, in which there were comparable contemporaneous groups and in which comprehensive follow-up of graduates had been conducted, would the total placement rate then be useful in determining whether vocational education had caused increases? Probably not. The problem of very high rates (and hence little difference between them) would still be present. Perhaps 95% of the vocational group and 94.5% of the comparison group would be placed. Such raw rates tell too little about the respective programs. What is needed is a qualitative approach to supplement the quantitative.

Instead of follow-up of the kind that is generally undertaken at present, more complex follow-up is necessary to identify more exactly what happens to program and nonprogram graduates. The total placement rate is the sledgehammer being used to crack the nut; it is too coarse a measure of what is to be assessed.

It is true that some studies have made attempts to follow graduates' careers in detail. Unfortunately, they have had low response to their inquiries. Yet follow-up that is both comprehensive and fine-grained seems to be the only technique that can supply the required data.

Even if a properly randomized control group is not politically or ethically acceptable, the evaluation plan should still provide for some sort of detailed comparison of program and nonprogram graduates. For example, with the cooperation of guidance personnel at the high schools, local employers, and employment agencies, it may be possible to identify those locales where most of the program graduates find work. For each of those locales it might be feasible to determine for, say, 18-year olds who took a general high school course and who had no specific vocational training before graduation, rates of initial job placement, rates of advancement on the job, job competency, and job retention. The same computations could be made for the graduates of the special vocational program. If these computations could be made for both groups in each selected locale at regular intervals, say every 10 months for 40 months, the trends for both groups could be compared. The advantage of this design is that fluctuations in the local labor market and other factors outside the program (which may be inherently unstable over time) will have a chance to act on both groups in each of the selected locales.

If comprehensive and fine-grained follow-up could be accomplished, far more detailed conclusions could be drawn about a program's relative success. Assume, for example, that the follow-up revealed that vocational graduates from a particular program were obtaining jobs more easily than other graduates, or that they were mostly entering jobs that paid well initially but had very limited long-term prospects. The follow-up would indicate well the success of the vocational program, in terms of how its graduates behaved after they had left it.

In summary, the shortcomings of vocational education program evaluations have been of two kinds, when it is a question of showing that vocational programs benefit their graduates more than other courses of instruction. First, there has been inadequate follow-up of graduates. Stress has been laid upon finding out what proportion of graduates are in occupations related to the vocational training provided, rather than upon collecting quantitative and qualitative data about the nature of the graduates' occupations. Second, there has been insufficient effort made towards designing evaluations so that contemporaneous program and (appropriate) nonprogram groups of graduates can be followed up. This is not to say that every graduate of every vocational program, and a corresponding number of nonvocational graduates, should be followed. Random sampling, both of programs and of students within programs, could be used to reduce the task to manageable proportions.

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CONCLUSIONS AND RECOMMENDATIONS

The findings of this study cannot themselves resolve the question: Do vocational program students benefit more after they have left the programs than if they had been in other types of programs? Yet this criterion does seem to be the one that should be applied, not only according to the opponents of vocational education but also according to its proponents.

If meaningful analyses are to be conducted in the future, and if realistic answers are to be sought, program evaluation designs in vocational education will have to be changed considerably.

There are two recommendations that can be derived from this study:

(1) That funds should be set aside for intensive follow-up of the graduates of selected, promising vocational programs, and for similar follow-up of a suitable comparison group of nonvocational graduates for each program selected.

(2) That assistance should be provided to local vocational program evaluators in the form of training in evaluation procedures and design.

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There are two bibliographies in this report. The first is a general one, listing materials relating to vocational education or referenced in the text. The second lists, alphabetically by state, materials relating to specific programs studied.

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APPENDIX A

Three Case Studies of Local Program Evaluations

At the local school district level there are many different approaches to evaluation, and not all of these evaluative efforts are addressed to follow-up of the program graduates. The reports of these evaluative efforts are typically brief and selective in the kinds of data reported and interpreted. Unfortunately, program evaluation efforts at the local school district level often become "added assignments," that is, the follow-up is undertaken amidst the continuing pressures of the ongoing instructional program with whatever time is available. Within these limitations, however, some school districts have undertaken fairly extensive surveys of the student population. Three case studies are appended here to give some idea of the kinds of evaluation being done.

Union High School District No. 5, Milwaukie, Oregon. The District is comprised of three comprehensive high schools and an Occupational Skills Center, which provides vocational education for junior and senior students bussed from the comprehensive high schools. First-year students in the Center attend two hours each day; second-year students attend for three hours each day. Part-time work opportunities are available to students who have taken some of their course work during the preceding summer, thereby accelerating their academic preparation prior to joining the work experience program. Students receive pay for their services and part-time jobs are available both within the school district and from outside employers.

The District had a total of 836 graduates in 1968 and 887 graduates in 1969. Of these, 115 were graduates of the Occupational Skills Center in 1968 and 187 were graduates in 1969. Industrial Arts classes (offered to freshmen and sophomores) and Business Education and Home Economics classes are taught in the home high schools and are not included in Occupational Skills Center figures. Occupational skills clusters offered at the Center include: Agriculture, Building Construction, Child Services, Data Processing and Business Machines, Distributive Education, Electricity and Electronics, Graphic Reproduction, Health Services, Industrial Mechanics, and Metal Fabrication.

Enrollment at the Occupational Skills Center is on the recommendation of the sending-school's principal, upon advice of the counselor and with the concurrence of the student and his parents. The Center's principal has the option to return students to the home school if they do not seem able to adjust to the vocational program as conducted at the Center.

The instructional staff at the Center include one Director, one Placement and Guidance Coordinator, thirteen teachers and eight teacher aides. Costs in the comprehensive high schools are $123.37 per student hour as compared to $211.37 per student hour in the Center.

The counseling and career orientation procedures begin in October for a senior class, followed by a survey of seniors in April, May, and June to determine their post-high school expectations.

Follow-up is undertaken for <u>all</u> District graduates and an additional follow-up is undertaken for Occupational Skills Center graduates. The initial follow-up is by phone, with each high school counselor calling the students assigned to him in the previous year. After three attempts to reach the graduate or his parents, other knowledgeable sources are contacted. Using this technique, a 95.5% completion of follow-ups was accomplished district-wide in 1969. The categories of data collected show the number of graduates:

Attending 4-year state schools (in state)

Attending 4-year state schools (out of state)

Attending private schools (in or out of state)

Attending Community College (in state)

Attending Community/Junior College (out of state)

Entered military service

Entered state or union apprenticeship training programs (does not include OJT provided by the employer)

Attending other schools (beauty, business, etc.)

Entered full-time employment

Entered part-time employment

Unemployed

Married (homemaker)

Other

Unknown (no response, moved---no forwarding address, etc.)

The Occupational Skills Center students also receive a mailed follow-up survey. It provides data showing the number of students who:

Entered full-time employment (does it relate to cluster taken?)

Entered college (full- or part-time and does it relate to cluster taken?)

Entered military service

Entered state or union apprenticeship training programs (does not include OJT provided by the employer)

A minimum of 20% return of these four-page mailed questionnaires is considered acceptable by the Occupational Skills Center personnel. Much of the information obtained by this questionnaire is intended to guide the instructional staff as they revise the curriculum in the various occupational clusters. Data obtained in these questionnaires are processed by students in the Center's Data Processing and Business Machines occupational cluster, providing an even more direct input to the ongoing program activities.

In spite of a thorough follow-up procedure and the publication of reports to state authorities and separately in booklet form to District personnel, the District does not have available comparisons between Occupational Skills Center graduates and any control group of matched or similar students. Instead, the comparative emphasis rests on looking at the placement of 1969 graduates in relation to the placement a year earlier. As pointed out elsewhere in this report, this procedure assumes a stable job market in the two years, consistency in draft sign-ups and college enrollments, and so on. The same constraints will exist for the three- and five-year follow-ups now planned for this program.

Two other ongoing self-evaluation efforts are undertaken by the District. The first is a Release-Time Training Evaluation form which is completed by the cooperating employers for those students involved in work-experience opportunities. Employers are asked, each spring, to rate the student employees on the criteria of (1) punctuality and attendance,

(2) initiative, (3) job performance, (4) skill development, (5) personal attitude, and (6) relationship with other employees. They are encouraged to make additional comments and suggestions.

The second form is the Instructor Rating and Recommendation, which is completed in the fall and again in the spring by the instructional staff. Each student is rated according to (1) development of craftsmanship, (2) technical understanding, (3) demonstrated safety habits, (4) cooperation with students and instructor, (5) willingness to accept criticism, and (6) personal attitude. Information of this type is intended to be used by the Placement and Guidance Coordinator as he attempts to place students in appropriate job opportunities.

* * *

Curriculum Development Program (CDP), Quincy, Illinois. CDP was established to identify and counsel the dropout-prone student, to provide special classes and practical classroom experiences, to develop a work-study program and to involve the parents of dropout-prone students in the school program. Socioeconomic status, intelligence, school achievement, reading achievement, and school and social adjustment (as rated on a description sheet of aggressiveness and withdrawnness behavior) were the factors used to identify dropout-prone students who were about to enter the seventh grade. CDP became a department within the public comprehensive school (grades 7-12) and within a few years the program included about 300 students, 14 full-time teachers, and 5 part-time teachers. It included regularly scheduled parent-teacher meetings, home visits by the teachers, a parent newsletter, and biweekly in-service teacher training sessions. Sheltered work stations were developed within the CDP to provide pre-employment experiences and training for students. One of the sheltered work stations is called the Service Station Training School, and is a work station which is being systematically evaluated.

The Service Station Training School for CDP boys aged 16 years or older is a sheltered work laboratory developed to give the youths individualized pre-employment classroom training and job training to articulate and facilitate the transition of the CDP students between the school and the world of work. The program was intended to provide experiences vital to

retaining students in school until they are ready to seek and maintain full-time employment. It was designed to systematically evaluate students' progress toward those goals. The students receive both school credit and a salary for working part-time at the service station which was rented for the purposes of the program. The amount of training received during each school year varies with the achievement made by each student. Each boy is evaluated monthly by the work experience coordinator, the training school instructor, and the work supervisor.

Each year a number of boys in CDP were eligible for service station training but only a portion of those boys could be served by the limited service station facilities. Of those students who were eligible, a number were randomly chosen for service station training and a number were chosen as a control group. Those who did not participate in the station training participated in the regular CDP training. At the end of each school year the experimental (or service station) and control groups could be compared on these factors: intelligence, reading achievement, attitudes, school attendance, grades, and placement in employment or further education. At the time of the writing of this report a full comparison of the placement in employment or further education of the members of both the experimental and control groups had not yet been completed.

* * *

The Center for Vocational Arts (CVA), Norwalk, Connecticut. CVA is a program for school-alienated youths (ages 15-21) which was developed to give the youths occupational training and academic instruction, and to effect the behavioral changes necessary for obtaining and keeping a job. Training is held at the Center and is offered in automotive services, food services, health services, landscaping and horticulture, office services, maintenance and repair operations, manufacturing operations, and retailing services. The Center emphasizes individualized instruction and individualized guidance in both vocational and academic areas and is developing, with the help of educational specialists, individualized learning activity packages for use in each of the training

areas. Each training area has a full-time vocational instructor as well as a full-time guidance counselor. About 175-200 students attend classes for three hours and work at a part-time job for four hours each day. Each student continues training at his own rate of development until he has reached a competency level which merits a vocational certificate, a high school diploma, or both.

CVA has participated in evaluation procedures performed by outside professional consultants and local program personnel at various points in the school's history. The following test instruments have at times been used to record the presence of the student attributes listed with each instrument: California Study Methods Survey--school adjustment, and study habits and skills; California Test of Personality--personal and social adjustment; Lorge-Thorndike Intelligence Test (Verbal and Non-Verbal)--academic aptitude; California Reading Test--reading vocabulary and reading comprehension; NYU Speaking Test--clarity of speech in reading and conversing; Occupational Adjustment and Rating Scale--self-concept, social behavior, attitude toward society, school adjustment, work attitudes; Fundamental Achievement Series--use of practical verbal and numerical symbols.

In addition, three studies were made to assess the ways in which students perceived their CVA experience: a comparative study of the perception of the school by the students, 1967-1968; how students at the Center saw themselves; and case study reports on the students, 1967-1968.

To measure the effect of the school on the employability of its students, a comparison was made between the job record of some CVA graduates (June 1966 to April 1969) and the job record of some students leaving CVA without completing a program. According to these records, 88% of the CVA graduates were employed full-time as compared with 73% of the nongraduates. Early in the history of the school it was planned that there would be a matched control group of students who qualified to be in CVA but who would not be admitted. Such a group, when followed over a period of years, might have provided a reliable basis against

which the program's success at helping students get and hold jobs could have been measured. At that time, community groups felt that all qualified students should be admitted to the Center's program and a control group was not chosen.

APPENDIX B

List of Consultants

A conference on the study of selected exemplary vocational education programs was held at the American Institutes for Research, Palo Alto, California, on July 10 and 11, 1969.

Consultants present at the conference were as follows:

Mr. Joseph Bellenger
Assistant Superintendent
San Jose Unified School District
1605 Park Avenue
San Jose, California 95114

Dr. Max U. Eninger, President
Educational Systems Research Institute, Inc.
4527 Winthrop Street
Pittsburgh, Pennsylvania 15213

Dr. Jack Michie
San Diego State College
San Diego, California 92115

Dr. Byrl R. Shoemaker
Director of Vocational Education
Department of Education
612 State Office Building
Columbus, Ohio 43215

Dr. Robert M. Worthington
Assistant Commissioner of Education
New Jersey State Division of Vocational Education
P.O. Box 2019
Trenton, New Jersey 08625

Apologies were received from the following consultants who were invited but were unable to attend:

Dr. Melvin Barlow, UCLA

Dr. Lowell Burkett, American Vocational Association

Dr. Rupert Evans, University of Illinois

Mr. Marvin Feldman, Ford Foundation

Dr. Edward Morrison, Ohio State University

Mr. Michael Russo, Division of Vocational and Technical Education, U.S. Office of Education

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ABSTRACT

The aims were to identify, select, analyze, and describe vocational programs at the secondary level that had been successful in increasing the total placement rate (employment, further education) when compared with other courses of instruction. Through a literature search, mail and telephone inquiries, personal contacts, and other means, 445 programs were identified for study with emphasis on program evaluation, particularly follow-up of graduates. Some 30 programs were site-visited.

None of the 445 programs could be shown to have met the study's criteria for success; 43% lacked comprehensive follow-up data on graduates; 33% had nearly complete data, but no trends could be detected, nor were suitable comparison groups of nonvocational graduates available.

Even if comparable, contemporaneous groups had existed, and even if complete follow-up of both groups of graduates had been possible, it was concluded that the original criteria needed to be supplemented by criteria which took into account qualitative placement factors, such as initial job earnings, on-the-job competency, job retention, progress within the job, and mobility within a range of jobs related to the training provided by the vocational program.

Recommendations for program design and evaluation that would permit the assessment of such factors conclude the report.