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ABSTRACT

The vocational follow-up system described in this publication was developed as an outgrowth of Project MINI-SCORE and is designed to gather information useful in decision-making concerning the improvement of the post-high school full-time day programs offered in the Area Vocational-Technical Institutes of Minnesota. The data-gathering instruments, which were developed and perfected with the assistance of representatives of the Area Vocational-Technical Institutes and the Department of Education, provide student population information, program termination information, and student and employer follow-up information. This information is synthesized and reported to the State Department personnel and to the directors of the Minnesota Area Vocational-Technical Institutes. This report provides a description of the system, along with a more inclusive rationale for gathering information for vocational-technical education decision-making. (Author/SB)

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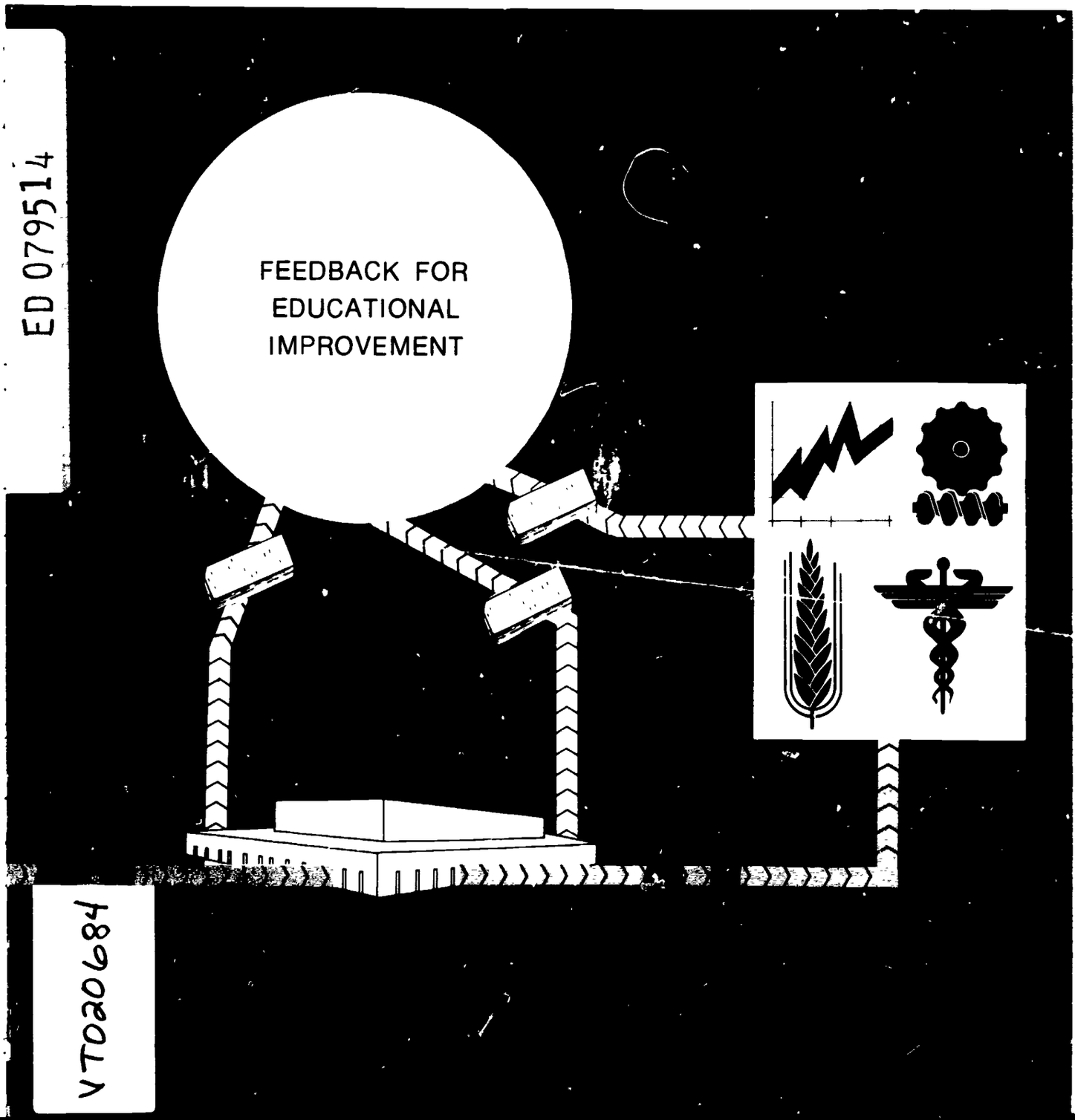
# THE MINNESOTA VOCATIONAL FOLLOW-UP SYSTEM: Rationale and Methods

By David J. Pucel

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# THE MINNESOTA VOCATIONAL FOLLOW-UP SYSTEM: RATIONALE AND METHODS

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Minneapolis, Minnesota 55414
February, 1973

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# CHAPTER I

## HISTORY, OBJECTIVES, AND SYSTEM MODEL

### History

The Vocational Follow-Up System is a result of the concern of vocational educators in the State of Minnesota for an objective information base upon which to make decisions. Prior to the establishment of the system, information was being gathered concerning the students who participated in vocational programs as well as follow-up information obtained from the students and their employers. However, it was not being gathered consistently across the state. Inconsistencies occurred both in terms of the types of information gathered by the various institutes as well as in the nature of how the data were collected. Attempts at aggregating the information in meaningful ways generally met with frustration. With the increased pressures for accountability it became more and more apparent that a uniform system of data gathering was needed.

Concurrently, Project MINI-SCORE was being conducted within the State of Minnesota by David J. Pucel and Howard F. Nelson of the Department of Industrial Education, University of Minnesota. Although the objectives of Project MINI-SCORE were to investigate and develop counseling aids for use with people who wished to attend the Minnesota Area Vocational-Technical Institutes, many of the procedures developed through the Project appeared applicable to the information needs of the State of Minnesota. Three of the sub-systems of Project MINI-SCORE appeared to be useful in terms of the information needs of the state:

(1) the system for gathering biographical information from students, (2) the system for gathering termination information, and (3) the follow-up system.

In 1968, computer print-outs were generated of the biographical information gathered by Project MINI-SCORE on students from the Area Vocational-Technical Institutes and of the follow-up information which had been gathered. This information was presented to the Minnesota State Department of Education and to the directors of the institutes. After the information was examined by the various decision-makers, it was decided that the information was useful for decision-making purposes and that with future modifications based upon input from the institutes and the State Department of Education the information should be gathered on a continuous basis. Consequently, early in 1970 the State Department of Education invited the University of Minnesota to prepare a proposal for such a system. A proposal was written and initiated by principal investigator, Dr. David J. Pucel, Associate Professor, Department of Industrial Education, University of Minnesota. The proposal was accepted and the Vocational Follow-Up System began as of November 1, 1970. During its first year of existence it was operated as an expansion of Project MINI-SCORE and the old Project MINI-SCORE instrumentation was used. Since that time new instrumentation has been developed with the aid of the Area Vocational-Technical Institute personnel, personnel of the Minnesota State Department of Education, and the State Follow-Up Advisory Committee.

## Objectives

The major purpose of the Vocational Follow-Up System is to provide vocational educators in the State of Minnesota with information that will be valuable to them in making decisions concerning the improvement of vocational education programs. Within the present interpretation of this general purpose the following specific activities are performed yearly.

1. Gather and report one year follow-up information which can be used to describe the post-graduation activities of Minnesota post-high school Area Vocational-Technical Institute full-time day program graduates.

2. Gather and report biographical information which can be used to describe enrollees who enter the Minnesota post-high school Area Vocational-Technical Institute full-time day programs.

3. Gather and report information concerning how students who enroll in the Minnesota post-high school Area Vocational-Technical Institute full-time day programs terminate their enrollment.

4. Conduct related research which will facilitate the accomplishment of the previously stated activities.

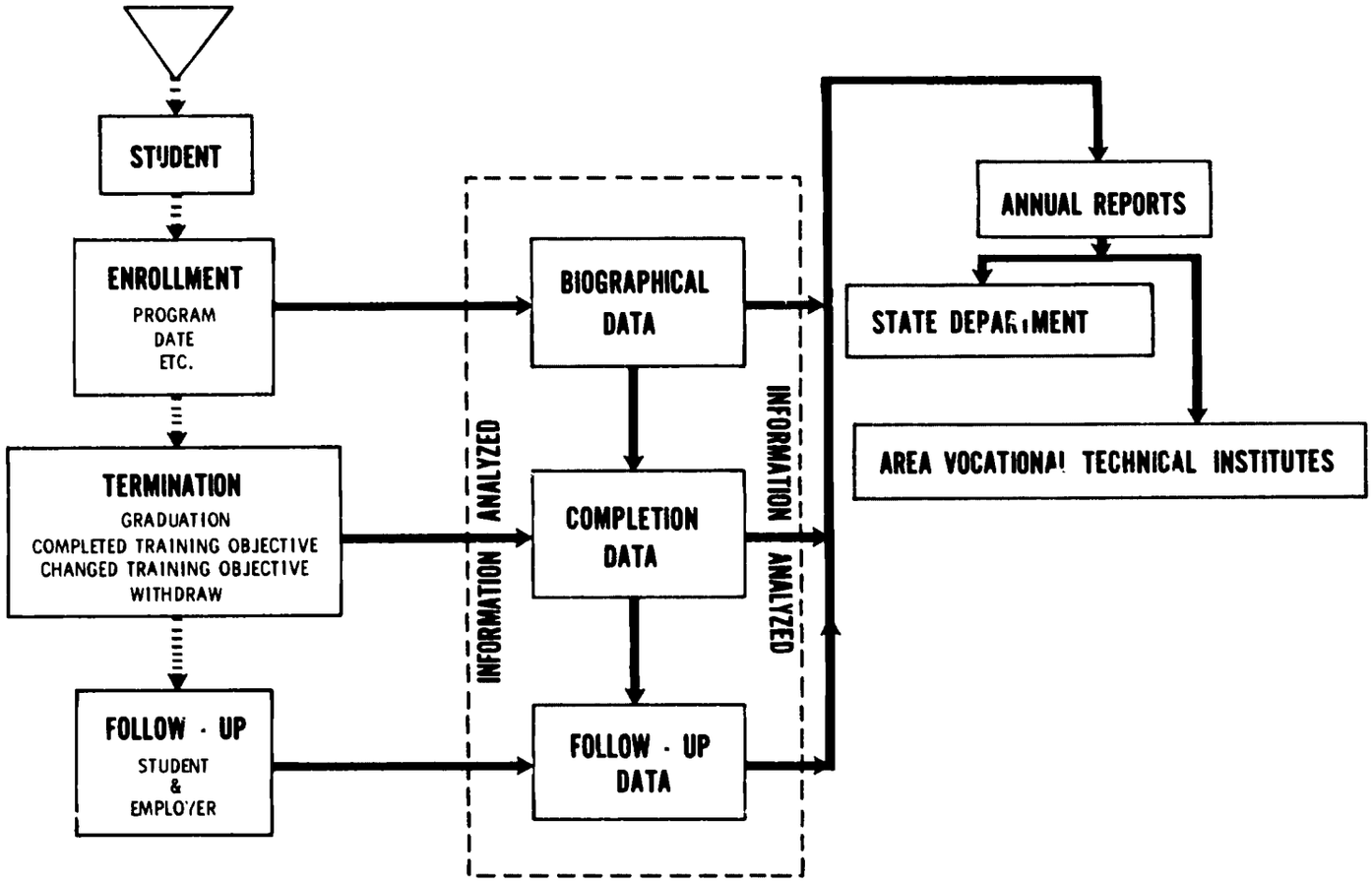
## Vocational Follow-Up System Model

The basic system model used to gather and report the information necessary to accomplish these objectives is presented in Figure 1. Upon enrollment students provide biographical information and identification information necessary to describe them and follow them up in the future. Upon students terminating their enrollment, the institutes report the reasons for the terminations which are later summarized to provide information on student program completions and withdrawals. One year after graduates graduate they and their employers are followed up to determine how well they perform on the job. The three types of information are summarized yearly and reported to school and state representatives.

Chapter II of this report presents a discussion of the desirability of formal information gathering systems. Chapter III presents the

**FIGURE 1**

**VOCATIONAL FOLLOW - UP SYSTEM**



theoretical context of the system and some techniques for gathering and utilizing additional information valuable for decision-making. Chapter IV describes the Vocational Follow-Up System rationale, instruments, and data gathering procedures in light of the theoretical context described in Chapter III.

# CHAPTER II

## THE NEED FOR AN INFORMATION SYSTEM WHILE MANAGING OCCUPATIONAL EDUCATION PROGRAMS

Information is the foundation for all decision-making. When decision-making is done relatively informally the information need not be gathered in a formal fashion. However, when decision-makers are held accountable for their decisions, the data requirements become more sophisticated because decisions must be justified.

The function of any information system is to gather and report data which can be used to justify the action or improve the efficiency of the organization on which the data is gathered. Information can really be thought of as a memory storage system, which can later be accessed and reported to decision-makers who can either take new action or redirect old action. With these functions in mind, it is obvious that only information which will be used should be gathered. Information is very expensive to gather, and the gathering of useless information provides no benefit to the organization gathering the information.

One example of an information system which provides information useful for redirecting action is college football films. The coach and the players practice various strategies and plays which they then execute in productive action -- competitive games. This productive action in a competitive game is stored in the form of information on film. The coach and his players replay the film, which constitutes a report of the information which was originally stored. Based on this report, the coach and his players can redirect the action to improve their game. The improvement or redirection is then utilized in the next competitive game, which is also stored on film. This chain continues as long as the need

for the information exists. If the coach and the players utilize the information effectively, their game should improve. The principle of the football game is similar to the principle of using the information in an occupational education program.

In the field of occupational education, the goal of an organization is to help students develop employment-related skills and behaviors which will allow them to become satisfactorily employed in occupations related to their training. Therefore, the ultimate function of the information system should be to determine if the occupational education programs are truly helping students accomplish this end. However, intermediate information systems may be needed besides the information system which accounts only for the output. These intermediate information systems can be thought of as systems to provide information on the major factors which affect the output or effectiveness of the organization. The gathering of information on the output of students provides information on the overall effectiveness of the program, while gathering information on basic program elements provides information as to why the program might or might not be effective.

Occupational education programs are planned with specific objectives in mind. The action is the actual process of conducting an occupational education program. The typical information system involves keeping school records as the program is conducted. This information is then synthesized and reported to program planners so that the effectiveness and efficiency of the program can be determined. Action is redirected when program planners modify the curriculum. Currently, most occupational education programs, like most other educational programs, have a system of information-gathering known as the "natural system." This system is one that nobody really planned, but which just grew. It is usually very disjointed

in regard to data-gathering, storage, and reporting functions. In such natural systems a lot of information is generally gathered which is not reported, and if it is reported, it is generally not used by anyone in a position to redirect the action.

As indicated above, the function of any information system is essentially one of a memory function. It stores information concerning some action which can later be used to report on that action to individuals who are in a position to direct or redirect the action. If information is being gathered which is not useful to redirecting action, it is questionable whether the information should be gathered. Therefore, in planning any information system, one should start with those people who have to make decisions for action. They should ultimately indicate the kinds of information they would find useful in making decisions concerning actions which they direct. Information collection and storage systems should then be developed for gathering and storing the necessary information. That information should be reported back to the individuals in control of the action.

In educational institutions conducting occupational education programs, there are a number of different people who utilize information to redirect action. The first would be the director or superintendent of the school. He is usually concerned with the overall effectiveness and efficiency of the programs operating in his school. If the effectiveness and efficiency of the programs are sufficient, he is rarely interested in what is being done in detail in each of the instructional programs. However, if the effectiveness and/or efficiency of the programs in the school are low, he would like to know why. In most cases, when the effectiveness and/or efficiency of a program is low, it may be due to one of four reasons: (1) there is no need for the program to

be offered (no labor market or people demand), (2) people who successfully complete the program find no application for what they gained in the program (skills learned are not those needed in the occupation-content), (3) those people admitted to the program are not the kinds of people who can and/or want to effectively apply the content presented in the program, and/or (4) the instruction or methods of presenting the content are not adequate.

Therefore, occupational education information systems should be capable of providing information concerning each of the four types of information or problem areas discussed above. If the information systems are all operating correctly, the director or administrator will rarely have to request information on anything other than the overall effectiveness and efficiency of the program. Those people in charge of program planning will have information to determine whether or not a program is meeting a true need of individuals and society. The counseling staff will have information to describe those persons successfully taking part in the programs, and the instructional staff will have feedback on the effectiveness of their instruction and the appropriateness of the course content. If each of these three basic components has direct feedback, the total system relating to a program can generally be kept in check to the point where the situation will be corrected automatically. Therefore, the administrative officer should rarely need to enter into discussions concerning any of these four basic pieces of information. However, if any or all of those other components fail to utilize the information, and the effectiveness and/or efficiency of the programs go down, the administrator will have the necessary information which he can review to take corrective action.

# CHAPTER III

## THEORETICAL CONTEXT OF THE VOCATIONAL FOLLOW-UP SYSTEM

This chapter presents a discussion of the theoretical context which is the foundation for the type of information gathered by the Vocational Follow-Up System. It also presents a number of techniques for gathering and utilizing information that have been used to improve occupational education programs. The latter discussion is presented to help people place information gathered by the system into perspective. No attempt has been made to describe all possible approaches to gathering or reporting the information. The chapter is divided into two sections: philosophical assumptions concerning vocational education, and information requirements in light of those assumptions.

### Philosophical Assumptions Concerning Vocational Education*

Any discussion of the philosophy of vocational education should begin with the purposes of vocational education as stated by those people who set national goals. In this country, national goals are established at the federal level by the Congress and the executive branch. Therefore, if one wishes to determine what the national goals of vocational education are, one should go to the legislation which the Congress has passed concerning vocational education. The purpose of vocational education, as stated in the Vocational Education Amendments of 1968, is to provide all persons with ". . . ready access to vocational training or retraining which is of high quality, which is realistic in light of actual or anticipated opportunities for gainful

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*Much of this section was taken from an unpublished paper entitled, "The Student: An Integral Part of Vocational Program Development and Evaluation," presented by the author at the U.S.O.E. sponsored training session entitled "Student Characteristics: A Determinant for Vocational Program Planning and Development," October, 1969.

employment, and which is suited to their needs, interests, and ability to benefit from training." (U.S. Government Printing Office, 1968.)

Upon reading both the legislation in more detail and current literature pertaining to the purposes of vocational education, the following assumptions concerning vocational education appear to be a meaningful expansion of the definition provided in the Act. These assumptions concerning vocational education are:

> Vocational education programs originate to fulfill education functions for individuals and society. These functions are:
>
> a. to assist all persons who wish to initially prepare themselves for employment or to update their employment related skills to prepare for employment in occupations in which there is a current or anticipated demand for employees in such a way that they may enter employment and/or further training related to the occupations, and
> b. to assist all persons who wish to initially prepare themselves for employment or to update their employment related skills to prepare for employment in occupations which they will find satisfying and in which they will be satisfactory employees.

The brief discussion of the philosophy of vocational education presented above provides a sufficient base to determine the basic criteria for judging the effectiveness of a vocational program. In determining the information requirements for vocational education to become part of a statewide system, it is not wise to attempt to define the philosophy of vocational education more precisely than required to generate the basic questions which will provide information necessary to adequately judge the effectiveness of a program. Maximum use of the information will occur if the data can be used by people who basically agree but who differ on micro-philosophical points such as to how the basic objectives should be finally implemented. In the field of vocational education, few people would argue with the purposes of vocational

education discussed above. However, if one begins to define these statements in more specific terms, few vocational educators would agree on all points.

## Information Requirements of a Total System

The information requirements which are necessary to justify and defend the establishment and operation of a vocational program according to the philosophy previously discussed are presented in this section. Such information arises from two basic questions continually asked of vocational educators. The questions are:

1. What programs should be offered?
2. Are the programs effective?

These two questions are basic questions because answers to the first question justify the original establishment of a program, and answers to the second question justify the continued existence of the program. In addition, a number of additional questions must be answered if the effectiveness of a program to prepare graduates for employment in related occupations is to be examined and diagnosed. If a program is established and all, or most, of the graduates of the program become employed in related occupations, most vocational decision-makers would not be concerned about gathering additional information. For it would be assumed that the requirements of a good vocational program have been met in that individual and societal manpower needs are being satisfied. Individuals are receiving preparation which allows them to become employed and society benefits from this employment. However, few programs place all graduates in occupations related to the training received in the program. Also, over a period of time techniques and content which were included in a successful program become old and need revision.

If programs are not effective and graduates are not able to be placed in related occupations, three questions must be asked to gather sufficient information to determine the reasons. The questions are:

3. Are students allowed to participate in programs based on their needs, interests, and ability to benefit from training?
4. Are job opportunities available in related occupations?
5. Do graduates possess the skills and knowledges necessary to perform in the occupation for which they trained?

If students are entering programs because there are no other programs available and not because they feel that the programs they are entering will meet their needs and interests and that they can benefit from the program, this might account for why graduates of a program are not entering the occupations for which they trained.

If jobs are not available in occupations related to a trainin program, this could also account for why graduates are not entering the occupations for which they trained.

If graduates are found to not possess the necessary skills and knowledge to perform in the occupation, based upon an inventory of the graduates and/or their employers, this would again explain why the graduates are not being placed. If the graduates do not possess the necessary skills and knowledge to perform in the occupation for which they trained, two additional questions must be asked. These questions are:

6. Is the content taught in the program appropriate?
7. Are the methods that are used to communicate the content to students effective?

Information gathered through answering these questions would determine whether the curriculum is appropriate for the current job market or whether the problem lay in the instruction or instructional methods.

The remainder of this chapter expands on the logic for gathering information relative to each of the questions posed above and presents alternative methods for gathering information. A review of this expanded discussion should allow the reader to develop a context within which to interpret the information reported by the Vocational Follow-Up System. It is as important for the reader to be capable of juding the types of information which are not gathered by the Vocational Follow-Up System as it is for him to understand what information is gathered.

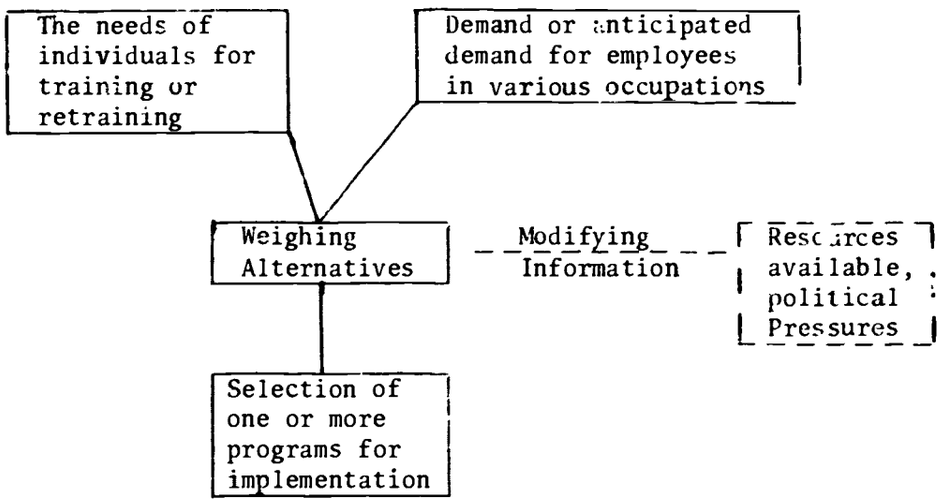
## Question 1: What Programs Should Be Offered?

The purposes of vocational education as stated in the Vocational Education Amendments of 1968 clearly suggest the data needed to answer the question "What Programs Should Be Offered?" The act indicates that programs should be offered in those areas suited to the needs, interests, and abilities of individuals who require training to obtain gainful employment in occupational areas in which there is an actual or anticipated demand for employees. Therefore, in justifying the creation of a new program or the continued existence of an old program, vocational educators should attempt to gather information on the demand for employees in various occupations and on the population of people needing vocational training or retraining. Figure 2 provides a diagram of the data flow which seems to be necessary to justify a given program.

Figure 2 implies that three basic types of information are necessary to justify the continuation of a currently operating program or to justify the creation of a new program. The three basic types of information are: (1) the needs of individuals for training or retraining; (2) the demand or anticipated demand for employees in various

FIGURE 2

INFORMATION REQUIREMENTS AND FLOW
ASSOCIATED WITH JUSTIFYING A PROGRAM




occupations; and (3) modifying factors, such as the resources available for operating vocational programs and political activity in the community. These three basic pieces of information, when considered together, allow decision makers to weigh alternatives and to select one or more programs for continued or initial implementation.

## Determining the Needs of Individuals

There are two basic ways to determine the needs of individuals for training or retraining when planning or justifying a vocational program. First, one can assess the actual expressed demand of individuals for training in a given area or areas. Second, one can assume that all of the people who need vocational education have not made their needs known, and that methods of projecting the needs must be adopted. There is little doubt that this assumption is correct. However, in practice

most local vocational educational planners develop information concerning individual needs around the first method. Not because they necessarily believe it to be most philosophically correct, but because they believe it to be more practically implemented. It is very difficult to initiate programs on the basis of some theoretical group of people whom societal planners assume to require vocational training. They may not want it. This is not to say that attempts should not be made to encourage them to enter training.

This discussion assumes that most local planners will not be in a position to dictate or modify the social structure or to justify their programs based upon the hypothetical demand of those who they feel need training. The societal needs which do not manifest themselves in actual demand by individuals are generally beyond the control of local planners. Therefore, the discussion of individual training needs will be limited to a discussion of the needs expressed by individuals.

A number of methods have been used to determine the needs of individuals in the geographic area serviced by a vocational-technical school. One method is to ask all students currently enrolled in the high schools of the area what they would like to be when they "grow up." Based upon an indication of what they would like to be, one can hypothesize the demand for training in the future. Such a practice has a number of limitations. The greatest limitation is the assumption that the expressed occupational choice of a student in school is an accurate reflection of what he will do when he leaves school. This assumption appears reasonable if you ask the student what his occupational choice

is at a point very close to the time that he will enter the work force. However, if you ask a ninth grade student what he plans to be when he "grows up," it is unlikely that his response will be closely related to his eventual occupation. The reliability of the above procedure has been refined to some extent by a number of people. Instead of asking students an open-ended question requiring them to fill in a blank such as, "What would you like to be when you grow up?", the student is provided with a listing of the occupations, such as the listing found in the U.S. Office of Education Instructional Program Classification System (U.S. Government Printing Office, 1969). Each occupational title is accompanied by a brief description of the occupation and the student is asked to rank the top two or three in which he is interested. (This procedure is being tried in Wisconsin--C.E.S.A. region four, Cumberland, Wisconsin.) The latter procedure tends to make the individual's response more precise. It outlines a larger array of jobs from which the student can select. It also provides the student with some information to minimally test the job against his self-concept. Data resulting from either of the two above approaches is then summarized and presented to vocational program planners in terms of the number of people expressing interests in different occupations.

The above methodology could be used for justifying new programs as well as old programs. If one wishes to justify the existence of an ongoing program or the expansion of such a program, another methodology is available. Accurate records can be kept on the number of people who apply to a given program as contrasted with the number of training stations available. As the number of people who wish to enter a program

grows as contrasted with the number of stations available, the justification for program expansion or continuation increases. Data can be obtained directly from records available in most schools through the counselor or admissions person who processes applications. These data might even be summarized by a secretary who opens the mail. Actual enrollment data will become part of the normal school records as soon as the class begins. As indicated, however, this latter technique does not provide information indicative of the need for program expansion in areas other than those currently being offered. It might, however, indicate that programs in a similar occupational area should be considered.

Determining the Demand in Occupations

The second major type of information needed to justify a current program or the implementation of a new program is the demand or anticipated demand for employees in occupations related to the program. As indicated in the Vocational Amendments of 1968, training or retraining should be provided in areas where there is a demand or an anticipated demand. Training in these areas insures both the individual and society that participation in a given program will yield a return. Since vocational programs are established to help individuals achieve employment, training in areas where there is a demand provides some assurance that an individual who is trained will actually find employment opportunities available to him when he leaves the training program.

A number of methodologies are open to program planners who wish to assess the current or anticipated demands in different occupations. The simplest methodology available is to interview industrial representatives in the geographic area to determine what their current and future

needs for employees will be. This can be done by asking potential employers what jobs they see having continued or increasing demand and having them provide job descriptions of these occupations. Besides providing job descriptions, estimates should also be made of the number of people they anticipate needing in each occupation in the future. The data would be summarized over all the firms which were contacted and the data would be made available to decision-makers With labor markets as widely diverse as they are today and with the mobility characteristic of our society, the above methodology is of limited value because it allows for a view of only a limited portion of the total labor market available to graduates of any program.

Another more refined method of assessing the demand for employees in a given occupation can be found in the publication Planning Vocational Education Programs in Pennsylvania: Guidelines for the Use of Labor Market Information (Pennsylvania Department of Education, 1970). The system was developed to provide program planners with not only information on demand in a given occupational area but information on the residual demand. The residual demand is calculated after the total demand is reduced by the anticipated supply. With the current vocational system as extensive as it is at the present time, it would be naive for program planners to attempt to implement new programs in an area based upon only knowledge of demand. They must also assess the output or supply of trained manpower being provided by other institutions. Using the Pennsylvania model, (McNamara, 1971), data are gathered on a regional basis for each of 142 different occupational areas. The data include supply information gathered from those institutions that are currently providing training in each of the occupational areas, and

anticipated demand information assembled by the Pennsylvania Department of Labor and Industry. Table 1 is a sample of the type of information

TABLE 1

SAMPLE MANPOWER AND TRAINING DATA
(Summary of Clerical Workers 1970)

| Occupational Classification | Census (1970) (1) | Projected Employment (1985) (2) | Annual Withdrawal (3) | Annual Growth (4) | Annual Demand (5) | Annual Supply (6) | Unmet Demand (7) |
|---|---|---|---|---|---|---|---|
| CLERICAL | 141266 | 204900 | 7251 | 4242 | 11493 | 6398 | 5095 |
| Accounting, Clerks and Bkprs. | 10370 | 13926 | 431 | 237 | 668 | 1073 | 405* |
| Secretaries | 22449 | 37176 | 1560 | 982 | 2452 | 1793 | 749 |
| Other Clerical Workers | 108447 | 153798 | 5260 | 3023 | 8283 | 3532 | 4346 |

* Excess Supply

provided by the Pennsylvania system. Table 1 shows examples of the ways in which the information concerning clerical workers could be presented to program planners. The number of people employed in each of the various occupations as of the 1970 census is reported along with the projected 1985 employment in those occupations. The annual withdrawal rate from the occupations due to retirement and other reasons is calculated and the withdrawal rate and the anticipated annual growth in the occupation are added together to arrive at the anticipated annual demand. The annual supply of trained persons for these occupations is obtained by summarizing information gathered through a survey of all

of the institutions training people for these occupations in the geographic area. The annual supply is then subtracted from the annual demand to obtain an estimate of the residual or unmet demand. The residual demand is then used by decision-makers to determine the need for workers in the occupations. This system can be operationalized using data currently gathered for other purposes. The labor market data is available through most state employment service offices or their counterparts. These offices gather their data using the approach described in the U.S. Department of Labor's publication Tomorrow's Manpower Needs: National Manpower Projections and a Guide to Their Use as a Tool in Developing State and Area Manpower Projections (1971). State offices of education gather statistics on the number of graduates from each of the vocational programs throughout the state. If these two pieces of information are gathered over the same geographical area it is possible to adopt the Pennsylvania system with relatively little effort.

Weighing Alternatives

After the needs of individuals for training and the demand or anticipated demand for employees in various occupations have been determined for the geographic area serviced by a vocational school, this information plus modifying information must be combined to determine which of many alternative programs should be offered. Some of the modifying considerations are the resources available and the political pressures in the area. If resources are limited, choices among the potential programs that might be offered must be made. If sufficient resources are not available to operate a specific vocational program, the fact that individuals desire training in the area and

that there is a demand or anticipated demand for employees in the area is not very meaningful. Also, if the political climate in the community is strongly opposed to or strongly in favor of a specific program being implemented, this factor must be taken into account in making a decision. Usually, program planners make decisions among alternative programs using some set of criteria. A number of the potential criteria are listed below.

1. The magnitude of the need of individuals for training or retraining in a given occupation.

2. The extent of the labor market shortage in a given occupation.

3. The availability of resources.

   If a number of programs have been shown to have both a large potential population of people interested in training in the occupation and a large demand for employees, a decision can be made as to which one of the two should be implemented based upon the availability of resources. Some programs are much more costly to operate than others. Therefore, when resources are limited, program planners generally select the least expensive program. As more resources become available the more expensive programs are implemented.

4. Community reaction.

   Given the situation presented in item 3 above, with adequate resources to fund either program but not both programs, community feelings toward the occupations might be a basis for making a decision.

Most program planners will have to make such decisions and usually the decisions will be made using one or more of the above four criteria and other criteria thought to be significant within the community.

## Question 2: Are the Programs Effective?

If the purpose of vocational education is to help people gain skills related to employment which will aid them in becoming satisfactorily

employed, vocational program effectiveness should be judged in terms of the extent to which the training program actually helps students become employed in occupations related to training which they find satisfying.

Such an assessment of effectiveness is usually made at two points in time, upon initial placement and after the students have been on the job for a period of time. Initial placement information is obtained by determining how many people who graduated from the program actually became employed in related occupations immediately after graduation or within some short specified time after graduation. Although this criterion has been used for years to judge the effectiveness of vocational programs, it is insufficient. When initial placement is used to judge the effectiveness of programs, studies [such as the one done by Eninger titled "The Process and Product of Vocational Education" (Eninger, 1968, p. 12-8)] find that the placement service is the major component of the instructional program that makes a difference. If the placement service is good, students tend to get placed in related jobs. If the placement service is bad, students tend to not get placed.

The objectives of vocational education are not only to get a person initially placed in an occupation related to training but to prepare a person for continued employment. Continued employment in an occupation is achieved if the occupation continues to require personnel, if the person is satisfied enough with the occupation to remain in it, and if employers in the occupation are satisfied enough with the ability of the person to perform on the job. This concept has been studied by the Work Adjustment Project at the University of Minnesota (Dawis and others, 1968) and others in the field of industrial psychology. Unpublished investigations have found that tenure in an occupation of

over six months implies a minimum of employer and employee satisfaction. If an employee is very unsatisfied with a job he will typically leave before six months and if an employer is very unsatisfied with the employee he will typically ask him to leave before six months. Therefore, a more appropriate criterion to use in judging the effectiveness of a vocational program is a follow-up taken at some point when past students have been out on the job long enough to determine if they like the kind of employment they have entered, and also long enough for employers to determine if they have sufficient skills related to the occupation for which they were trained.

It appears that a follow-up conducted approximately one year after students graduate would be an appropriate vehicle for gathering information concerning the effectiveness of vocational programs in light of the above discussion. If the follow-up is to provide the information needed to judge whether or not the program is effective plus diagnostic information concerning why the program might not be effective, it should gather information on the following. It should gather information on whether or not graduates are employed in related occupations, whether they are satisfied with their employment, whether their employers are satisfied with their performance, and diagnostic information which might be used to determine why individuals were not placed in related occupations, are not satisfied, or are unsatisfactory to their employers.

In any discussion of the overall effectiveness of a program one should also examine the efficiency of the program. If one agrees with the purposes of vocational education specified earlier, the efficiency of a program is judged in terms of the cost of preparing individuals

who become employed in occupations related to the training program. The efficiency of a program is obtained by dividing the total cost of the program by the number of people who graduate, enter related jobs and are successful. A program can be inefficient if the costs involved in operating the program are very high or if the output from the program is very low. The number of dropouts from the program will greatly affect this efficiency as will the quality of training of those who complete the program. If a large number of people drop out, the program will operate inefficiently because all of the instructional costs would be allocated to a few graduates. If the program is not doing a good job of training, the program would also be inefficient because many of the graduates would not be successful on the job. In each of the above cases the costs of the dropouts or the unsuccessful graduates would be allocated to those who were successful, further raising the cost per successful graduate.

Care must always be exercised in interpreting efficiency information because some programs may be high cost programs but other social values may offset the costs. For example, programs to train handicapped may be expensive per graduate but they should not necessarily be eliminated.

### Question 3 : Are Students Allowed to Participate in Programs Based on Their Needs, Interests, and Ability to Benefit From Training?

This question is usually answered by gathering two types of information. The first type is subjective and relates to judging the satisfactoriness of pre-enrollment counseling. In this paper pre-enrollment counseling is defined as assisting a student to choose among alternative

programs which are available and not as selecting students for admission. The second type of information is the extent to which students are allowed to enroll in programs they really wish to enter as contrasted with programs which have training stations available.

Determining who can benefit and profit from instruction offered in a program is always a very difficult task, usually undertaken during pre-enrollment counseling. Legislation indicates that people should be allowed to enter programs based upon their needs, interests, and ability to benefit from training. In trying to assist people to select among alternative vocational programs based on these three factors, vocational educators are faced with both philosophical and empirical considerations. Some information has been shown to have a high relationship with potential success in all types of further education. But these measures in many cases are not consistent with the philosophical position underlying the statement that students should be allowed to enter vocational programs based on their needs, interests, and ability to benefit from training. Table 2 lists some potential measures which are consistent with vocational education philosophy, and other measures which are potential but <u>not consistent</u> with vocational education philosophy.

## TABLE 2

### POTENTIAL COUNSELING MEASURES

| Potential and Consistent | Potential But Not Consistent |
|---|---|
| 1. Aptitudes | 1. Scholastic aptitude tests to the degree that they are affected by prior academic performance |
| 2. Measures of needs individuals would like to have satisfied by jobs | 2. High school rank |
| 3. Interests | 3. Prior academic record |
| 4. Vocational maturity (readiness to make occupational choices) | 4. Sociological data |
| | 5. Sex |

The major objection with the "potential but not consistent" measures is that they are past-oriented or categorical variables. Individuals should be counseled concerning vocational programs on the basis of their potential to succeed in the occupation for which the training program is preparing them to enter, and not on the basis of past performance of individuals or their socioeconomic status. Categorical variables such as disadvantaged, minority groups, sex, and handicapped are satisfactory if one wishes to describe a group of people, but they are not truly relevant for pre-enrollment counseling purposes. The groups of individuals contained in such categories are not homogeneous enough to use such categories to specify who can benefit and who cannot benefit from instruction. For example, a program developed for rural black high school dropouts implies that rural black high school dropouts have some characteristics in common which result in all of them benefiting from the same type of instruction. Rural black high school dropouts are just as heterogeneous as any other category of people, and just because they fall into this socially defined category does not mean that they are all the same or can benefit from the same type of instruction.

Problems are also encountered if measures of past performance such as high school rank and prior academic record are used in pre-enrollment counseling. Such measures may be the best empirical predictors of future performance, but they penalize people based upon their past rather than allowing them to be judged based on their future potential. When people are admitted and counseled toward vocational programs based upon their past record, they are not truly being given the opportunity to enter vocational programs based upon their interests,

needs, and abilities. Most of us can think of examples of individuals who could not see the relevance of education during their high school years, who went into the military service and upon coming out of the service recognized the importance of additional education, and have succeeded where their past record would have condemned them to failure. Also, many individuals who do not do well in the academic programs in high schools because of lack of interest may find meaningful educational experiences in the vocational programs. Their admission to the vocational program should not be biased by past academic performance.

The measures in the "potential and consistent" list tend to be less affected by past performance. Therefore, they are more appropriate measures for assessing the abilities, interests and capabilities of an individual to benefit from instruction in a particular program.

Over the years, a great deal of research has been done to try to determine which student characteristics might be helpful in assisting students to select among the many alternative occupational training programs available to them. One of the more comprehensive studies in this area has been Project MINI-SCORE, conducted in Minnesota. The results of this study, as well as empirically developed normative data which can be used in counseling students in regard to post-high school vocational programs, can be found in a series of final technical reports and the final report (Pucel, Nelson, Asche and Faurot, 1972; Pucel, Nelson and Faurot, 1972; Pucel, Nelson and Mohamed, 1972; Pucel and Nelson, a, b, 1972; Nelson and Pucel, 1972). The results of this study indicate that measures, such as those in the "potential and consistent" list, can be useful in assisting a person wishing to decide which of a number of alternative vocational programs to enter. The

results also show that such measures are not very effective in predicting a person's probability of success in a given occupation.

Attempting to judge the philosophical compatibility of a counseling system with vocational education philosophy and the empirical characteristics of a counseling system is very difficult and is better left to persons who are specialists in that area. The previous discussion provides some general information on judging the philosophical compatibility of a counseling system.

The second piece of information which could be used to determine whether students are allowed to participate in programs based on their needs, interests and abilities to benefit from training can be gathered very simply by asking students who are enrolled in the programs whether the program in which they enrolled was their first, second or third choice, etc. If one assumes that students have made somewhat realistic program choices, it would be possible to determine which students were at least not allowed to enroll in programs consistent with their primary interests. If a population needs survey were conducted as discussed in the discussion of "What Programs Should Be Offered?," this information could also be used to help answer the question.

### Question 4: Are Job Opportunities Available In Related Occupations?

The availability of job opportunities in occupations related to a training program should be determined prior to the time the program is initiated. Procedures for assessing demand for graduates of a program have already been discussed in reference to the question "What Programs Should Be Offered?" At that point the procedure was discussed primarily in reference to whether or not a program should be started.

After a program is initiated and becomes operational it would also be wise to use the same procedures on a yearly basis to justify the continued demand. However, many vocational educators do not feel they have the resources to continue to conduct in-depth demand studies each year for all programs they are offering. Therefore, other approaches are sometimes used to determine if training related jobs are available to graduates after graduation.

One approach is to determine whether or not graduates of the program are entering related employment. If the number of graduates entering related employment is high, one can conclude that the number of jobs available to graduates in training related occupations is sufficient. However, if the number of graduates entering training related occupations is low one can not necessarily conclude that there are few jobs available in training-related occupations. The graduates may not be qualified to enter these occupations, or they may not wish to enter the occupations. Therefore, the practice of observing the percentage of graduates placed in training-related occupations immediately following graduation provides sufficient information only if the percentage of graduates entering a related occupation is high.

Another more satisfactory technique is to follow-up graduates and ask them if jobs were available in training-related occupations when they graduated. If such jobs were available but graduates did not enter them, they should be asked why they did not.

### Question 5: Do Graduates Possess Skills and Knowledge Necessary to Perform in the Occupations For Which They Trained?

Typically when graduates of a program are found to be employed in occupations unrelated to the program from which they graduated, the

immediate implication is that the students may not be adequately prepared for employment in that occupation. As indicated earlier however, there are other reasons why a person might not be employed in an occupation for which he trained. Two of these are: there may be no jobs available in the occupation and, the individual may not wish to become employed in the occupation. Information concerning the graduate's possession of skills and knowledges necessary to perform in the occupation can be obtained from the graduates and from their employers. Graduates can be contacted through follow-up and asked whether or not they possess the skills and knowledge required of them on the job. Employers can be contacted to determine whether they feel the graduates possess sufficient skills to perform adequately on the job. If the graduates and the employers indicate that the graduates possess sufficient skills and knowledge to proceed on the job, decision-makers must look for alternative reasons such as those previously suggested for why the graduates are not employed in related occupations. If the graduates and/or their employers indicate that the graduates do not possess sufficient skills and knowledge to perform on the job, the question becomes why. Usually the answer to this question will be found either in the content taught in the program from which the graduates graduated or in instructional methods used in the program. Some questions which might be asked of graduates are: Do you possess sufficient technical information to perform on your job?; Were you provided sufficient training to allow you to utilize the equipment found on the job?; Do you possess sufficient skill to actually perform the tasks required of you on the job?. The employers would be asked similar types of questions regarding whether or not the graduates possess sufficient technical informa-

tion, their ability to operate the equipment found on the job and their ability to perform the manipulative tasks required on the job.

If answers to any of the questions asked of the graduates or their employers indicate a lack of ability in any of these gross areas, it is important to determine why this lack has occurred. This lack usually occurs because the content or the teaching methods used in the instructional program are inadequate.

### Question 6: Is the Content That is Being Taught In the Programs Appropriate?

Investigations into the appropriateness of the content being taught in a program usually takes one of two forms. Either a long list of questions can be asked of students and their employers pertaining to the specific tasks included in the instructional program or general questions can be asked pertaining to the major categories of program content. Although the procedure of enumerating each of the tasks taught in the program and having graduates and their employers react to this list is more empirically sound, it is typically not used. The amount of time involved in developing adequate instrumentation and in gathering and aggregating the information becomes prohibitive. Also, the time required to respond to such instruments may have a tendency to reduce return rates and cooperation. Therefore, most program operators attempt to determine the general area where the problem exists and then they re-examine the program content related to that general area. The following is a discussion of some alternative techniques typically used to determine if content being taught is relevant.

Probably the most widely used method of determining content is to assemble an advisory craft committee of persons who represent the

industries in which graduates of the program will be employed. The craft committee provides counsel and direction to the instructor or the curriculum personnel in the school as they develop the course content. This does not say that craft committees should not be utilized if other techniques are used. The craft committee is a cornerstone of any occupational education program and should be constituted and allowed to review the curriculum materials regardless how materials are created.

A number of formal techniques can be used to determine what content should be taught in a course. The technique used most often in the past is "trade and job analysis" as described by Fryklund (Fryklund, 1965). The following is a brief summary of that technique. One or more people visit the industries which the occupational program is supposed to prepare employees to enter. They observe the typical jobs performed in each occupation. Eventually, after visiting many similar industries and observing people performing in each of these industries, a total list of the skills required in the occupational areas to be serviced by the program is achieved. This list provides the basis for determining the content of the occupational program and also provides a justification for the course content. The trade and job analysis does not provide information on the exact technical information which should be made available to students to enable them to perform the tasks; it only indicates tasks they may potentially have to perform. The instructor or other personnel must infer the necessary technical information from the tasks which are performed. This technique works very well in occupations where a large portion of the requirements of the job are performance or doing elements. However, in occupations primarily dependent upon technical knowledge, the technique is not as useful. The reason

it is not as useful in these occupations is that it is very difficult to infer the technical information requirements when the performance requirements of the job represent a small fraction of the total activity. The technique works very well where the physical activity is a fairly large component as contrasted with the mental activity.

Formal "task analysis" as proposed by Gagne (1964) is more applicable in situations where the technical information is a relatively large component. However, the technique is quite involved and most program operators might find it too complex and time consuming to meet their needs. A more detailed discussion of alternative methods of determining content can be found in the article entitled "Goal Structure and Change Definition in the Process of Curriculum Development" (Smith and Pucel, 1970).

### Question 7: Are the Methods Which Are Being Used To Communicate the Content to Students Effective?

Given the current state of educational research and development, this is probably the most difficult question on which to gather objective decision-making information. For years, educational personnel have attempted to determine which teaching techniques are most effective in teaching certain kinds of content. The results of this research continue to provide conflicting evidence. It appears that students can learn the same content presented through a large variety of methods and that as long as the material is presented in a clear, meaningful fashion, the exact method of presentation is not important. A second generalization which might be made from past research is that a teacher's expectation of a student's performance in the classroom will to some extent dictate the performance of the student within the classroom. This

generalization is based on evidence presented in the book Pygmalion in the Classroom (Rosenthal and Jacobson, 1968). The Pygmalion study investigated two groups of students with equal ability. Instructors were told that one group of students was performing at a lower level than their ability would indicate and that they had great potential for growth. Although the two groups started out equal in IQ, the group which the instructors thought had a great deal of potential for expansion greatly out-achieved the other group at the end of the study. Therefore, it appears that the actual technology used in presenting the content might not be as important as the psychological climate within which the instruction is given.

Currently, data-gathering methods which can be used to provide feedback for decision-making concerning teaching methods are in their infancy.

# CHAPTER IV

## DATA COLLECTED BY THE VOCATIONAL FOLLOW-UP SYSTEM

As indicated earlier, the objective of any information gathering system is to gather the minimum amount of information that is required to support decision-making. Therefore, the Vocational Follow-Up System data base was developed after a study of the minimum amount of information that would be required to allow vocational educators to make decisions concerning their programs. The primary function of the system was to gather follow-up information which could be used to evaluate the overall effectiveness of programs. This follow-up information would also be used to satisfy the federal requirements for follow-up of students who participate in vocational programs utilizing federal funds. Since the follow-up was the primary focus of the system, it was decided that additional information which could be used to facilitate decision-making would also be gathered to the extent that it did not overshadow the original purpose or cause an unrealistic increase in the cost of operating the system. Therefore, all information eventually included in the system was limited by the data gathering techniques necessary for conducting the follow-up. In some cases this meant that less than ideal methods of gathering the other types of information were developed so they were compatible with the follow-up even though it was recognized that more refined systems for gathering the information were possible if additional funds were available.

The five information requirements thought to be valuable to vocational educators for decision-making purposes which were discussed in Chapter III were reviewed in light of the ultimate follow-up objective.

The basic question to be answered by the Vocational Follow-Up System was "What is the overall effectiveness of the vocational programs being conducted in the post-high school area vocat nal-technical institutes of Minnesota?". Based on the previously discussed theoretical structure it was decided that the overall effectiveness of a vocational program is best judged on the extent to which the graduates of the program become employed and maintain employment in occupations in which they can utilize the skills developed in the program. Therefore, the most gross measure of the overall effectiveness of a program is the extent to which graduates of the programs become employed in occupations related to the program. It was also decided that it was important to assess the ability of a program to retain all of the people who enrolled in the program through graduation. For if a program only graduates a very small percentage of those who enroll, and those people are successful on the job, this would still not indicate a truly effective program. Therefore, it became essential to gather not only follow-up information on whether graduates became employed in related occupations, but it also became essential to gather information on how people terminated their experience in the vocational program.

In light of the previously discussed rationale, the basic follow-up information gathered as an indicator of program effectiveness was the employment status of the graduates one year after graduation. Upon investigating the possible classifications of a graduate's job one year after graduation, it was found that a graduate could become employed in the exact occupation for which he trained, employed in an occupation related to the occupation for which he trained but not the exact occupation, employed in an unrelated occupation, unemployed

(seeking work but can not find work) or unavailable for employment (not seeking work). The category "unavailable for employment" was important because there are many reasons which society recognizes as legitimate for graduates of vocational programs not being employed after graduation. Some of these reasons are: engaging in further training, military service, illness, housewife, or pregnancy.

The need for information concerning the number of students who graduated from the program as opposed to the number who enrolled necessitated the development of a data gathering procedure which would allow for all terminations to be reported. Upon examining the possible methods of terminating from a program a four category classification scheme was developed. It was felt that a student would terminate by: withdrawing from the program (dropping), changing from one program to another program within the school, completing his training objective and leaving to become employed in a job directly related to his training program, or graduating. If the student withdrew it was recognized that there were a number of possible reasons for withdrawing such as: unsatisfactory program performance, economic reasons, entered the armed forces, personal problems or transfer to another educational institution. Therefore, it was felt that the overall effectiveness of the program could be determined by gathering information on how people terminated as well as whether or not they became employed in a related occupation.

Besides being interested in the effectiveness of vocational programs, diagnostic information was desired to aid in determining why a program was not effective. Specifically, decision-makers were interested in determining where a program may need improvement. This gave rise to two questions: "Are the methods which are being used

in the program to communicate the content to students effective methods?" and "Is the content being taught in the program helpful to students when they seek employment and become employed?". It was felt that information which would be capable of answering these questions would relate to the quality of the program and should be gathered not only from students but their employers. Therefore, a series of questions to be asked of graduates was developed pertaining to the quality of instruction as well as the relatedness of the content in the course to their post-graduate employment. A series of questions was also developed which was to be asked of employers to gather similar types of information from an employer point of view. It was felt that by reviewing both types of information, gathered from the graduates and their employers, statements could be made concerning if the program was not effective due to the quality of the program. The procedures that were used to develop the questions that were asked of the students and the employers will be discussed later. Other reasons for why a program might not be effective can be found in Chapter III.

In order to conduct the follow-up it was not only necessary to know who graduated from the various programs but it was also necessary to have the addresses of the graduates. This information can be gathered through two different methods. One is to have the schools provide the addresses of the graduates when they report who graduated from the programs. The second is to gather the addresses upon enrollment which allows the information to be gathered directly from the students rather than having the schools spend clerical time going through their files to determine the addresses of graduates when they graduate. The procedure of having the schools turn in the addresses

upon graduation was used originally. However, the schools found that the amount of clerical time required was extensive, especially in the larger schools. Therefore, the approach of having all people who newly enroll in a school fill out an information sheet was adopted. This provided a vehicle for gathering biographical descriptive information on the students as well as their addresses. The biographical information was gathered because it was recognized that members of certain "high risk" populations may tend to withdraw (drop) more often or become unemployed more often than members of other populations. Therefore, follow-up information and termination information would need to be judged in light of the characteristics of people in the program. The specific list of biographical data gathered by the system will be discussed in detail later.

The biographical information also allows for an investigation of the question "Which individuals should be admitted to the program based upon their needs, interests and abilities?" The basic descriptive information could be useful in comparing those people who withdraw from programs versus those who graduate, etc. It could also be valuable in examining the types of people that employers feel are performing very satisfactorily as contrasted with the types of people employers feel are not performing adequately.

In addition to the information described above which related directly to the major purposes of the follow-up system, additional information of interest to decision-makers was gathered. Such information included the first salaries graduates received as contrasted with salaries after one year, satisfaction of graduates with their employment, amount of additional post-graduation education and prior work histories.

## Instruments

The information requirements of the Follow-Up System required four instruments. An instrument to gather the student addresses as well as other biographical information upon student enrollment into area vocational-technical institutes (Enrollee Information Form), an instrument to gather information concerning how students terminated their enrollment (Termination Report Form), a follow-up questionnaire to be sent to graduates one year after graduation (Follow-Up Questionnaire), and an instrument to gather information from the employers of graduates (Employer Questionnaire).

### Enrollee Information Form

The purpose of the Enrollee Information Form was to gather biographical information from students as well as their addresses which could be used during follow-up. A series of meetings were held with representatives of the area vocational-technical institutes to determine which types of information they felt might be useful in describing the populations enrolling within the institutes. It was decided that the information needed could be classified into five categories: (1) identification information - information useful in identifying and locating the student; (2) enrollment information - information which describes where, when and the program in which the student enrolled; (3) categorical information - information which allows for the classification of students into categories of reporting interest; (4) history information - information which allows for a description of selected aspects of a student's past activities; and (5) test information - information which allows for a description of students in terms of standardized

test scores. The specific information identified under each of these major categories is listed below.

I. Identification information

1. Social Security Number
2. Name
3. Permanent address
4. Telephone number
5. Parent or guardian name
6. Parent or guardian address
7. Parent or guardian telephone number
8. Parent or guardian occupation

II. Enrollment information

9. Program in which enrolled
10. Program starting date
11. Vocational school in which enrolled

III. Categorical information

12. Age in years
13. Sex
14. Marital status
15. Annual income of household
16. Number of people living in household
17. Handicaps

IV. History information

18. Major activity during previous year
19. Last high school attended
20. Whether a person graduated from high school and the date of last attending high school.
21. Number of years of education completed
22. Whether or not the person participated in prior high school vocational training
23. Whether or not the person participated in prior post-high school vocational training
24. Amount of prior work experience
25. Whether the student previously attended an area vocational-technical institute

V. Test information

26. The schools were given the option of whether or not they wanted to provide test scores on the students enrolling in their programs. If they provided these scores, the scores would be summarized and reported. However, providing the scores meant that the schools would have to go back into their files to retrieve that type of information.

The result of many discussions concerning the information that should be gathered and how it should be gathered was the Enrollee Information Form presented in Sample A. The form was developed in such a way that most of the information provided by the new enrollee could be punched directly without any input from the Vocational Follow-Up System staff. The red boxes indicate pieces of information that had to be converted by Vocational Follow-Up System staff into numerical data that would be suitable for data processing. It was felt that it was more efficient to have students provide narrative responses to these items and to have the office staff code them than it was to try to explain the entire coding system to the students and have them select an alternative. Most students would not have sufficient background to select the appropriate alternative. In those cases where it was felt that the students could select the appropriate alternative, students were presented choices to be made and the data did not have to be converted.

The information collected through this form is summarized and reported to the schools. Procedures for summarizing and reporting the information are discussed in later sections of this report.

### Termination Report Form

The second form which had to be developed was a termination report form. This form was needed by the institutes to report how students who enroll in a program terminate their enrollment. The form was developed with the consultation of personnel from the area vocational-technical institutes as well as the Minnesota State Department of Education. After a series of meetings it was decided that terminations could

Form 1971

# SAMPLE A

Vocational Follow-Up System
125 Peik Hall
University of Minnesota
Mpls , MN 55455

## ENROLLEE INFORMATION FORM

1 Social Security Number (9) ___ – ___ – (17) ____

2 Name (18) Last (29) (30) First (39) (40) Initial (41) Maiden (if any) (50)

3 Permanent Address (51) Street or Rural Route (72)

(9) City (26) (27)(28) State (29) Zip Code (33)

4 Telephone Number (39) Area Code – (48)

5 Parent or Guardian's Name (49) Last (60) (61) First (70)

6 Parent or Guardian's Address (9) Street or Rural Route (30)

(31) City (48) (49)(50) State (51) Zip Code (55)

7 Parent or Guardian's Telephone Number (56) Area Code – (65)

8 Parent or Guardian's Occupation _____

9 Program Enrolled In _____

10. Starting Date (71)(72) Month (73)(74) Year

11 Vocational School Enrolled In

(9-10) Code Name

- 25 Albert Lea
- 01 Alexandria
- 17 Anoka
- 02 Austin
- 26 Bemidji
- 23 Brainerd
- 03 Canby
- 27 Dakota County, Farmington
- 24 Detroit Lakes
- 04 Duluth
- 05 Eveleth
- 06 Faribault
- 08 Granite Falls
- 09 Hibbing
- 28 Hutchinson
- 10 Jackson
- 11 Mankato
- 12 Minneapolis
- 13 Moorhead
- 14 Pine City
- 15 Pipestone
- 29 Ramsey-Washington Co , St Paul
- 30 Rochester
- 16 St Cloud
- 31 St Paul
- 18 Staples
- 32 Suburban Hennepin, Minneapolis
- 19 Thief River Falls
- 20 Wadena
- 21 Willmar
- 22 Winona

12. Age in Years (75)(76) Years

13 Sex (77) [1] Male [2] Female

14. Marital Status (check one)

(11) [1] Single (11) [2] Married (11) [3] Other

15 What was the approximate annual income of the household in which you lived last year? (check one)

(12) [1] Under $3000
(12) [2] $3000-$4999
(12) [3] $5000-$8000
(12) [4] More than $8000

16. How many people lived in the household referred to in Question 15 above? (13)(14)

17. Are you (check those that apply)

(15) [1] Deaf

(16) [1] Hard of hearing (need hearing aid)

(17) [1] Speech impaired (stutter, etc )

(18) [1] Blind (20/200 or less in better eye after correction)

(19) [1] Partially sighted (20/200-20/70 in better eye after correction)

(20) [1] Physically impaired (crippled, heart condition, etc )

18 How did you spend most of last year? (check one)

(21) [1] Employed
(21) [2] Going to School
(21) [3] Military
(21) [4] Unemployed (looking for work)
(21) [5] Other

19 Name and address of last high school attended

_____

_____

20 Do you have a high school diploma or its equivalent?

(25) [1] Yes — If yes, date graduated (26)(27) Month (28)(29) Year

(25) [2] No — If no, last date attended (30)(31) Month (32)(33) Year

21 How many years of school have you *completed*?

(34) [1] Less than 8
(34) [2] 9
(34) [3] 10
(34) [4] 11
(34) [5] 12
(34) [6] 13
(34) [7] 14
(34) [8] More than 14

22 Have you had prior *high school level* vocational training?

(35) [1] Yes (If yes, check below)

(36) [1] Related to program now enrolled in

(37) [1] Unrelated to program now enrolled in

(35) [2] No

23 Have you had prior *post-high school level* vocational training?

(38) [1] Yes (If yes, check below)

(39) [1] Related to program now enrolled in

(40) [1] Unrelated to program now enrolled in

(38) [2] No

24 Have you had prior work experience? (Indicate the number of *MONTHS* in each category, *FULL-TIME* means 35 or more hours per week.)

(41) (43) Months — Part-time work experience unrelated to program now enrolled in.

(44) (46) Months — Full-time work experience unrelated to program now enrolled in

(47) (49) Months — Part-time work experience related to program now enrolled in

(50) (52) Months — Full-time work experience related to program now enrolled in

25 If you have previously attended an *Area Vocational School* in Minnesota, which one was it? Use the code number from Question 11

(53)(54) Code — What was the date you left? (55)(56) Month (57)(58) Year

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FOR OFFICE USE ONLY U S Office of Education Code for program enrolled in

MSAT scores Raw score (65)(66) Percentile rank

High School Percentile Rank (69)(70)

General Aptitude Test Battery (GATB):

be classified into four categories: withdrawal, change of program, completion of training objective, and graduation.

First a student could withdraw from a program for a number of different reasons. The reasons might be: (1) unsatisfactory program performance, (2) economic reasons, (3) entered the armed forces, (4) personal problems, (5) student transferred to another AVTI, (6) student transferred to a junior college, (7) student transferred to a college or university, (8) student transferred to institutions other than those mentioned above, or (9) reason unknown.

Second, a student could transfer to another program in the same institute. Third, a student could complete his training objective even though he did not graduate. "Completion of a training objective" was defined as a situation where a person left the program before graduation for employment in a directly related occupation or a student stayed in the program until completion but did not perform satisfactorily enough to meet all the qualifications for graduation. Some of the schools issued trade certificates to those individuals who completed the entire program but did not do so satisfactorily. Fourth, a student could successfully graduate from the program.

The Termination Report Form presented in Sample B was developed to gather the termination information. It was developed in such a way that it could be sent directly to keypunchers for data processing after the Vocational Follow-Up System staff completed the information required in the red boxes, which represented the conversion of verbal information to numerical values ready for data processing. The Termination Report Form is completed by an institute representative and not the student.

Form 1107

# SAMPLE B

## TERMINATION REPORT FORM

Vocational Follow Up System
Room 302 1507 University Ave SE
University of Minnesota
Minneapolis, Minnesota 55455

NOTE Red squares are for office use only

STUDENT'S NAME _____
Last First Middle Initial

AREA VOC -TECH SCHOOL _____
Name

PROGRAM STUDENT TERMINATED FROM _____
Curriculum

(Check one) **CHANGE OF STATUS** Date 12 [ ][ ] month 15 [ ][ ] year

16 [1] Student dropped (see back of this page for drop reasons Place code in this square ) 17 [ ]

16 [2] Student changed program

TO _____
Curriculum

16 [3] Student completed training objectives (student accepted employment in a job directly related to his AVTS program) or received a trade certificate

16 [4] Student graduated

### REASON FOR DROPPING CODE

(Select one and record on other side)

1 UNSATISFACTORY PROGRAM PERFORMANCE

e g a) poor grades – lack of progress
b) absent too frequently
c) could not adjust to training program
d) lack of educational interest
e) etc

2 ECONOMIC REASONS

e g a) insufficient funds
b) accepted a full time job not related to his AVTS program
c) etc

3 ENTERED THE ARMED FORCES

4 PERSONAL PROBLEMS

e g a) family problems
b) health illness or death
c) marriage
d) moved from area
e) pregnancy
f) etc

5 STUDENT TRANSFERRED TO OTHER AVTS

6 STUDENT TRANSFERRED TO JUNIOR COLLEGE

7 STUDENT TRANSFERRED TO COLLEGE OR UNIVERSITY

8 STUDENT TRANSFERRED TO INSTITUTION OTHER THAN THOSE MENTIONED IN 5, 6, or 7

9. REASON UNKNOWN

e g a) no reason given by student
b) non interpretable reason
c) etc

## Follow-Up Questionnaire

The third instrument developed by the Vocational Follow-Up System was the Follow-Up Questionnaire. The Follow-Up Questionnaire (Sample C) was designed to gather information capable of answering the questions: "Was the training program effective in assisting graduates to obtain related employment and maintain related employment during the first year after graduation?" "Was the training program relevant to the requirements of the jobs graduates entered during their first year after graduation? and "What job-related experiences or history did graduates have during their first year after graduation?" In order to obtain information concerning these basic questions the questionnaire was designed in three sections: status one year after graduation, history during the year after graduation, and training program assessment by students in light of their job experiences during their first year after graduation (see Figure 3).

The primary piece of information gathered concerning the status of graduates one year after graduation was their employment status. Employment status was broken down into five categories: employed in a closely related occupation, employed in a broadly related occupation, employed unrelated, unemployed, and unavailable for employment. This categorization allows decision-makers to assess the number of graduates employed in the exact occupations for which trained (employed closely related), the number employed in related occupations but not the exact occupations for which trained (employed broadly related), the number employed in unrelated occupations (employed unrelated), the number actively seeking employment who can not find it (unemployed), and the number unavailable for employment. The unavailable for employment

Vocational Follow Up System
Room 302, 1507 University Avenue S E
University of Minnesota
Minneapolis, Minnesota 55414

SAMPLE C

PLEASE LEAVE ALL [illegible]

## FOLLOW-UP QUESTIONNAIRE

*ALL RESPONSES WHICH YOU GIVE WILL BE KEPT STRICTLY CONFIDENTIAL*

GENERAL DIRECTIONS Please complete ALL sections that apply When you have completed the form return it in the enclosed return-addressed, stamped envelope Your frank response is very important in order that the area vocational-technical institutes may continue to improve their programs

### I PERSONAL INFORMATION

A Name _____ (Last) _____ (First) _____ (Middle) B Soc Sec No. (18) [ ][ ][ ]-[ ][ ]-[ ][ ][ ][ ] (26)

C Present Address _____ (Street or Rural Route)

_____ (City) _____ (State) _____ (zip code)

D Home Phone _____ (area code) Work Phone _____ (area code)

### II ADDITIONAL TRAINING

A Since attending the area vocational-technical institute, what further educational training have you taken part in? (You may check more than one )

(27) [1] None

(28) [1] On-the-job training (employer-sponsored training program)

(29) [1] Public area vocational school programs

(30) [1] Private vocational programs

(31) [1] University, college and/or junior college programs

(32) [1] Apprenticeship

(33) [ ] Specialized occupational military training

(34) [1] Other _____ _____ (specify)

### III. EMPLOYMENT INFORMATION – Present status

A Are you presently employed, unemployed or unavailable for employment? (Check *only* one of employed, unemployed, or unavailable for employment.)

[ ] Employed

[ ] Unemployed (You are actively looking for a job but cannot find one )

[ ] Unavailable for employment (You cannot accept a job for one of the following reasons Please check appropriate reason )

(36)
[1] Military
[2] Further training or education
[3] Illness

(36)
[4] Housewife or pregnancy
[5] Presently not working and not interested in employment
[6] Other _____ _____ (specify)

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## IV JOB INFORMATION (IF YOU HAVE NOT BEEN EMPLOYED AT ANY TIME SINCE GRADUATION FROM THE AREA VOCATIONAL-TECHNICAL INSTITUTE, SKIP TO SECTION IX, p 4)

DIRECTIONS 1. If you were employed at any time since graduating from the area vocational technical institute, *complete the following section of the questionnaire*

2 Please supply the requested information for each of the following jobs held during the time since graduating from the area vocational-technical institute. (Include names and addresses.)

| | | |
|---|---|---|
| (1) First Job (first job after leaving vocational school) | Firm Name _____<br>Firm Address _____<br>City _____<br>Job Title _____<br>Job Duties _____<br>Immediate Supervisor _____ | Check one (47)<br>[1] Full-time job<br>[2] Part-time job<br>Check one<br>[ ] Job related to training<br>[ ] Job not related to training<br>Number of *months* in this job since graduation from vocational school (48)(49) [ ][ ] |
| (2) Present Job (job you are presently employed in If same as first job, write SAME ) | Firm Name _____<br>Firm Address _____<br>City _____<br>Job Title _____<br>Job Duties _____<br>Immediate Supervisor _____ | Check one (60)<br>[1] Full-time job<br>[2] Part-time job<br>Check one<br>[ ] Job related to training<br>[ ] Job not related to training<br>Number of *months* in this job since graduation from vocational school (61)(62) [ ][ ] |

(3) How many jobs, including your first and present job, have you had since leaving the area vocational-technical institute? (63) [ ]

## V ADVANCEMENT INFORMATION

A. Have you had a formal advancement in job classification (other than just salary increases) since taking your first job after leaving the area vocational-technical institute?

(64) YES [1] (64) NO [2]

B. NOTE The following item need not be completed if you prefer not to complete it Please do not include overtime when calculating your monthly salary (Check the appropriate squares.)

| | Under $250 | 250-299 | 300-349 | 350-399 | 400-449 | 450-499 | 500-549 | 550-599 | 600-649 | 650-699 | 700+ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| First Job Monthly Salary Range | | | | | | | | | | | | (65) (66) |
| Present Job Monthly Salary Range | | | | | | | | | | | | (67) (68) |
| | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | |

VI JOB SATISFACTION SURVEY (IF YOU ARE NOT PRESENTLY EMPLOYED, SKIP TO SECTION VII.)

DIRECTIONS The purpose of this survey is to enable you to express your feelings of satisfaction or dissatisfaction with your present job Please answer all questions by placing an "X" in the appropriate square

A How do you feel about your present job?

(9)

[1] Like it very much

[2] Like it somewhat

[3] Neither like nor dislike it

[4] Dislike it somewhat

[5] Dislike it very much

B. Considering the characteristics of your present job, rate the degree to which you are satisfied with each of the following

| | Satisfied | Not Sure | Dissatisfied | |
|---|---|---|---|---|
| 1. Salary | [1] | [2] | [3] | (10) |
| 2. Fringe benefits | [1] | [2] | [3] | (11) |
| 3. Potential for advancement | [1] | [2] | [3] | (12) |
| 4. Supervision and management | [1] | [2] | [3] | (13) |
| 5. Co-workers | [1] | [2] | [3] | (14) |
| 6. Company policies and practices | [1] | [2] | [3] | (15) |
| 7 Pace (speed) of work | [1] | [2] | [3] | (16) |
| 8. Facilities and equipment with which to do the job | [1] | [2] | [3] | (17) |
| 9 Working conditions | [1] | [2] | [3] | (18) |
| 10. Variety of work tasks | [1] | [2] | [3] | (19) |
| 11. Job security | [1] | [2] | [3] | (20) |
| 12. Safety conditions | [1] | [2] | [3] | (21) |

**TRAINING PROGRAM QUESTIONNAIRE:** (IF YOU ARE PRESENTLY EMPLOYED OR HAVE BEEN EMPLOYED AT ANY TIME DURING THE YEAR SINCE GRADUATION FROM THE AREA VOCATIONAL-TECHNICAL INSTITUTE, COMPLETE THIS SECTION OF THE QUESTIONNAIRE )

DIRECTIONS Please answer all of the following questions concerning the quality of the curriculum and the quality of the facilities and equipment associated with the program from which you graduated Place an "X" in the appropriate square.

VII. CURRICULUM

A. In light of your experience on the job, how do you feel about the training you received in basic job-related (performance) skills at the area vocational-technical institute?

(22)

[1] Excellent [2] Very good [3] Adequate [4] Inadequate

B. In light of your experiences on the job, how do you feel about the training you received in job-related general technical knowledge at the area vocational-technical institute?

(23)

[1] Excellent [2] Very good [3] Adequate [4] Inadequate

VIII. FACILITIES AND EQUIPMENT

A. The equipment at the area vocational-technical institute in my training area was such that

(24)

[1] I found it very easy to adapt to the equipment on the job

[2] I had some problems adapting to the equipment on the job

[3] I found it very difficult to adapt to the equipment on the job.

B. In comparison to the facilities and equipment used on your present job, how would you rate your area vocational-technical institute facilities and equipment?

(25)

[1] Area vocational-technical institute facilities and equipment were superior to those on the job.

[2] Area vocational-technical institute facilities and equipment were similar to those on the job

[3] Area vocational-technical institute facilities and equipment were inferior to those on the job.

THIS SECTION IS TO BE COMPLETED BY ALL

DIRECTIONS: Please answer all of the following questions concerning the quality of instruction and the quality of the school and community services associated with the school from which you graduated Place an "X" in the appropriate square.

## IX. INSTRUCTION

A. How would you rate the teaching quality of instructors in your training program at the area vocational-technical institute?

(26) [1] Most of the instructors taught very well
(26) [2] About the same number taught well as did not.
(26) [3] Most of the instructors did not teach well

B How would you rate the knowledge your instructors at the area vocational-technical institute possessed about their field?

(27) [1] Most were very knowledgeable
(27) [2] About the same number were knowledgeable as were not
(27) [3] Most were not knowledgeable.

C. How would you rate the interest shown by your instructors in your work progress at the area vocational-technical institute?

(28) [1] Most instructors were very interested in my progress.
(28) [2] Most instructors were somewhat interested in my progress
(28) [3] Most instructors did not seem interested in my progress

D. How would you rate the extent to which your instructors at the area vocational-technical institute were up-to-date in their fields?

(29) [1] Most instructors were up-to-date
(29) [2] About the same number were up-to-date as were not
(29) [3] Most instructors were not up-to-date.

X. If you could start all over again, would you choose the same training program you received training in at the area vocational-technical institute? (30) YES [1] NO (30) [2]

## XI. SCHOOL AND COMMUNITY SERVICES

A. Who was the *greatest* help to you in securing your first job? (Check one )

(31) [1] Instructor, or other area vocational-technical institute personnel
[2] Private employment agency
[3] Relatives or friends
(31) [4] State employment agency
[5] Other _____ (specify)
[6] Does not apply (I have not been employed during the year)

B. How would you rate the *quality* of the following services as provided by the *area vocational-technical institute*? If you did not take advantage of the service, or if the service was not available, check "does not apply." (Please check only one square for each item.)

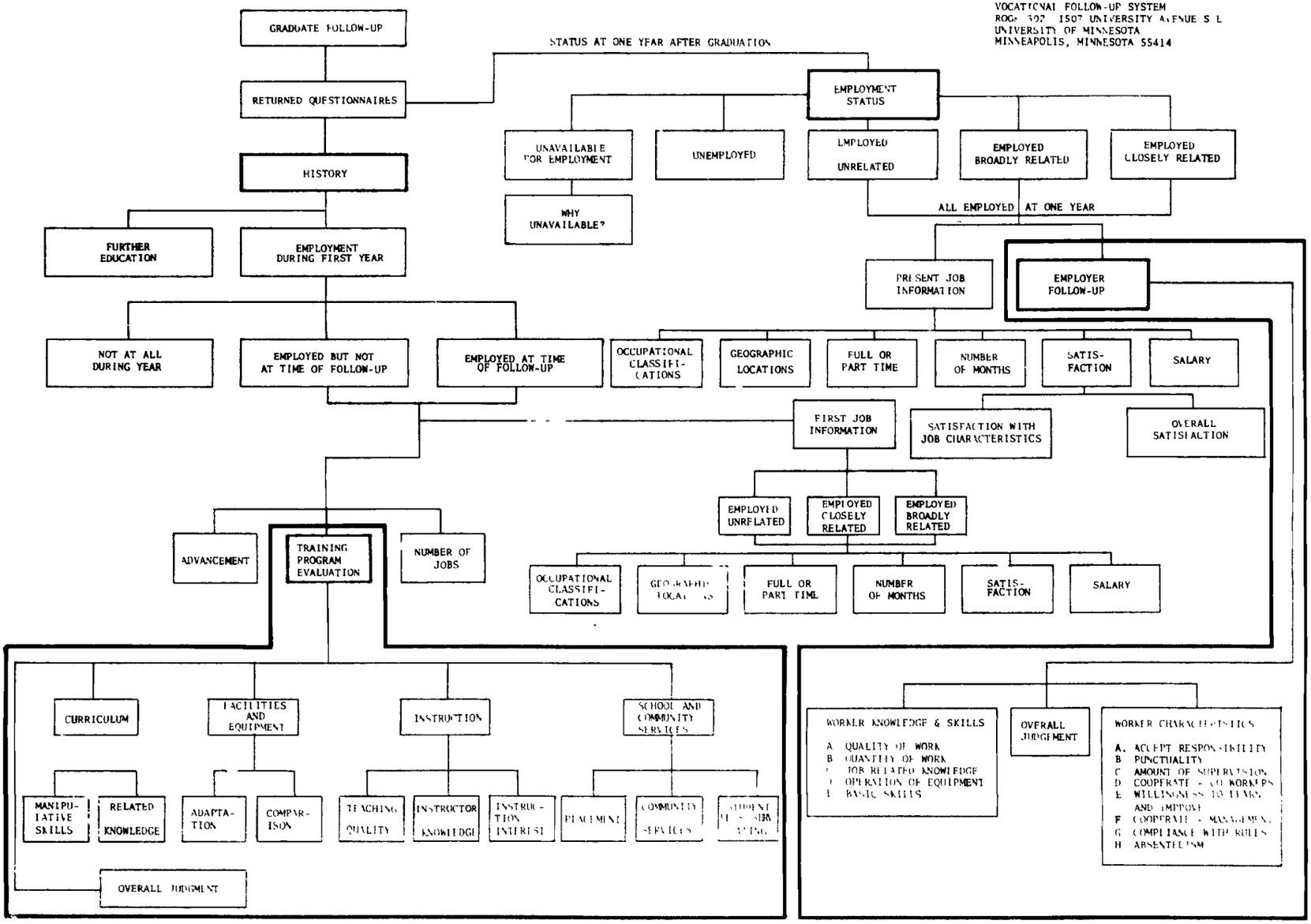
| | Excellent | Good | Poor | Does not apply | |
|---|---|---|---|---|---|
| 1. Job Placement | [1] | [2] | [3] | [4] | (32) |
| 2. Counseling with personal problems | [1] | [2] | [3] | [4] | (33) |
| 3. Help in making career decisions | [1] | [2] | [3] | [4] | (34) |
| 4. Help in securing part-time employment | [1] | [2] | [3] | [4] | (35) |
| 5. Help in obtaining financial assistance | [1] | [2] | [3] | [4] | (36) |
| 6. Help in securing housing | [1] | [2] | [3] | [4] | (37) |
| 7. Youth organizations | [1] | [2] | [3] | [4] | (38) |
| 8. Recreational programs | [1] | [2] | [3] | [4] | (39) |
| 9. Study, library and other learning resource facilities | [1] | [2] | [3] | [4] | (40) |
| 10. Health services | [1] | [2] | [3] | [4] | (41) |

C. How would you rate the *quality* of the services and facilities provided by the *community* in which the vocational school is located? (Check appropriate square for each of the items )

| | Excellent | Good | Poor | Does not apply | |
|---|---|---|---|---|---|
| 1. Housing | [1] | [2] | [3] | [4] | (42) |
| 2 Job opportunities | [1] | [2] | [3] | [4] | (43) |
| 3. Recreation facilities | [1] | [2] | [3] | [4] | (44) |

# FIGURE 3

## ORGANIZATION OF THE FOLLOW-UP INFORMATION OBTAINED FROM GRADUATES OF MINNESOTA VOCATIONAL INSTITUTES AND THEIR EMPLOYERS



category was separated from the unemployment category because there are reasons, such as illness, which society recognizes as legitimate for a person not being employed.

If a person is employed one year after graduation, decision-makers are interested in what the job is, where the job is located, whether it is full-time or part-time, how long the person has been employed, how satisfied the person is with the job, and how satisfied he is with the salary he is making. Therefore, the questionnaire includes items to provide information regarding each of these questions. This information allows decision-makers to examine the types of occupations graduates of a particular program are entering, where graduates of a particular school distribute themselves, whether or not the graduates are obtaining full-time employment, how satisfied the graduates are with their jobs, and how much money the graduates of a particular program are making.

The history information provides decision-makers with knowledge of the student's job history and educational related history during the first year after graduation. This history includes information on further education, whether the person was employed at all during the first year after graduation, whether the person experienced advancement during the first year, how many jobs the person had during the first year, and a description of the person's first job. The first job description contains information similar to the descriptive information gathered on the job that the person was in one year after graduation, as indicated above. If the person had only one job after graduation and held it for a year, the first job information and the information concerning the job one year after graduation would be the same. If the person had more than one job during the year, and was employed one year after graduation, this comparable information on different jobs

allows for a comparison of what happens to graduates at the time they graduate and their employment status one year after graduation.

### Follow-Up Questionnaire Training Program & Job Satisfaction Evaluations and Employer Questionnaire

The training program and job satisfaction evaluation portions of the Follow-Up Questionnaire were developed in conjunction with the Employer Questionnaire after an intensive staff study entitled "The Development of the Vocational Follow-Up System Student and Employer Follow-Up Questionnaires" (Pucel, Mohamed, and Asche, 1972). Therefore, these portions of the Follow-Up Questionnaire will be discussed with the Employer Questionnaire. They were developed to gather information that would indicate the student's reaction to the training program, the student's job satisfaction, and the employer's reaction to the student. Diagnostic information would thus be available in the event that the overall effectiveness of a vocational program was found to be low. The information can also be useful as descriptive information to describe the student and employer reactions to the skills which students developed in particular components of the program. The rationale surrounding the development of these assessment instruments suggests that (1) the assessment of a graduate's ability to perform on the job requires the assessment of the graduate's performance by himself and by his employer and (2) a person's ability to perform on the job is related to his skills and knowledge as well as to his personal characteristics. Therefore, the training program and job satisfaction evaluations were designed to have the employee, or graduate, evaluate the training program in terms of the skills and knowledge he gained through the pro-

gram in light of those required on the job and his satisfaction with his job. The Employer Questionnaire was designed to allow the employer to evaluate the graduate's performance in terms of (1) the graduate's skills and knowledge related to performance on the job and (2) the ability of the graduate to satisfy the personal requirements of the job (see Figure 3).

Graduate's Evaluation of the Training Program

In the context of the Vocational Follow-Up System, the evaluation of the training program by past graduates was necessarily gross. This was due to the objective of the System to develop procedures and instruments that could be used with graduates of all of the vocational-technical programs. This restriction made it impossible to identify specific competencies required of people in a particular occupation and to have the graduates rate the usefulness of these competencies on the job. The procedure used to develop the training program questionnaire was to first identify the major components of a training program that could affect a graduate's performance on the job, and then to develop questions which would assess these basic components in a way in which the questions could be used with graduates of all vocational programs. An investigation into the basic facets of a training program which would directly affect the ability of graduates to perform on the job revealed three components of the training program, as well as a component related to the environment within which the training program was conducted. The three basic components of the training program were: (1) curriculum, (2) facilities and equipment, and (3) instruction (see Figure 3). The general component within which a program is operated was further broken down into school and community services.

A further look at training program curriculums revealed two major components, the manipulative skills or performances required on the job and the knowledge required on the job. Therefore, curriculum was evaluated in terms of the extent to which the curriculum prepared graduates in the manipulative skills and knowledge required on the job.

It was assumed that training programs should utilize equipment and facilities which would cause the least problem for students as they adapt to post-training employment. Therefore, facilities and equipment were evaluated on (1) the extent to which the facilities and equipment used in training were similar to those used on the job, and (2) the problems experienced by graduates in adapting to equipment used on the job.

An investigation into variables which might affect the instruction received by students revealed three basic variables: (1) the teaching ability of the instructor, (2) instructor knowledge, and (3) the ability of the instructor to relate to students. If an instructor knows the content but can not communicate it, he is not effective. If an instructor can communicate content effectively but is not knowledgeable, he is not effective. Some people also feel that if an instructor can not relate to the students and be sensitive to their needs, he can not be effective. Therefore, students were asked to rate the teaching quality of the instructors, the knowledge of the instructors, and the interest shown by the instructors in their progress.

In addition to asking graduates to evaluate each of the three basic components of the training program, (curriculum, facilities and equipment and instruction) graduates were asked to make an overall judgment concerning the training program from which they graduated.

They were asked if they would choose the same training program if they could start all over again.

Although the primary interest of vocational decision-makers concerning the student's evaluation of the school is in terms of the instructional program, the program can only be evaluated in light of the graduate's perception of the environment within which the program exists. Besides providing instruction, the school provides an instructional environment including ancillary services required by students as they enter the school, proceed through the program and exit the school. Therefore, an investigation was made into the major ancillary services available to students that might affect their progress through their instructional program. This investigation revealed that the ancillary services could be grouped under two major headings, school services and community services. The school services identified were related to job placement, counseling with personal problems, help in making career decisions, help in securing part-time employment, help in obtaining financial assistance, help in securing housing, youth organizations, recreational programs, study-library and other learning resource facilities, and health services. The community services were broken down into three major groupings: housing, job opportunities, and recreational facilities. The specific items used to gather information from graduates concerning the training program and the training program environment are found in the following sections of the Follow-Up Questionnaire (Sample C): VII-Curriculum, VIII-Facilities and Equipment, IX-Instruction, X-(Overall judgment) and XI-School and Community Services.

Graduate's Evaluation of Job Satisfaction

Besides asking the graduates questions concerning the extent to which their skills and knowledge were sufficient to perform adequately on the job, the graduates were asked about their satisfaction with their job. In Figure 3 graduate satisfaction is located in the "Employment status" section because it describes the status of an individual, but that section of the questionnaire was planned with and was designed to be interpreted with the training program evaluation information.

The decision to include items related to job satisfaction in the follow-up questionnaire was made after lengthy discussions as to the appropriateness of using such information to judge vocational programs. Some argued that this information would not be of value in trying to judge the effectiveness of vocational programs because the post-high school area vocational-technical institutes have little influence upon these factors. Others argued that it would be useful to the institutes to determine how satisfied their graduates were with their jobs because if their graduates were consistently dissatisfied with certain aspects of their employment, this might reflect an area where the institute might place emphasis in its instructional program to help students avoid the dissatisfaction. After examining the various facets of job satisfaction which might have relevance to vocational program modification, two basic types of information were identified as being useful (see Figure 3). The first was an overall assessment of the graduate's satisfaction. The second was an assessment of selected components of job satisfaction. The twelve selected components were salary, fringe benefits, potential for advancement, supervision and management,

co-workers, company policies and practices, pace of work, facilities and equipment with which to do the job, working conditions, variety of work tasks, job security, and safety conditions. The specific items used to gather information from graduates concerning their job satisfaction can be found in section VI, Job Satisfaction, of the Follow-Up Questionnaire (Sample C).

Employer Questionnaire

The Employer Questionnaire was designed to obtain information from employers concerning the performance of graduates one year after graduation. The Employer Questionnaire is composed of two major sections (see Sample D). The first section presents information which identifies the graduate and the employer. The second section is the "Employee Performance Survey." It was designed to gather information concerning the graduate's skills and knowledge related to performance on the job and the ability of the graduate to satisfy the personal requirements of the job.

The "Employee Performance Survey" section of the Employer Questionnaire was developed around the same basic characteristics of a training program and personal qualities of graduates that could affect a graduate's performance on the job referred to in the previous discussion of the evaluation of the training program by graduates.

In examining the types of evaluations that should be sought from employers concerning the knowledge and skills possessed by the graduates, three major components were identified. The first was the extent to which the graduate possessed specific job-related knowledge important to success on the job; the second was the degree to

Vocational Follow-Up System
Room 302, 1507 University Avenue S E
University of Minnesota
Minneapolis, Minnesota 55414

SAMPLE D

_____ 19 ____

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## EMPLOYER QUESTIONNAIRE

DIRECTIONS. Please complete ALL sections of this form even if the employee no longer works for your firm When you have completed the form return it in the enclosed return-addressed, stamped envelope Your responses will in no way affect the employee.

### I. PERSONAL INFORMATION

A Employee name _____
(Last) (First) (Middle)

B Indicated Employer _____ City _____

### II. EMPLOYMENT INFORMATION

If the employee has worked or works for your firm, please have a supervisor familiar with the work of the employee fill out this questionnaire.

Supervisor filling out form

1. Name _____ Date _____
(Last) (First) (Middle)

2. Position _____ _____

*PLEASE COMPLETE REMAINING PORTIONS OF THIS QUESTIONNAIRE*

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(1) 0 9 (3) (8) (11) (12) (leave blank)

## EMPLOYEE PERFORMANCE SURVEY

DIRECTIONS Please indicate your satisfaction with the employee as compared with other workers in the same work group If the worker is the only person employed with your firm, compare him with others who have worked in the same position. This information will be kept strictly confidential Please respond to all questions

I Total number of *months* employee has been employed by your firm . . . (13 14)

PLEASE RESPOND TO THE FOLLOWING QUESTIONS BY PLACING AN "X" IN THE APPROPRIATE SQUARE

II. In comparison with other workers in the same work group, how would you rate the employee on each of the following characteristics?

| | above average | about average | below average | |
|---|---|---|---|---|
| 1 The quality of employee's work | 1 | 2 | 3 | (15) |
| 2. The quantity of employee's work | 1 | 2 | 3 | (16) |
| 3 The degree to which the employee possesses specific job-related knowledge important to success on this job | 1 | 2 | 3 | (17) |
| 4 The degree to which the employee is able to operate the equipment and apparatus used on the job | 1 | 2 | 3 | (18) |
| 5 The degree to which the employee possesses basic reading, verbal and computational skills | 1 | 2 | 3 | (19) |

III In comparison to others in the employee's work group, how would you rate the employee on each of the following characteristics?

| | above average | about average | below average | |
|---|---|---|---|---|
| 1 Willingness to accept responsibility | 1 | 2 | 3 | (20) |
| 2 Punctuality | 1 | 2 | 3 | (21) |
| 3 Ability to work without supervision | 1 | 2 | 3 | (22) |
| 4. Willingness to learn and improve | 1 | 2 | 3 | (23) |
| 5. Cooperation with co-workers | 1 | 2 | 3 | (24) |
| 6. Cooperation with management | 1 | 2 | 3 | (25) |
| 7. Compliance with company policies, rules, and practices | 1 | 2 | 3 | (26) |
| 8. Work attendance | 1 | 2 | 3 | (27) |

IV. In comparison with other workers in the same work group, how would you rate the employee's over-all competency, effectiveness, proficiency, general over-all work attitudes, and other elements of successful job performance?

(28)

1 In the top 1/4

2 In the top 1/2 but not among the top 1/4

3 In the bottom 1/2 but not among the lowest 1/4

4 In the lowest 1/4

which the graduate was able to operate the equipment and apparatus used on the job; and the third was the degree to which the graduate possessed basic reading, verbal, and computational skills required on the job. Assuming that employers are interested in production, it is also important to determine how well the graduates can apply their skills and knowledge. After considering how to assess a graduate's production, it was decided that such production has two characteristics, quality and amount. Therefore, employers were asked to evaluate the quality and quantity of a graduate's work.

In addition to an assessment of graduates' job-related skills and knowledge, it was felt that it would be valuable to obtain an assessment of the extent to which graduates possessed personal qualities consistent with others in the occupation. A person might possess all of the required skills and knowledge but might not be able to adjust to the social environment. Therefore, various job-related personal characteristics that might affect performance on the job were identified. They were condensed into eight aspects which representatives of the institutes and the State Department felt would be appropriate to have employers evaluate. These eight selected aspects were: willingness to accept responsibility; punctuality; ability to work without supervision; willingness to learn and improve; cooperation with co-workers; cooperation with management; compliance with company policies, rules, and practices; and work attendance. Hopefully, employer ratings of these selected aspects will provide information that can be useful in helping students to better understand the social environment which they will enter upon employment.

In addition to assessing specific elements of a graduate's job performance, an overall assessment of performance was developed which asked the employer to make an overall judgment of the graduate's performance. The specific items used to gather information from employers concerning graduates can be found in Sample D.

The Advantages of a Centralized Follow-Up System

The Vocational Follow-Up System is a centralized follow-up system serving all of the Minnesota Area Vocational-Technical Institutes. It was created on the assumption that it is more efficient and productive to have a centralized staff devoted to the gathering, coding, and reporting of information than it is to have a decentralized system with specialized people in each institute. An examination of the relative costs of staff to conduct the functions of the Vocational Follow-Up System in each of over thirty institutes, as compared to the costs of a centralized system, has revealed that the aggregate cost of systems in all these institutes would far exceed the costs of a centralized system. In addition, the gathering of information from over thirty sources has a tendency to introduce error within the data gathered.

Another major advantage of a centralized system is the availability of staff to undertake the developmental efforts required to update questionnaires and data-gathering instruments and to refine the data processing system. The data-gathering procedures used by the System were developed to minimize the burden on the individual institutes. Institute personnel do not have to go into their files in order to provide any of the information to the system. The

enrollee information is gathered directly from the students; the termination information is provided by the counselor when the student terminates; and all of the information retrieval necessary to follow up students is accomplished by the Vocational Follow-Up System.

## Gathering the Information

This section will be organized in the order that data would be gathered on a particular individual. This structure allows the reader to determine how each piece of information is gathered and how pieces of information gathered at different points in time relate to one another.

### Enrollee Information Form

The Enrollee Information Form is the first source of information gathered on an individual entering a full-time day program of a Minnesota Area Vocational-Technical Institute. The Enrollee Information Form is completed by the student when he first enrolls at the institute. Typically, it is completed during one of the first days of class under the direction of the student's instructor. The Enrollee Information Form provides biographical data and the address needed to follow-up the student in the future (see Sample A).

### Termination Report Form

The Termination Report Form is completed by a vocational-technical institute representative when the student terminates his enrollment in a particular program. This termination can take the form of either leaving the institute or of changing curriculums within the institute (see Sample B).

## One-Year Follow-Up

The follow-up procedures utilized by the Vocational Follow-Up System in conducting the one-year follow-up were originally developed through Project MINI-SCORE. The Project MINI-SCORE procedures were developed after a formal study of follow-up procedures, which has been published in the article entitled "Questionnaire Follow-Up Returns as a Function of Incentives and Responder Characteristics" (Pucel, Nelson and Wheeler, 1971).

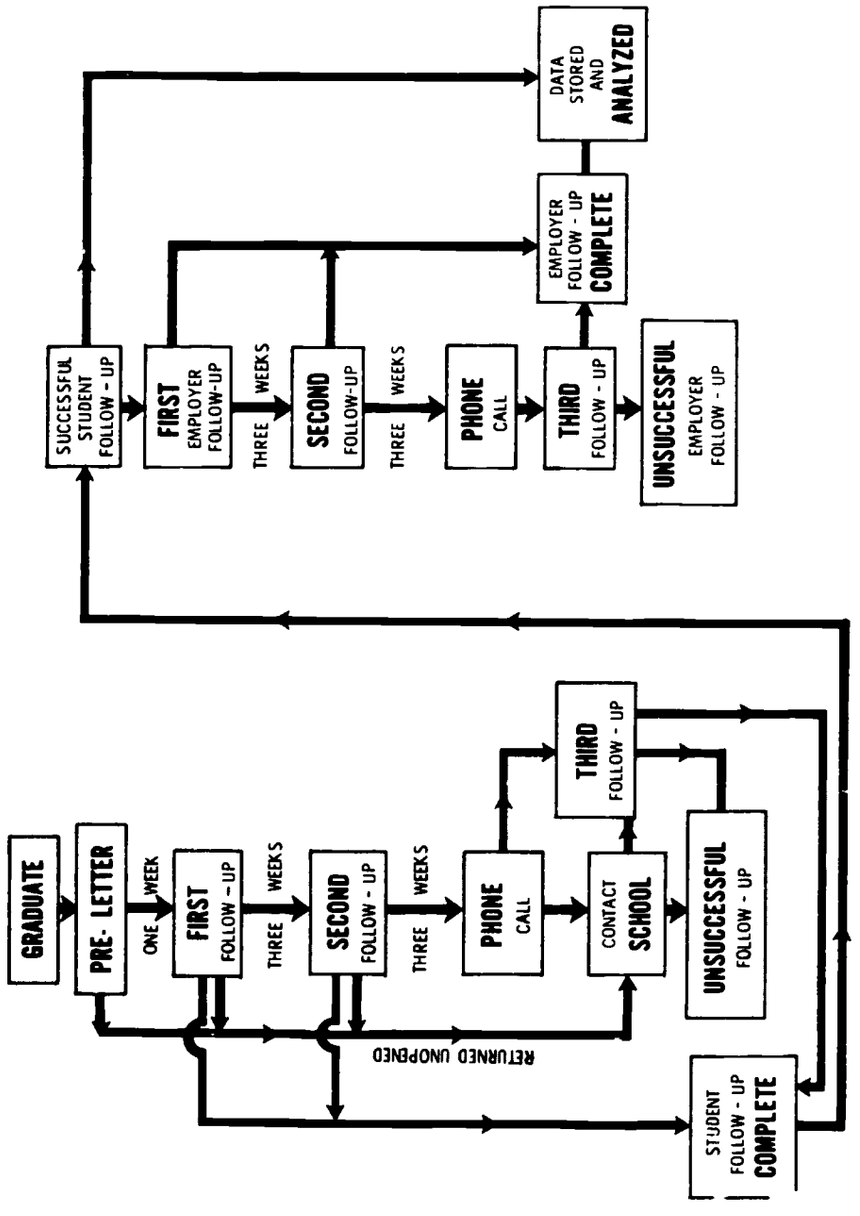
The follow-up procedure begins with the student follow-up one year after a student graduates from one of the full-time day programs of the Minnesota Area Vocational-Technical Institutes. Follow-ups are conducted every month since people graduate from the institutes every month. The following is a description of the follow-up procedure presented in Figure 4.

One year after a person graduates from one of the institutes he is sent a pre-letter which prepares him to receive the questionnaire and indicates its importance. This letter presents a psychological appeal. He is told that if he fills out the questionnaire, he will assist other people like himself by providing the institutes with information with which to improve their programs for future students.

One week after the pre-letter is mailed, the first follow-up questionnaire is sent. The first follow-up package includes: a return-addressed stamped envelope, a follow-up questionnaire printed on green paper, a personalized cover letter, and a packet of instant coffee. The questionnaire is overprinted lightly in red with the word "confidential" (see Sample C). The personalized letter again makes a psychological appeal to the graduate to complete the

**FIGURE 4**

**VOCATIONAL FOLLOW - UP SYSTEM ONE -YEAR FOLLOW - UP**



questionnaire. It also refers to the packet of instant coffee which is included in the package. The research study conducted by Project MINI-SCORE concerning methods of follow-up indicated that follow-up returns could be improved by approximately 20% if a pre-letter were used, the questionnaire were printed on green paper, and a novelty such as a packet of instant coffee were included with the materials. Materials included in the follow-up package are personalized; the addresses on the envelope and the letter are all typed and the letter is hand-signed. This personalized approach is thought to be one of the reasons for the success of the Vocational Follow-Up System follow-up procedures.

The first follow-up usually results in one of three things happening. A graduate completes and returns the questionnaire, the package is returned unopened, or the questionnaire is not returned. If the student follow-up questionnaire is completed and returned, it is ready to be processed further. If the letter is returned unopened the institute from which the student graduated is contacted to determine if the institute has a different address for the student. If the institute has a new student address, that information is used to re-contact the student. If the student does not have a change of address registered with the school, the student is classified as "no return" and is no longer followed up.

If the student does not respond to the first follow-up and the materials are not sent back unopened, a second follow-up is conducted three weeks after the first follow-up. The second follow-up includes a stamped return addressed envelope, another copy of the questionnaire

and a personalized "second" letter appealing to the graduate to complete the follow-up. If the second follow-up is not returned within three weeks, attempts are made to reach the graduate by phone and a personalized appeal is made for the graduate to fill out the form. A third follow-up package is sent to those who are reached by phone and who agree to complete the questionnaire. The third follow-up package is identical to the second follow-up package. Students are terminated from the follow-up if they do not respond to the third follow-up within three weeks, or if they indicate, upon receiving the phone call, that they do not wish to complete the questionnaire.

If the student completes the questionnaire and he was not employed at the time of follow-up, his information goes directly to data processing for processing and analyzing. If he was employed, he was asked to provide the name and address of his immediate supervisor on the job. The questionnaire informed the student that this person would be contacted. The information which the student provides is then used to contact his immediate supervisor on the job.

The employer questionnaire sent to employers is printed on white paper and is overprinted lightly in red with the word "confidential" (see Sample D). The employer questionnaire package includes the questionnaire, a personalized letter explaining the role that employers can play in improving the quality of vocational education programs, and a stamped return addressed envelope. If the employer does not complete the first questionnaire within three weeks, he is sent a second employer follow-up package which is

identical to the first. If the employer does not complete the second follow-up questionnaire within three weeks he is contacted by phone and if he agrees to fill out the questionnaire, he is sent a third employer follow-up package. If the employer does complete the follow-up as a result of any of the three attempts, his response is combined with the information from the graduate follow-up and is sent to data processing for punching, storage, and analyzing. Employers who do not return their questionnaires are placed in an "employer no return" category.

The above procedure has been used over a period of approximately five years and has consistently yielded yearly return rates of about 85% for the student follow-up and about 96% for the employer follow-up. These return rates are attributed to the personalized approach used during the follow-up, the appeal made to both students and employers for their assistance in improving vocational education programs, and the novelties and techniques which have been proven through research.

The follow-up procedures required to complete the student and employer follow-ups for one month's group can take as long as 19 weeks if the maximum lenth of time is taken at all steps.

# CHAPTER V

# PREPARING, ANALYZING, AND REPORTING THE INFORMATION

## Preparing the Information

The information is gathered from students, schools, and employers through the use of (1) the Enrollee Information Form, (2) the Termination Report Form, (3) the Follow-Up Questionnaire, and (4) the Employer Questionnaire which were discussed in the previous chapter. All of these instruments were developed in light of objectives to maximize the ease of supplying the data requested and to maximize the reliability of the data.

The formats for these forms were developed after an investigation of alternative data processing procedures. Consultation with data processing personnel revealed two general procedures: (1) gathering the data using a standard questionnaire format and having the data keypunched, and (2) gathering the data with an optical scan questionnaire format and having the data optically scanned. After intensive study of the relative merits of developing the forms according to each format it was decided to adopt the standard questionnaire format. The five primary considerations that led to this decision were: (1) the desire to process all of the information using similar methods, which would increase staff flexibility and reduce training time for new people; (2) the large amount of descriptive information requested such as name, address, parent occupation, parent address, etc., which would require large alphabetical grids if an optical scan format were used; (3) the cost of printing a larger number of pages (necessitated by optical scanning) and of mailing this information; (4) the possibility of lower return rates using the optical scanning form, which would have large, distracting grids potentially more difficult for students to complete; and (5) the need for a complex coding system

to convert some of the gathered information to numerical values that could be processed with the computer. An example of the conversion problem can be seen in the gathering of information on parent's or guardian's occupation. It was hypothesized that if one wanted reliable information concerning the classification of the parent's or guardian's occupation, one should ask the student to write down the name of the exact occupation and then have people familiar with the coding system (for the father's or guardian's occupations) code the occupation. Most students know what their fathers or guardians do, but would have difficulty determining if the occupations should be coded as "service workers," "craftsman," etc. The same coding problem existed with the coding of student identification numbers and job classification codes.

Each type of information received by the Follow-Up System is processed separately when it is received. Later it is all combined into a composite student record. When the information is received, those items which require conversion to numerical values are coded and the forms are sent out for keypunching. The information is returned to the office in the form of IBM cards.

Special computer programs are used to edit each type of information to assure that the keypunching is accurate, and also to eliminate any impossible combinations of responses by students. For example, if a person indicates that he is not employed one year after graduation, he could not also have an employer one year after graduation. The edit of the follow-up information would find and list such an instance. The form for that particular student would then be reviewed in detail to solve the illogical data pattern. Rules have

been developed for solving such inconsistencies, if possible. After the information from a particular form is edited, it is placed on computer tape. The entire above process is performed for each type of information: enrollee information, termination information, and follow-up information. The information is stored independently because each piece of information on a particular student is gathered at a different point in time. The enrollee information is gathered upon entry into the school; the termination information is gathered upon exit from the school; and the follow-up information is gathered one year after graduation. Therefore, it is not possible to merge all of this information until the follow-up information is gathered and processed.

The information gathered at different points in time is combined using special computer programs. A tape of information gathered through the Enrollee Information Forms is united with a tape of information gathered on the same individuals upon exit from the programs using the Termination Report Forms. This combined information provides a vehicle for identifying those individuals who should be followed up. The termination information provides the dates of graduation and the enrollee information provides the addresses of the students. After a person is followed up and his follow-up information has been processed, it is combined with the other information to provide the combined student record. This record can then be used to investigate the relationships among variables and to conduct future follow-ups if they are desired.

Analyzing and Reporting

The data are reported to vocational educators in the State of Minnesota to facilitate decision-making relative to improving the vocational education programs. Separate reports are generated for each of the three types of information (enrollee information, termination information, and follow-up information). Attempts are being made to provide these reports to decision-makers in the state by November 1 of each year.

The reports are presented at four different levels of aggregation. The first level, which is the most inclusive level of aggregation, summarizes information over all full-time day programs offered by the Minnesota Area Vocational-Technical Institutes. This report allows one to examine information summarized from all of these programs in the State of Minnesota. The second series of reports presents information by curriculum or program area summarized over all programs of a given type in the state. For example, practical nursing information summarized over all practical nursing programs in the state is presented in one report. This allows people to examine information pertaining to a given program area as it exists across the State of Minnesota. The third series of reports summarizes information over each Area Vocational-Technical Institute in the state. This level of reports allows people to examine information summarized from all programs offered by a particular institute. The fourth, and most specific series of reports summarizes information for each curriculum or program area in each institute. This allows people to examine information concerning a particular program in a particular school.

All of the reports present basic descriptive information. Sample tables from a follow-up report are presented in Sample E. Each of the three major types of reports is prepared in the same way. The covers and the basic explanatory text are common to all four levels of a particular type of report. The text explains how to interpret the tables of information and provides a description of the context of the information. The tables included in all reports of a specific type have the same basic format and differ only in terms of the specific data included in the tables. For example, the follow-up report summarized across all programs in the state would contain the same tables as the follow-up report for a particular program in a given school, but numbers and percentages would vary. The state report would include information summarized over all graduates followed up who had been involved in programs in the state, and the report pertaining to a program in a school would summarize information only on graduates followed up who had been involved in that particular program. The reports are differentiated by a label on the front cover which identifies each specific report.

The data tables included in a report are created by processing the tape of the appropriate information with a special computer program that sorts out the information to be included in the report and generates the appropriate tables. The tables, in the form of computer print-outs, are then cut to 8 1/2" x 11" size. The text, which has been offset printed, and the tables are then combined, and the appropriate label for the report is placed on the front cover. The reports are then sent for binding. When they are returned from binding they can be mailed directly to the various decision-makers in the state.

# SAMPLE E

## FOLLOW-UP REPORT SAMPLE TABLES

TABLE 6-EMPLOYMENT STATUS ONE YEAR AFTER GRADUATION - GRADUATES EMPLOYED, UNEMPLOYED, OR UNAVAILABLE FOR EMPLOYMENT ONE YEAR AFTER GRADUATION

| CATEGORY | NUMBER | PERCENT |
|---|---|---|
| 1. EMPLOYED CLOSELY RELATED . . . . . | 3452 | 52.19 |
| 2. EMPLOYED BROADLY RELATED . . . . . | 491 | 7.42 |
| 3. EMPLOYED UNRELATED . . . . . | 1255 | 18.97 |
| 4. UNEMPLOYED . . . . . | 515 | 7.79 |
| 5. UNAVAILABLE FOR EMPLOYMENT . . . . . | 901 | 13.62 |
| TOTALS | 6614 | 99.99 |

TABLE 7-PRESENT JOB FULL OR PART-TIME - FULL OR PART-TIME STATUS OF GRADUATES JOBS ONE YEAR AFTER GRADUATION

| CATEGORY | NUMBER | PERCENT |
|---|---|---|
| 1. FULL-TIME EMPLOYMENT . . . . . | 4701 | 92.54 |
| 2. PART-TIME EMPLOYMENT . . . . . | 379 | 7.46 |
| TOTALS | 5080 | 100.00 |

TABLE 14-UNAVAILABILITY - REASONS GRADUATES WERE UNAVAILABLE FOR EMPLOYMENT ONE YEAR AFTER GRADUATION

| CATEGORY | NUMBER | PERCENT |
|---|---|---|
| 1. MILITARY . . . . . | 475 | 52.72 |
| 2. FURTHER TRAINING . . . . . | 66 | 7.33 |
| 3. ILLNESS . . . . . | 42 | 4.66 |
| 4. HOUSEWIFE OR PREGNANCY . . . . . | 289 | 32.08 |
| 5. OTHER . . . . . | 29 | 3.22 |
| TOTALS | 901 | 100.01 |

The State Department receives copies of all reports and each institute receives copies of reports of information gathered on students from that institute. Institutes also receive a copy of the overall state summary.

# CHAPTER VI

## SUMMARY

The Vocational Follow-Up System is funded by the Minnesota State Department of Education, Division of Vocational and Technical Education, to gather information useful in decision-making concerning the improvement of the post-high school full-time day programs offered in the Area Vocational-Technical Institues of Minnesota. The System developed as an outgrowth of Project MINI-SCORE, which had an extensive follow-up system. Data-gathering instruments and techniques have been developed and perfected with the assistance of representatives of the Area Vocational-Technical Institues and the State Department of Education. The instruments provide student population information, program termination information, and student and employer follow-up information. This information is synthesized and reported to State Department personnel and to the directors of the Minnesota Area Vocational-Technical Institues.

This report provides a description of this system as well as a more inclusive rationale for gathering information for vocational-technical education decision-making. The inclusive rationale was provided to define the context of the Vocational Follow-Up System.

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