A DECISION-MAKING MODEL FOR ADDING, MODIFYING, OR TERMINATING VOCATIONAL EDUCATION PROGRAMS IN OKLAHOMA

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CHAPTER I

RESEARCH PROBLEM

Introduction

Today we see that vocational education's responsiveness to the demands of technological, economic, social, and political changes is becoming a central concern to those interested in vocational education in the United States. Likewise, the data and the planning processes to help manage those changes have also become complex. Allen (1990) expressed his frustration in keeping up with complex information and the pace of change when he stated that it is difficult for local-level planners to determine which vocational education programs to offer and that planning programs is, in itself, a delicate decision-making challenge faced by vocational administrators and planners nationwide. "It is a continuous problem-solving process that focuses on selecting, updating, and improving occupational program offerings to meet the needs of business, industry, labor, and the student" (p. 1).

From a review of the literature, it became apparent that the challenge of keeping pace with society's needs for effective programs was not a new challenge. Researchers have dealt with the challenge of keeping pace for a number of years. Much of the literature on the problems of program planning was related to the

misunderstanding or misuse of data. Casto and Smith (1992) stated that the most serious planning problem today involves limited understanding of the interaction of the many factors involved. In fact, in 1984 Franchak addressed the issue of effective program planning when he reported that it is not easy to be responsive to societal demands and that there were serious road blocks to local-level program planning: " . . . implementing program decisions has been complicated because data are frequently unavailable, unreliable, or misunderstood" (p. 7). More recent literature was less critical of the data and more critical of how to use the data to make accurate program decisions. Casto and Smith (1992) wrote the following: " . . . it is much easier to gather data today than it is to use it optimally. As a result, the actual planning of programs is still primitive when compared to the sophistication of the information available" (p. 1). According to Franchak (1984), those societal demands over the years have highlighted the use of evaluation and planning to support effective program decisions at the local level.

Statement of the Problem

The problem is that on some foundation, administrators, vocational planners, boards of education, and advisory committees must decide which programs to add, modify, or terminate. Therefore, if an appropriate decision-making model can be developed, ensuring a more effective manpower delivery system for Oklahoma's business and industry, economic development in the state of Oklahoma will be enhanced.

Need for the Study

Oklahoma area vocational-technical schools administrators require reliable information to make wise and accurate program planning decisions. As Allen (1990) noted:

> Reliable occupational information is needed to ensure that job training program offerings meet student and labor market demands and that training is aimed at occupations with good employment prospects and away from occupations which are not in demand or oversupplied. (p. 4)

A review of the literature revealed that Oklahoma's area vocational-technical school administrators used no formalized model to add, modify, or terminate vocational programs. It appeared that the absence of a formalized model is not an unusual phenomenon. As early as 1984, Franchak stated that program decisions made by secondary and postsecondary vocational administrators were not data-based, even though published data are usually cited and reviewed in the decision-making process. In an earlier study, Moss and Stromsdorfer (1971) asserted that not only do planners need to make data-based decisions when selecting programs, but the programs also need clear-cut objectives. "We lack clear-cut objectives for our programs, and the lack of such objectives makes it impossible to arrive at least cost economies so as to maximize our investments" (p. 192).

How vocational education meets the needs of the labor market, as well as the individual needs of the students, has been a major concern for those who plan the programs and make the decisions in vocational education (Franchak, 1984). Starr et al. (1981) reported that most program implementation ideas come from

informal contacts with community members and that ideas for new programs often come from advisory committees, business people, or teachers.

Drewes and Katz (1975) and Starr et al. (1981) have confirmed that vocational program decision making is a complex process that is not clearly defined at the state and local level. Likewise, Starr et al. (1981) reinforced the need for a decision-making model as they outlined a number of recommendations to assist decision-makers in the process of planning vocational programs at the local level:

1. Models and procedural guides are needed to assist local schools with training persons for employment, and to make the best use of available resources for vocational education.

2. Planning information systems for vocational education need to be developed for use by local schools. Such systems need to incorporate a variety of data that are pertinent for local planning and evaluation purposes.

3. Alternative ways of systematically generating and analyzing data to produce planning to meet the requirements of schools operating under different environmental context conditions also need to be developed. (pp. 15-16)

Purpose of the Study

The purpose of this study was to develop a model that area vocational-technical school administrators might use to ensure a more appropriate basis for making decisions in relation to the manpower delivery system in Oklahoma.

Research Questions

The following questions were developed to provide direction to the study:

1. What are the most important factors identified by vocational planning experts in the decision to add, modify, or terminate programs at their school?

2. According to these experts, what relative rank or value does each of these important factors have?

3. Do vocational planners from rural, urban, and metropolitan school settings rank the important factors differently?

4. What suggestions do vocational planning experts have on the utility and useability of the proposed decision-making model?

Assumptions of the Study

The following assumptions were pertinent to the conduct of this study:

1. The responses to the researcher's questions are conscientious expressions of the attitudes, opinions, and beliefs of the vocational planning experts.

2. The nomination process was unbiased and yielded nominations of individuals representative of vocational planning experts in the field.

Limitations of the Study

The following limitations applied to the study:

1. The decision-making model was specifically designed for Oklahoma area vocational-technical schools and their administrative staffs representing rural, urban, and metropolitan settings. The selection of the most important factors, along with their definitions, weights, and cell score structures, may only be applicable to the above-mentioned schools in Oklahoma.

2. The key factors generated in the study and the review and development of the decision-making model are based upon the perceptions of a selected group of six expert panelists. No attempt was made by the researcher to further validate those perceptions. The data elements generated and the modification of the decision-making model define the total body of data relevant to the study.

3. Although political factors could be considered important to the program decision-making process, the researcher made no attempt to incorporate political factors into the decision-making model because "politics" was considered to be too loosely defined and elusive to measure. Therefore, factors other than political were considered for the model.

4. In this study, the Nominal Group Technique produced value judgments from the participants. The study was limited in its statistical validation because the true value of judgment, even a consensus judgment, cannot be validated statistically.

Definition of Terms

The following definition of terms is offered to provide clarity and consistency throughout this study:

Administrator - Refers to a member of the secondary or postsecondary administrative team. This generic term, except where specifically designated otherwise, refers to the secondary school principal, director, or superintendent (Norton, Ross, Garcia, & Hobart, 1985).

Benefits - For the purpose of this study, benefits was defined as any outcome of the vocational education process that increases an individual's or society's well-being.

Evaluation - The collection of information and judgments to facilitate planning, to aid in the improvement of programs, and to meet accountability demands (Wentling, 1980).

Focus Group - A carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, nonthreatening environment (Krueger, 1988).

Metropolitan Statistical Area (MSA) - For the purpose of this study, an MSA was any location with a population of 50,001 or more.

Model - A preliminary pattern representing an item not yet constructed, and serving as the plan from which the finished work, usually larger, will be produced (Gove, 1981). The model developed in this study is a decision-making model for determining vocational curricular priorities by using predetermined weighted criteria or factors to evaluate current and potential occupational program offerings. It should not be considered a comprehensive program planning model, but rather a single step in the larger scope of planning programs.

Modify Program - For the purpose of this study, modify program was defined as any change to an existing program in order to improve, update, or otherwise bring the program more in-line with the school or customer's needs.

Nominal Group Technique (NGT) - NGT is a procedure used to facilitate a small group meeting which follows a prescribed sequence of problem-solving steps. The steps are (1) group members write their ideas on cards in silence, (2) group judgment is pooled via the round-robin procedure wherein members' ideas are recorded on a flip chart, (3) group discusses, verbally clarifies, and evaluates each of the individual ideas generated earlier, and (4) individual judgments are aggregated by a mathematical voting procedure (Delbecq, Vande Ven, & Gustafson, 1986).

Panelists - For the purpose of this study, the terms panelists and participants were used interchangeably and mean a group of selected professionals knowledgeable in the planning and revision of vocational educational education

programs.

Rural - For the purpose of this study, rural was defined as any location with a population of 12,000 or less.

Urban - For the purpose of this study, urban was defined as any location with a population between 12,001 and 50,000.

Vocational Program - Refers to a training program which prepares graduates to work in a specific cluster of occupations (Casto & Smith, 1992).

Vocational Education - Specialized preparation for entry into employment, advancement, or continuation in an occupation (Atteberry, 1977).

CHAPTER II

REVIEW OF RELATED LITERATURE

Vocational Education Planning

From a review of the literature on planning, it was apparent that vocational educators have faced continuing demands for an effective system of planning in order to make objective and cost-effective decisions concerning instructional programs. The pressures of those demands were evident in 1980 when Wood pointed out that communities and school patrons were increasingly insisting that public schools become accountable for the efficiency and effectiveness of programs supported by tax dollars and contributions. According to Copa, Geigle, and Imade (1976), vocational education planning has typically meant deciding how many workers with various types and amounts of preparation will be needed at some future time. However, somewhere along the way, thoughtful and effective planning seemed to have lost its importance in the hustle of keeping up with the daily operations of running a school. VanAusdle (1980) outlined the weaknesses of local-level planning and characterized it as follows:

> Historically, planning in most institutions could be characterized as ad hoc, informal, authoritative, short-range, and expansionary. Planning is often viewed as an added burden to an overloaded administrator and results in casual, often haphazard, approaches to

> deciding which new programs to initiate and what percent various budget items should be increased on an "across-the-board" basis. (p. 7)

A review of documents on planning and evaluation since 1963 attests to the attention given to effective program planning. A number of studies--such as Copa et al. (1976), Drewes and Katz (1975), Lawrence and Dane (1974), the National Institute of Education's Vocational Education Study (1981), Starr et al. (1981), and the U.S. General Accounting Office report (1974)--found that federally inspired planning and evaluation at the state level had little influence on local program decisions. Reasons cited in those various reports included limited federal expenditures, poor data and information, and lack of resources to support effective planning and evaluation. To further compound the problem, Starr et al. (1981) noted that economic, financial, and labor market data appear to be underutilized in vocational education planning.

Several researchers identified the kinds of information needed in developing program plans, but very few offered a systematic model for applying the data to make program decisions. In 1977 Hamlin outlined what he felt was important when making program decisions by identifying the information needed in developing program plans: indications of future student needs and interest, future manpower projections, projections of availability of instructional staff and training stations, and placement and follow-up data. In a later study, Bregman (1979) listed several components basic to any vocational education system involving both strategic and administrative program planning. Those components were (1) population needs, (2) job market opportunities, (3) job performance

requirements, (4) student recruitment, (5) curriculum, (6) guidance and counseling, (7) placement, (8) program review, and (9) evaluation (p. 21). Still other researchers went beyond recommending the type of factors to incorporate into the planning process and set out to describe the forces at work in the decision-making process. The American Institute for Research (1976) outlined part of the problem and the dilemma of opposing forces at work in curriculum planning in the following way:

> One can think of vocational curriculum planning as an attempt to balance an equation. On one side of the equation are the manpower needs of business and industry in the community or district. On the other side are the demands and interest of students being served. Somehow, on a continuing basis, each side of the equation should balance the other side. (p. 51)

Realizing there were gaps in the planning process and that local-level planners were, for the most part, making program decisions in a haphazard manner, one researcher advocated a more systemic process to planning. Franchak (1984) urged that the actual factors used in the decision-making process should come from a variety of sources that support the need for a defined decision-making process or model. Franchak offered that efforts for planning may be hindered by a lack of understanding about the factors important in program decision making and specifically the determination of the most effective process of deciding to add, modify, or terminate a vocational education program. Wenrich, Wenrich, and Galloway (1988) stated that planning decisions about vocational education program additions, revisions, or terminations must first be based on valid information.

Similar to Franchak (1984), Henderson (1973) was another researcher who advocated the importance of planning and the need for sophistication and rigor in the planning process. Henderson stated that:

> Planning is here to stay. We can use it to our advantage, or we can let others use or misuse it to our disadvantage. As the public becomes increasingly concerned about the educational enterprise, we have an opportunity now, through effective, clearly defined planning, to help restore confidence in education--in what we are doing; as we continue to increase in size and complexity, we have an opportunity now, through effective planning, to increase our capacity to make intelligent decisions. Through effective planning we can untie our hands from administrative minutiae and concentrate our efforts on the educational process. The choice is ours. (p. 9)

Allen (1990) likewise stressed the need for careful consideration to be given to planning on the part of administrators.

> Given the complexity of a school district's need to make annual and long-range planning considerations for occupational programming changes and improvements, it becomes imperative that criteria and data sources be carefully selected and measurement techniques be applied within a system's framework. (p. 2)

Franchak (1984) was concerned not only with the rigor of the planning process, and the careful selection of measurement techniques, but also with tying the decision-making process into a comprehensive planning and evaluation system. Franchak stated that " . . . there is a continuing need on the part of vocational educators to relate a consistent decision-making process more effectively to a comprehensive planning and evaluation system" (p. 6).

Vocational Education Evaluation

According to Norton et al. (1985), evaluation may be defined as the process of gathering and providing useful information for decision making. "The

goal of evaluation is to improve the program or activity being examined" (p. 88). Likewise, McCaslin (1990) stated that evaluation is the act of rendering judgments to determine a program's value. Allen (1990) had the following to say about effecting quality vocational-technical education through evaluation:

> The essence for effecting quality vocational-technical education is based on an integrated and continuous process of planning, developing, and implementing, evaluating, and modifying its occupational programs and services for the intended purposes of improving performance and delivery. (p. 6)

In an earlier study, Norton and McCaslin (1976) asserted that " . . . to be successful, the evaluation effort must be viewed and used as a process for program improvement and progressive change, rather than for personal or program condemnation" (p. 88). Norton and McCaslin stressed the need for carefully designed and conducted evaluations when they stated:

> To insure that changes made are positive ones, which will lead to increased program effectiveness and/or efficiency, carefully designed and conducted evaluations are essential as a source of reliable information. Given factual information about a program, the decision maker can identify alternative actions and choose the action or combination of actions most likely to result in improved practice. (p. 328)

Many researchers stressed the importance of tying the evaluation of programs to the planning process. McCaslin (1990) outlined the close relationship between evaluation and planning in the following way:

> In planning, emphasis is placed on stating intentions, (What do we want to do?) whereas evaluation places emphasis on determining the degree to which stated expectations were met, (Did we do what we planned?). (p. 15)

Wentling (1980) stated that a comprehensive approach to evaluation would tie into the planning process by contrasting the attained results with (1) the human,

social, or institutional needs that caused the development of the program, (2) the minimum standards of success for retention of a program, (3) general occupational competency standards for the trade or profession, or (4) anticipated or expected program outcomes (p. 15). Wentling further tied the evaluation process to the planning of programs when he stated that:

> Overall effectiveness is concerned not only with behavioral changes in trainees and students, but also with the utilization of student, organization, and manpower resources and the extent to which objectives are appropriate to real career development needs and the needs of individual learners. (p. 15)

In a recent study, Allen (1990) stated that evaluation of vocational training programs at an area vocational-technical school is a continuous and constant process. He further claimed that " . . . it is a process to assist management in obtaining reasonable objective information about programs so that the resulting data can be applied to current and future planning decisions" (p. 17).

Young and Schuh (1975) stressed that when considering possible sources of information for use in evaluating and making decisions pertaining to occupational training program additions, modifications, or terminations, five basic questions should be addressed:

1. What sources of information or data are needed or required to answer programming questions?
2. How accessible is the information (i.e., are there limits to the amount of information which can be obtained or on the ways it can be obtained)?
3. How valid and reliable is the information (i.e., will the source consistently provide accurate information or will it be erratic or biased)?
4. Are there other sources of information?
5. Which is the most efficient source to use? (p. 56)

To address the first question raised by Young and Schuh (1975), Hopkins (1979) recommended using the following criteria: (1) objective of the program, (2) enrollment numbers in the program, (3) the number of completers, (4) the competencies achieved, (5) the number of completers available for the labor market, and (6) the number of completers continuing education in the field for which they are trained (p. 12).

One result of the continuing need for good evaluation practices is that unsuccessful programs continue to drain resources. According to Datta (1979), there is little evidence that a program is dropped because of unfavorable evaluations. Chelimsky's study (cited in Franchak, 1984) confirmed the need for program managers to use evaluation results:

> The problem of evaluation use is hardly a new one. We've been puzzling for years now about how to get program managers, for example, to use evaluation findings as a way of correcting or even cutting their programs, despite the obvious career threat which such use can represent. (p. 22)

Norton et al. (1985) pointed out that one of the most difficult and challenging responsibilities facing local administrators at both the secondary and postsecondary levels is that of phasing out a long-established program or service that is no longer needed.

> While phasing out a program does not occur often, the need does arise occasionally and the competent administrator must be willing and able to cope with the situation. Taking this course of action, even when completely justified by all the factual data available, can be a frustrating and politically dangerous experience. (p. 92)

In an earlier study, Long, Minugh, and Gordan (1983) formed some guidelines for making the difficult decision for phasing out a vocational program.

They offered the following for a basis:

> Three typical situations form the basis for phasing out a program: (1) insufficient enrollment, (2) insufficient funding, and (3) unsatisfactory job placement of graduates. Each situation can occur for a variety of reasons. The decision to phase out a program should be made only after careful examination of each situation and after serious consideration of the alternative of improving the program to make it more responsive to community needs. If this or another alternative is not feasible, then cause exists to phase out the program . . . . (pp. 5-7)

Some schools maintain a clear-cut mission to continue particular vocational programs even when the numbers would indicate otherwise. Long et al. continued:

> Even when careful and thorough review indicates the advisability of program phase-out, there may be reasons to search for alternative approaches. For example, a program may have a significant public service value despite its high cost and low enrollment. It may serve a special sector of the community and thus warrant continuation regardless of cost inefficiencies. The mission statement of the institution may carry a direct or implied mandate for such a program. Certain programs are also uniquely tied to geographic settings. Finally, legal counsel may advise against phasing out a specific program at a certain time. (pp. 5-7)

Revisiting our original discussion on evaluation, Young and Schuh (1975) contended that the underlying purpose of evaluation is to improve program performance. Young and Schuh explained that this may not necessarily mean phasing out a program. Long et al. (1983) offered the following as alternatives to phasing out a vocational program:

- Find alternative funding (e.g., from the business or industry served by training the program provides).
- Incorporate portions of the program into another related program.
- Conduct classes at the business or industry site.
- Schedule evening classes, particularly for beginners and those needing upgrading.

- Develop a cooperative agreement with another institution to meet the needs of students in the program and to avoid duplication.
- Redesign curricular offerings to make them more attractive to students.
- Revise the program to reduce its cost (e.g., offer courses less frequently, or increase class size).
- Reorganize the program so as to provide greater services at the same or a reduced cost.
- Be sure that nonessentials (e.g., recreational facilities or conference centers) are not being supported while occupational training programs are considered for phase-out. (p. 7)

Decision Making

Various researchers, such as the U.S. General Accounting Office (1974), Drewes and Katz (1975), and Starr et al. (1981), have confirmed that vocational program decision making is a complex process that is not clearly defined at the state and local level and that the process is not data-based according to the rational model defined in legislative mandates. Rather, they contended that management information systems and the other techniques for decision making implied in the legislation are only supplemental or fragmentary sources of information and supply only a part of the data needed for making an administrative program decision. That fact may be partially due to the political environment in which decisions are made. In their 1980 study, Pucel and Schneck stated that:

> . . . decisions are made in a political environment involving various groups and individuals who may have not only different needs but also, at times, competing interests; that the best data-oriented planners cannot anticipate all of the information needed; and that, at times, decisions may be political, aimed at defending the organization or at buying time. (p. 46)

Two predominant models of decision making emerged from an extensive review of the literature. De Young and Conner (1982) summarized the characteristics of those two models:

> The rational decision-making model assumes that decisions in an organization are based on rational processes. In this model, the vocational administrators would begin their decision-making process by identifying the problem. This step would begin with a formulation of a general statement of the problem in the form of objectives. Next, the identification of constraints (of finances, human resources, policies, laws, and so forth) would be balanced against the problem definition. A translation of the problem based on the analysis of the constraints would then result in a determination of measurable goals. The second phase of this decision-making model would be problem solving. In this phase a detailed analysis of the problem would be presented, and alternatives would be identified and weighted according to fixed constraints. From this analysis, candidate solutions would be chosen. Then these solutions would be measured against the goals and objectives established in the problem defining phase of the decision-making process. (p. 431)

The second organizational decision-making model defined by DeYoung and Conner (1982) is the incremental model, which assumes that decisions in organizations are the product of compromise among competing groups. According to De Young and Conner, the inability to attain consensus on objectives, as a result of the many diverse groups who have different values, characterizes the environment in which the incremental model operates. DeYoung and Conner concluded that information is important in the incremental model. However, " . . . it does not play a central role in decision making" (p. 432). They added that " . . . the choice among alternatives is not necessarily based on theory or past research but on the policy experiences of the decision maker and the demand of the situation" (p. 432).

The significance of decision making in the vocational education system has been stressed in many ways. The federal legislative enactments since 1917 have highlighted the need for using objective data relating both to occupational demand and supply and the student needs or interest. Franchak (1984) stated that legislative mandates have, for the most part, put decision making in the realm of a rational process to be undertaken by individuals who have clearly defined goals in regard to a clearly defined role for vocational education, with alternative decisions to be based on objective data. To bring about this objectivity, Franchak (1984) reported that management information systems and a variety of decision-making procedures--such as PERT (Program Evaluation Review Technique), economic and occupational forecasting, Delphi, and linear programming--were encouraged at the state and local levels as a result of the passage of the Vocational Education Act of 1963 and its subsequent amendments.

Franchak (1984) asserted that decision making by vocational education administrators has become more complex because of the changes in the environment in which the vocational education system operates. "The social, economic, technological, political, and legislative conditions that affect the information base have caused administrators to look at a variety of factors when making program decisions" (p. 8).

In a Minnesota research study designed to analyze decision-making procedures through the use of simulation exercises, eight major factors were identified as keys in the decision-making processes used by a group of selected educational planners as a basis for justifying their decisions about program

alternatives. The major factors that emerged and their operational definitions are presented below:

> 1. Satisfaction - Individual needs of people: preferred occupations of students, special needs of individuals, students' interest, cost to students, ability to serve students, etc.
>
> 2. Satisfactoriness - Needs of society: occupational demand, placement rate, employer acceptance, economic growth, occupational turnover rate, business and labor interest, etc.
>
> 3. Efficiency - Educational and/or program cost: staff and facilities availability, duplication of effort, cost is prohibitive, entry-level program, cost-effectiveness, cost per student, etc.
>
> 4. Alternative sources - Other educational sources: other agencies better tooled to provide training, apprenticeship approach, secondary education is sufficient, etc.
>
> 5. Quality - Educational and/or program quality: program prerequisites and organization, local support services, on-the-job training opportunities, program comprehensiveness, etc.
>
> 6. Equal opportunity - Equal opportunity for education: vocational education should be made available to all who can benefit, career education for minorities, cultural goals of minorities are different, etc.
>
> 7. Legal - Legal requirements: college degree program, vocational education act, professional occupation, skilled worker, limited training required, etc.
>
> 8. Mutual satisfaction - Combined needs of society and individuals: programs could provide useful training, needs of local area, documentation for need of programs, needs of nation, upgrading of existing occupations, etc. (Copa et al., 1976, p. 45)

Norton et al. (1985) asserted that various criteria can form the basis of the selection process, depending on the specific local situation. However, they recommend " . . . that whatever criteria are used be explicitly agreed upon beforehand and that some type of ranking of each alternative across the criteria

selected be completed" (p. 51). According to Norton et al., the following are some of the most commonly used criteria:

- Likely effectiveness
- Likely impact
- Resources available
- Resources required
- Political feasibility
- Compatibility with present programs
- Ease of implementation
- Cost-effectiveness of alternatives
- Educator reactions to alternatives
- Student reactions to alternatives
- Community reactions to alternatives (p. 51)

Franchak (1984) asserted that while knowledge of the most important criteria is needed, there is much more to the decision-making process that an effective administrator should know. Franchak outlined several areas of competence which he stated administers should know to make informed decisions.

> Effective decision making for adding, terminating, or modifying vocational education programs requires that vocational administrators be knowledgeable about the context within which their institutions function. The context includes the educational, social, and labor market settings. Administrators also need to understand the present and future trends affecting social and economic conditions, and related group and individual needs. Finally, there is a need to plan and evaluate vocational education within a framework that supports a defined decision-making process. That process requires a communications linkage among administrators, teachers, evaluators, planners, employers, and special interest groups. The actual factors used in decision making come from many sources and are filtered by the personality characteristics of the decision makers in their perception of the role or roles of vocational education. The understanding of the data, their availability, and their relationship to the decision-making process in a local educational institution is important. (p. 9)

As stated in one local program planning document:

> Every school district must correspondingly look at its decision-making structure, re-examine its need for information upon which

> decisions are made, and sufficiently modify its decision-making process so that vocational program offerings are justified in terms of employment demand data, program cost, placement statistics, and school, community, and student needs. (Portland Public Schools, 1977, p. iii)

The decision-making model proposed in this study was database-oriented and requires a rational decision-making approach with predetermined criteria. While most researchers agree there are a number of possible decision-making methods to use, most also agree that whatever method is selected should be rational, data based, and objective, and should involve the use of predetermined criteria. "A more logical and defensible approach would be to specify criteria and use a ranking approach, with the criteria forming the basis for informed judgments (Norton, 1977).

Cost-Benefit Analysis

Warmbrod (1977) stated that since the primary purpose of vocational education is preparation for employment, vocational education programs are, in some respects, more amenable to an economic assessment of benefits and costs than is education in general. He further offered that the application of cost-benefit analysis to vocational education requires that the benefits, as well as cost, be expressed in monetary terms. Kaufman's study (cited in Warmbrod, 1977) explained that cost-benefit analysis is an evaluative technique that relates the total value of a program's benefits to its total costs.

Warmbrod (1977) suggested that the first step in the application of cost-benefit analysis to vocational education is the identification of the cost and benefits of a given program. He added that both individual and social costs must

be quantified in monetary terms, an accomplishment that is termed virtually impossible by Kaufman (1967). Mangum (1967) seemed to agree with Kaufman and contended that many of the benefits and some of the costs of social programs are nonquantifiable, thereby leaving broad areas of assessment to assumption in judgment. Davie (1967, 1968), in an attempt to quantify the benefits of vocational education, explained that individual or private benefits have been defined as the welfare gained by an individual as a result of education. He listed the following as individual benefits:

1. Additional earnings attributable to vocational education net of taxes.
2. Fringe benefits associated with additional earnings.
3. Stipends received, if any, while enrolled in a vocational-technical program.
4. Value of the option to enter other educational programs in the future.
5. Increased psychic benefits. (p. 308)

In explaining the benefits to society, Davie (1967, 1968) concluded that:

> The benefits to society or welfare gained by society as a result of education are the gross additional earnings of individuals attributable to vocational education, the effects of reducing transfer payments, and better citizenship and reduced costs to society of bad citizenship. (p. 309)

In a similar study, Hardin (1967) defined social costs as the value of the productive resources consumed by providing an educational program. Hardin found that:

> The resources include instructional resources; administrative resources; additional resources used by trainees because of training, e.g., travel expenditures of trainees; and opportunity costs of foregone earnings, since the productive manpower of trainees is not available to society while the training course is in progress. (p. 379)

Another issue of concern on the topic of cost-benefit studies is that of confidence in the data. Economists who have conducted cost-benefit studies of vocational education reported that the cost data available are highly inadequate. Dueker and Altman (1967) studied 16 comprehensive and 16 vocational schools to identify the kinds of costs and related data that could be obtained to aid in planning and evaluating programs of vocational education. Supporting claims by Kaufman (1967) and Mangum (1967), Dueker and Altman (1967) found that the available cost data do not readily lend themselves to coherent analysis and that cost data pertaining to vocational education are not kept in a way that makes them accessible for rigorous analytic and evaluative purposes. They concluded that data are not easily obtained for realistic cost-benefit studies of vocational education.

Researchers outlined several problems and limitations in evaluating programs of vocational-technical education through cost-benefit analysis. Kaufman (1967) cautioned that cost-benefit analysis has disadvantages when applied to programs of education. In an earlier study, Davie (1965) listed the following limitations of cost-benefit analysis when applied to educational programs:

1. the treatment of benefits which cannot be measured in monetary terms.
2. the comparison of monetary benefits among different individuals.
3. the search for the best possible programs.
4. the treatment of benefits which accrue outside a particular community. (p. 17)

Kaufman (1967) listed inherent problems and limitations of cost-benefit analysis as including the following questions: What costs and benefits are to be included?

How are costs and benefits to be valued? At what interest rate are costs and benefits to be discounted? What are the relevant constraints? Warmbrod (1977) also contended that the usefulness of cost-benefit analysis as an evaluative technique in vocational education is limited by the requirement that benefits, as well as costs, be quantified in monetary terms. The researcher noted that except for the review done by Warmbrod in 1977, (15 years ago) not much has been done in the cost-benefit area in 25 years - since 1967. The value of cost-benefit analysis for vocational-technical education may be questionable.

Econometric Models

According to Tintner (1953), econometrics is the study of the application of statistical methods to the analysis of economic phenomena. Wolf and Waldron (1986) define an econometric model as " . . . an equation that is a hypothetical construction of reality which includes variables identified as important, and as affecting the way in which a country's or an industry's, or an organization's economy works" (p. 5). Wolf and Waldron further stated that the value of such a model would be to unify the various factors that are often considered in fragments in traditional ways of studying the problems of such units. They outlined the many difficulties and virtues that exist in using such a model to discuss educational management:

> It has the advantage of any model: it reduces a mass of information to a manageable size and shape. Second, this type of model gives the possibility of experimenting with changing variables under the control of the researcher. Third, an econometric model has the potential advantage of forcing fuller examination of important factors for managerial planning, decision making, and strategy

> implementation. Fourth, the model can force the manager to apply and refine decision-making criteria. Fifth, constructing and sharing a model has a powerful influence on those in authority to act in a way that minimizes negative side effects. (pp. 9-10)

In general, Wolf and Waldron contended that a good econometric model describes the essential features of a complex situation, and enables us to consider more variables than we can normally carry comfortably in our heads on a day-to-day basis.

However, "models are never perfect" (Wolf & Waldron, 1986). There were numerous problems mentioned in the literature concerning econometric models. Wolf and Waldron stated that the most common problems occur in the formulative stage where relevant variables may be omitted, or irrelevant ones may be included, or a variable may be given inappropriate weighting. They argued that the best, if not the least painful, preventative measure for this set of difficulties is group process. A second potential problem mentioned by Wolf and Waldron was that the data used to measure each variable may be outdated or statistically and substantively skewed. Again, they suggested that the best remedy was to check out the data sources with other informed persons. A final, and more intransigent difficulty mentioned by Wolf and Waldron, was that there was no easy way to predict the value of exogenous ("generated from outside") variables. An example of exogenous variable provided by Wolf and Waldron was a government decision to change a tax rate or reduce its level of spending.

Econometric studies are frequently conducted by the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor. The BLS econometric approach yields a national ten-year demand analysis based on projections of

population, labor force, productivity, consumption, and overall output that provides estimates of new openings by occupation. These estimates can be obtained from the U.S. Department of Labor. Young, Clive, and Miles (1972) stated there are disadvantages, or at least limitations, with the econometric model approach. "Accuracy is a problem since it is hard to forecast economic activity, technological change related to productivity, and specific needs, which change due to labor and capital mobility, in given market areas" (p. 45). In addressing the suggestion that the BLS model for econometric studies be adopted by state and regional planning departments, Young had the following comment: " . . . to be valid and useful it requires extensive knowledge of labor economics and statistics. The implementation of the model would be useful in providing local data regarding manpower needs" (p. 45). In a similar vein, Shapiro (1984) had the following to say about the appropriate use of econometric methods in educational research:

> The appropriate use of econometric methods in educational research is problematic because the aims and philosophical underpinnings of econometrics are incompatible with the philosophy of science subscribed to by most educators and educational psychology researchers. (p. 12)

According to the American Institute for Research (1976), econometric studies are more sophisticated and dependable than employer surveys, but for the most part they are too complicated, time consuming, and expensive for the typical vocational education curriculum developer to conduct (p. 44).

Model Development

A model, as stated by Gove (1981) in the "Definition of Terms" in Chapter I, is a preliminary pattern representing an item not yet constructed, and serving as the plan from which the finished work, usually larger, will be produced. Likewise, Jeffers (1984) stated that models are formal expressions of the essential elements of a problem in either physical or mathematical terms. Richardson (1984) added the following about models:

> The models we use in daily life and professional activity are grouped into a dozen varieties, from small-scale replicas to highly complex global depictions which must be developed by interdisciplinary research teams having access to large computer systems. We use models to simplify the complex, to understand otherwise elusive processes or systems, to plan business, teaching, environmental control, broad-based strategy, and especially to help us solve problems of every kind. (p. 3)

Corwin, Lane, and Monahan (1975) suggested that users of models needed to recognize that models are not perfect and that they are merely representations or descriptions. Improperly selected models, used without caution, could mislead the user.

Casti (1989) defined a model in the following way:

> An encapsulation of some slice of the real world within the confines of the relationship constituting a formal mathematical system. Thus, a model is a mathematical representation of the modeler's reality, a way of capturing some aspects of a given reality within the framework of a mathematical apparatus that provides us with a means for exploring the properties of that reality mirrored in the model. (p. 1)

Casti (1989) further stated, "The success of any modeling venture depends upon a judicious selection of observables and means for encapsulating these observables

with the framework of convenient formal mathematical systems" (p. 1).

In a study to develop a curriculum planning model for community college vocational education programs, Clifford (1988) outlined seven characteristics representative of an "ideal model" which were identified in the literature and validated by a panel of experts:

1. Relevance to a clear need: the precise purpose of the process and its relevance to the participants.

2. Usability: the ability to manipulate the model several times and achieve similar results.

3. Cost effectiveness: the ability to utilize the model with a reasonable amount of expense; an expense that can be comfortably matched to the value of the product.

4. Ability to reflect social and professional trends: the characteristic of a planning model that ensures that the program graduate will be employable and satisfied with his/her employment and education over time.

5. Flexibility: the ability to adapt to the different vocational programs in different community college settings.

6. Systematic approach: a method of planning that coordinates all aspects of the problem in a methodical arrangement toward the end product.

7. A timed framework: the specific time parameter appropriate in utilizing the model to affect change and yet keep the interest, energy and momentum of the participants. (pp. 142-143)

Boshear and Albrecht (1977) stressed the need to select the proper model and to recognize the limitations of models. A common concern, they stated, was the user's unwillingness to change or use a new model when appropriate. The tendency, in their estimation, was to overuse the model. The user of the model

needed to take care not to stretch the model over a situation it was not designed to cover.

The researcher found very few sources on the topic of model development that centered on the actual steps in the process of developing a model or on the issues of model properties. Rosen (1985) supported this claim when he discussed the topic of model development.

> There is a genuine need for developing an actual theory of models, employing a metalanguage that goes beyond the level of the phenomenon itself. It's just not possible to speak about the relationships between competing models of a given situation by using terms appropriate to the level of the model: We must go beyond the model to a meta-level in which the language is constructed to speak about issues involving properties of models, not properties of systems being represented by models. (p. 36)

In an earlier study, Knapp (1974) also claimed that although the model-building literature abounds with typologies based on model structure and function, much less has been specifically written on the process of model development itself. The only writer found to directly discuss the steps in the process of model development was Gelovani (1984). In his discussion on the development of a computerized model, Gelovani (1984) stated that most of the work in modeling system alternatives essential to decision-making goes into building a special model, which means lengthy and endlessly repeated modifications to its composition and structure. He stated that this model-building proceeds through the following steps:

> Definition of the limits of the system, choice of the basic variables and structure of the model that will most fully reflect the specifications of the research problem and correspond with existing knowledge and data.

> Quantitative description of the chain of cause and effect, writing of the computer programs, collection of statistical data, qualitative investigation and the dynamics of individual submodels.
>
> Combining the finished submodel programs into a single model of the phenomenon being investigated.
>
> Preparation of a set of alternative scenarios and their formalization.
>
> Analysis of the sensitivity of the modeling results to mistakes in the parameters, review of the adequacy of the model, assessment of modeling accuracy.
>
> Performance of simulation and optimization calculations using different quality criteria.
>
> Collection, processing and storage of the modeling results, their display in suitable form, substantive interpretation of the results. (p. 78)

Gelovani (1984) further described this process as an enormous volume of work, corresponding to many man-years that often has to be repeated all over again, even for a minor change in the initial statement of the problem. Gelovani stated that this process is problematic in that existing modeling methodology for the range of problems under consideration offers no adequate modeling technique corresponding to practical requirements. For this reason a new modeling method was proposed by Gelovani based on the concept of a problem-oriented, man-machine modeling system, i.e. a mathematical, algorithmic, program and information software system enabling experts in conversational mode with a computer to carry out all the processes of building, reviewing, and operating the model for a broad range of activities involving the simulation of processes in a given problem area. Gelovani stated that the essence of this system is that it does not initially contain a model, but instead a base that lets the expert generate the

particular model structure corresponding to his research aims or problem; this structure is then filled in with quantitative relationships describing the links between its elements. He stated that these relationships can be easily written out and fed into the model and that the system should also contain and provide ready access to and use of all algorithms and programs needed at the various stages of building, reviewing and operating the model. Gelovani explained that this should be achieved by automating the routine procedures arising at all modeling stages, taking into account the range of problems specifically being studied.

According to Khan (1984), models are increasingly being used in educational and manpower planning and are being integrated into the economic development plans of most countries. Khan stated that the reasons for this are well known. "A changing or growing economy requires forecasts of its manpower needs and the education and training of manpower well in advance to fill these needs" (p. 241). A review of the literature revealed a variety of models that have been developed for the purpose of program planning for vocational education. The specific models examined in this study were the Curricular Priority Matrix first introduced in the Vocational Education Planning Manpower, Priorities, and Dollars report published in 1972 (Young et al., 1972, p. xii) and the Van Buren Vocational-Technical Center model developed by Allen (1990). The model by Young et al. (1972) involved an in-depth examination and identification of various criteria, funding allocation techniques, and data resources that should be incorporated into the vocational education program planning and evaluation processes at the secondary level. As a result of this investigation, the authors,

Young, Clive, and Miles, developed a hypothetical matrix approach, as shown in Figure 1, for determining vocational curricular priorities when using several criteria to evaluate current and potential occupational program offerings. The matrix model called for (1) formulation and specification of the institution's goals and objectives and their weighted values; (2) selection of explicit criteria (i.e., supply/demand, placement, student interest, etc.); (3) selection of curricular cost criterion for the allocation of resources; and (4) identification, collection, and analysis of internal and external data sources that can be applied to the model (Young et al., 1972). According to the authors, the underlying assumptions for employment of the matrix model were:

> (a) a more rational and objective vocational education planning process will occur if specified criteria are applied in evaluating occupational programs; and (b) the use of cost criterion for program funding priorities will make the school system more accountable to their clientele as a means of justifying, as well as garnering their support for current and future programming decisions. (p. 36)

CURRICULUM-OCCUPATION: / PRIORITY CRITERIA:	Net Openings	Student Interest	Academic Performance	Entry Wages	Seniority Wage	Job Satisfaction	Entry Requirements	Curricular Cost	Serving Disadvantaged (Weight = 2)	CURRICULUM PRIORITY INDEX	RANK PRIORITY ORDER
Nurse, Registered	1	1	3	3	2	3	0	1	3 X 2 = 6	(20)**	x***
Licensed Practical Nurse	1	1	2	2	1	2	3	2	2 X 2 = 4	18	4
Nurse Aide	1	0	1	1	0	0	0	3	1 X 2 = 2	(8)	x
Typist	1	1	2	2	1	2	3	3	2 X 2 = 4	19	3
Machinist: Institutional	1	1	3	2	3	2	2	0	3 X 2 = 6	(20)	x
Machinist: Coop Ed.	1	1	3	2	3	2	2	3	3 X 2 = 6	23	1
Carpenter	0	1	1	1	1	1	1	1	2 X 2 = 4	(17)	x
Computer Operator	1	1	1	1	1	1	1	1	3 X 2 = 6	22	2

*GENERAL RANKING OF CELL SCORES: 0 - Inappropriate for Vocational Education
1 - Low Priority Score
2 - Moderate Priority Score
3 - High Priority Score

Figure 1. Curriculum Priority Matrix

An evaluation of the Young et al. (1972) Curricular Priority Matrix model revealed the following strengths and weaknesses. Observable strengths of the Curricular Priority Matrix were: (1) Flexibility in being able to adapt the matrix approach to serve local program planning and evaluation activities; (2) Emphasis on curricular-occupational program priority ratings using cost criterion as a basis for budgeting alternatives; (3) The use of weighted values for each criterion along with a definition of each value; (4) The overall design and construction of the matrix worksheet is simple to use. It provides a clear and complete picture of the entire scoring system for each program as well as the programs ranked by priority. Observable weaknesses of the Curricular Priority Matrix were: (1) The instructions for completing the matrix were left to the imagination of the person using the model; (2) The authors could have provided a sample listing of suggested data sources as a means of showing how these resources could be referenced with each of the criteria selected; (3) Although the definitions for each cell score according to criteria was a conceptual strength of the model, the definitions used were too general. A more precise definition for each cell score per criterion was needed in order for an evaluator to arrive at a more accurate score.

The second model reviewed in this study was the Van Buren Vocational-Technical Center model by Allen (1990). Due to the length of the Allen model it was not feasible to illustrate here. However, a discussion of the model's strengths and weaknesses was offered instead. Observable strengths of the Allen model were: (1) Criterion-scoring technique for evaluating and selecting occupational

programs; (2) The model identified specific data sources from which essential evaluative information could be obtained; (3) The model made use of three matrix worksheets for calculating, scoring, and ranking occupational programs as a means for determining possible programming options. Observable weaknesses of the model were: (1) The criteria or factors developed for the Allen model were generated by a single individual and not by group consensus; (2) The selection of which criteria to use in the decision to add, modify, or terminate vocational programs was made by the school's Director of Career Vocational-Technical Services; (3) The Allen model had an excessive number of worksheets making it cumbersome to follow and work through; (4) The Allen model separated the data sources into three categories of add, revise, and terminate causing the user to look in three different locations when working with the model. Many data sources were appropriate whether the decision was to add, modify, or terminate a program, i.e. demand data, student interest etc.; (5) One of the first steps in the instructions was the selection of the most important factors or criteria to be used in the model. The Allen model asked the user to select the factors but offered no suggested rank ordered list of factors to consider in this decision; (6) Although the instructions were straight forward, and the names of the worksheets were referred to in the instructions, there was no mention of the specific appendices location. Therefore the user had to look up each worksheet by name rather than by appendix letter.

The decision-making models by Allen (1990) and Young et al. (1972) mentioned previously were focused on the decision-making step to the program

planning process as opposed to a more comprehensive model offered by Norton (1985). The decision-making models developed by Allen and Young et al. are but a single step (in this case Step 7, Select the best alternatives) in the larger more comprehensive model offered by Norton. Norton described the comprehensive planning process as a problem solving activity involving nine essential steps. The comprehensive vocational education program planning model is presented in Figure 2. An overview of each of the general steps and their interrelationships follows. Norton's model is presented here not to down play the importance of the smaller decision-making models, but rather to illustrate where (Step 7) in the total planning process that the decision-making models fit and the relationship they have to the larger model. Norton stated that the planning model presented, whether followed in whole or in part, can provide direction for organizing and conducting a planning effort that will serve to improve and strengthen local vocational-technical programs.

Nominal Group Technique (NGT)

The NGT is a brainstorming technique for problem solving based on the notion that the average person can think up twice as many ideas when working with a group than when working alone (Ollhoff, 1991). In the nominal group process, people work in the presence of each other after first writing ideas independently rather than talking about them. The initial silent, idea-generating stage of the NGT decreases individual inhibitions and premature evaluation. "Individual inhibitions and premature evaluation can result in a decrease in

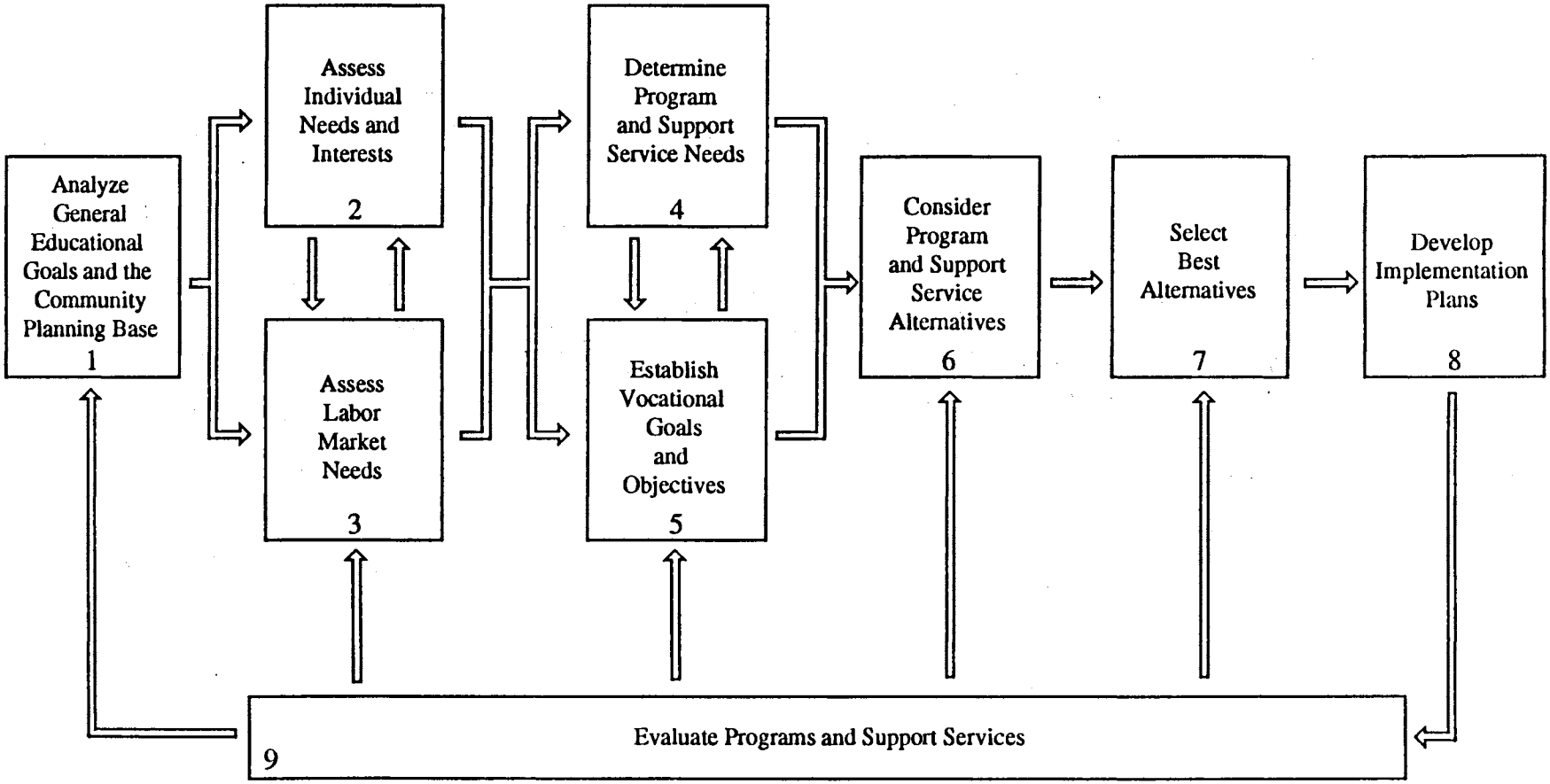

Figure 2. Vocational Education Program Planning Model

Figure 2 (Continued)

Steps in the Vocational Education Program Planning Model

Step 1--Analyze the general educational goals and community planning base. A vocational education program obviously cannot and should not operate in isolation from the community or area that it is intended to serve, nor should it operate apart from the total educational system of which vocational education is generally a subsystem. This important step in the vocational planning process therefore involves (1) carefully reviewing the educational philosophy and goals of the overall educational system and (2) analyzing the values, expectations, and resources of the community to determine their implications for vocational education.

Step 2--Assess individual needs and interests. This step in the planning model is concerned primarily with determining the vocational-technical training needs and interests of present and prospective students. In most institutions, this assessment will include determining the training interests and needs of adults in the area served by the college or school district. At the secondary level, parental preferences are also commonly surveyed.

Step 3--Assess labor market needs. This step involves making a careful determination of the present and likely future labor market supply-and-demand situation. A variety of techniques are commonly used at this stage of the planning cycle to assess current job openings, projected job openings, workforce mobility, and the economic outlook for the area in order to determine the number and kinds of employment opportunities that will be available for program graduates. The multiple sources of trained personnel are also studied to secure data about the expected labor supply.

Step 4--Determine program and support service needs. This step in the planning cycle is concerned with analyzing the data available or collected concerning student needs and labor market needs in order to determine (1) what changes, if any, are needed in the existing vocational programs and (2) what new programs, support services, or related activities, if any, are needed.

Step 5--Establish vocational goals/objectives. Once individual needs and labor market needs have been clearly established and program and support service needs have been determined, appropriate goals and/or objectives should be established at that point in the process. These goals and objectives should help make clear the specific intent of the new or modified programs and support services to be provided.

Figure 2 (Continued)

Step 6--Consider program and support service alternatives. This step involves the generation of alternative methods of achieving the established vocational goals. The alternative methods are then analyzed in terms of their cost, political feasibility, and likely effectiveness in meeting the identified student and labor market needs.

Step 7--Select the best alternatives. This is basically a decision-making step in which the appropriate persons (advisory council members, staff planning committee, administrators) consider all the available data regarding the alternatives proposed in the previous step and select the best ones. At this stage of the process, those involved must ensure that they can adequately justify their decisions, given the resources available and any other established criteria.

Step 8--Develop implementation plans. Once the best alternatives have been selected, a plan for providing the desired programs, support services, and activities--including time schedules, staffing requirements, management procedure, program budgets, and the designation of persons who will be responsible for each activity--needs to be developed. The staff planning committee and administration normally are responsible for preparing the proposed plan and related application and submitting them to the board of trustees or the board of education and, upon approval, to the state department of education.

Step 9--Evaluate programs and support services. Another essential component of any comprehensive vocational education planning process involves developing plans for conducting both formative and summative evaluation of the programs, services, and activities to be provided. This type of evaluation, which can take many forms, allows you to obtain useful feedback for program improvement purposes and to collect appropriate data for local, state, and federal program accountability purposes.

Recycle. As indicated by the arrows on the diagram of the model, you will undoubtedly find it necessary to repeat most, if not all, of the planning steps each year. In our rapidly changing technological society, needs must be frequently reassessed and program goals and objectives redefined to reflect new conditions and new priorities. (Norton, 1985, pp. 17-18)

Norton (1985) concluded by stating that the result of a well-conducted comprehensive planning process should be the design, implementation, and evaluation of vocational education programs that meet the identified needs and goals.

quality of group ideas in terms of creativity, originality, and practicality" (Delbecq, Van de Van, & Gustafson, 1986).

Delbecq et al. (1975) pointed out that the NGT is excellent for situations where individual judgments must be solicited and combined to invent or discover a satisfactory course of action. They further contend that the NGT can facilitate creative decision making and creative productivity, stimulate the generation of critical ideas, and serve as a method of aggregating individual judgments. The NGT consists of a series of six steps that allows each person to act individually while working through the process of reaching group consensus, ordinarily in response to a specific question (Hentschel, 1984). Delbecq et al. (1975) outlined the six stages of the NGT in the following way:

> Stage One - Formulation of the NGT question.
>
> Stage Two - Silent Generation. The meeting begins with five to eight individuals seated around the room in full view of each other. There is no discussion. Each individual, rather, is asked to list ideas concerning the NGT question on cards or sheets of paper in front of him or her.
>
> Stage Three - Round Robin. At the end of five to ten minutes, stage three begins during which each individual presents his/her ideas, one at a time, in a "round robin" manner without discussion. The ideas are fastened to a wall or chalkboard so all can see. Everyone is given equal opportunity to present their ideas. This round robin listing continues until all the ideas have been shared.
>
> Stage Four - Discussion. The group discusses each idea and clears any confusion.
>
> Stage Five - Voting. During this stage, independent voting takes place. Each member privately selects and ranks what he feels are the best ideas and writes them down.
>
> Stage Six - Tabulation. The group discussion is tabulated based on the results of the group's voting as individuals. (p. 11)

The NGT is further noted by Ludden and Wood (1987) as a systematic data collection method that combines the synergy provided by a group with the technique that minimizes the possibility of dysfunctional group behavior. Harrison, Pietri, and Moore (1983) have furthermore used the NGT as a front-end analysis tool in assessing training needs in the business sector, while Delbecq et al. (1975) have applied the method to analyze problems and solutions in health, government, and welfare programs.

The following characteristics of the NGT process facilitate decision-making performance:

1. Low variability among groups in member and leader behavior leads to consistency in decision making.

2. A balanced concern for social-emotional group maintenance roles and performance of task-instrumental roles offers both social reinforcement and task accomplishment reward to group members.

3. The silent independent generation of ideas, followed by further thought and listening during the round-robin procedure, results in a high quality of ideas.

4. Search behavior is proactive, characterized by extended periods in generating and clarifying alternative dimensions of the problem, tendencies for high task-centered group effort, and the generation of new social and task-related knowledge.

5. The structured process forces equality of participation among members in generating information on the problem. (Delbecq et al., 1986, pp. 34-35)

Frequently, consensus group techniques similar to the NGT are chosen when low to moderate disagreement is expected, as in judgmental decision making when equal participation may be difficult to achieve (Zemke, 1978). Advantages of using the NGT are exemplified in the following objectives illustrated by

Delbecq et al. (1975): (1) to ensure balanced participation; (2) to assure different processes for each phase creatively; and (3) to incorporate mathematical voting techniques in the aggregation of group judgments. Consequently, the NGT process also reduces conflict and tension that often arises when individual judgments are required from persons of varied backgrounds, positions, or social status (Rice, 1980). As Hentschel (1984) demonstrated, the NGT adds civility to the decision-making process and further reduces the occurrence of negative feelings developing among members by separating the person from the idea in the final voting (Delbecq et al., 1975). Ford and Nemiroff (1975) suggested that although the NGT appears especially functional for fact finding or idea generating, the group discussion format is superior for sharing and evaluating ideas. To overcome this limitation, the "clarification only" rule during discussion could be relaxed and additional time for free discussion may be added to further increase the quality of ideas (Conserva, Inc., 1980).

Focus Groups

As defined in the Chapter I "Definition of Terms," a focus group utilizes a carefully planned discussion format designed to obtain perceptions on a defined area of interest in a permissive, nonthreatening environment (Krueger, 1988). A focus group interview was selected as the primary methodology for data collection in this study because it represents a promising method for conducting qualitative research. This view was expressed by Marshall and Rossman (1988):

> We intend instead to describe the process of designing mainstream qualitative research that . . . values participants' perspectives, that views inquiry as an interactive process between the researchers and the participants, and that is primarily descriptive and relies upon people's words as the primary data. (p. 11)

The researcher chose a qualitative approach to ensure participants' opportunity to describe fully their insights and suggestions concerning the utility and usability of the proposed program decision-making model. The panel members were advised that they would be asked in a focus group activity to evaluate the utility and usability of the proposed vocational program planning model. The panel members were asked:

1. What are the strengths of the decision-making model?
2. What are the weaknesses of the decision-making model?
3. What are other possible barriers in using this model?
4. How could you eliminate these barriers or weaknesses?
5. How would you modify or improve the model?
6. How many of you would use the model?
7. How would you use this model?

Krueger (1988) had the following to say about focus groups:

> Focus group interviews are widely accepted within marketing research because they produce believable results at a reasonable cost. This technique is growing in popularity among other information seekers, such as social scientists, evaluators, planners, and educators. It is a particularly appropriate procedure to use when the goal is to explain how people regard an experience, idea, or event. Social scientists are finally rediscovering the focus group. The evolution of focus groups and, for that matter, of qualitative research methods in general has been delayed for a variety of reasons--a preoccupation with quantitative procedures, assumptions about the nature of reality, and a societal tendency to believe

> in numbers. Too often the quantitative approaches were based on assumptions about people, about things, or about reality in general that were not warranted. (pp. 20-21)

The value of the interaction of focus groups is also supported by Morgan (1988): "One advantage of group interviewing is that the participants' interaction among themselves replaces their interaction with the interviewer, leading to a greater emphasis of participants' points of view" (p. 18). This is important to this study because the focus of the research was to determine how useful the decision-making model would be and what participants would do to improve the model. The focus group methodology was further supported by Krueger (1988): "The focus group discussion is particularly effective in providing information about why people think or feel they way they do" (p. 14). In discussing the use of focus groups instead of other methods, Krueger stated:

> The focus group is unique from these other procedures; it allows for group interaction and greater insight into why certain opinions are held. Focus groups can improve the planning and design of new programs, provide means of evaluating existing programs, and produce insights for developing marketing strategies. (p. 15)

Krueger (1988) further explained that focus group interviews typically have five characteristics or features: (1) people who (2) possess certain characteristics and (3) provide data (4) of a qualitative nature (5) in a focused discussion (p. 27). According to Mariampolski (1984), "Because the moderator can challenge and probe for the most truthful response, supporters claim, qualitative research can yield a more in-depth analysis than that produced by formal quantitative methods" (p. 21).

Additional support for focus group methodology can be gleaned from

McCaslin (1978). The author cautioned against those individuals stating the need for "hard" data and discrediting "soft" data. He warns that " . . . people often fail to realize there is bad hard data as well as good soft data. Measurement through numbers alone is not the only way to extend or solidify our understanding of vocational education" (p. 6).

Summary

Chapter II provided a review of the literature and research relative to the importance placed on planning and evaluating vocational education programs since the 1963 vocational amendments. Emphasis was placed on using effective planning and evaluation to make objective and cost-effective decisions about instructional programs. With the many reports dealing with planning and decision making came many recommendations for the development of a model and procedural guide to follow in making program planning decisions at the local level. In fact, this seemed to be the theme of the literature on planning--that although considerable strides had been made, it was still a complex process that was not clearly defined at the state or local level. The biggest gap seemed to be in making sense of all the data elements and making decisions in light of the complex information available. Evaluation was stressed as an ongoing activity used to improve vocational education programs. Although evaluation can be used to phase out unwarranted vocational programs, the literature outlined (and in fact suggested) alternatives to program phase-out. The literature suggested that decision making has become more complex due to the environment in which

vocational education systems now operate. Decisions are often made in a political environment and may not necessarily be database-oriented. The literature also emphasized that effective decision making requires that vocational administrators be knowledgeable about the context within which their institutions function. Various problems were highlighted when attempting to use cost-benefit analysis in vocational education. The main concern seemed to be that many of the benefits and some of the costs of social programs are nonquantifiable, thereby making it difficult to perform effective cost-benefit analysis. Second, cost data pertaining to vocational education are not kept in a way that makes them accessible for rigorous analytic and evaluative purposes.

While a considerable amount of investigation was found in each of these areas, there was a conspicuous absence of research relating to the use of econometric models in vocational education and even less on the process of model development. While the literature documented that econometric studies are more sophisticated and dependable than employer surveys, it was also apparent that they are too complicated, time consuming, and expensive for the typical vocational education curriculum developer.

The last two sections describe the nominal group technique--a research design that focuses on the generating and ranking of the most important factors in the decision to add, modify, or terminate vocational education programs, as well as the utilization of focus group methodology to solicit the perceptions of vocational planning experts on the design, utility, and usability of a proposed program planning model. By collecting the above-mentioned data, it was hoped

that a decision-making model could be developed that would help vocational planners and administrators make better-informed program decisions, thereby enhancing economic development in Oklahoma.

CHAPTER III

METHODOLOGY

The purpose of the study was to develop a model that area vocational-technical school planners and administrators might use to ensure a more appropriate basis for making decisions in relation to the manpower delivery system in Oklahoma. This chapter is devoted to the method of data collection and its analysis, and is divided into the following sections: (1) Introduction, (2) Population, (3) Collection of Data, (4) Analysis of the Data, (5) Accuracy of Content Analysis, (6) Ethical Concerns, and (7) Summary.

Introduction

This descriptive study consisted of the acquisition of information using two methods: the NGT and focus group methodology. The NGT was designed by Andre Delbecq and Andrew Van de Ven in 1968, and according to Krueger (1988), many of the procedures that have come to be accepted as common practice in focus group interviews were set forth in the classic work by Merton, Fiske, and Kendall, The Focused Interview (1956).

Using a selected group of vocational planning experts, NGT was employed to generate and rank order a list of the most important factors to consider in the decision to add, modify, or terminate vocational programs. Following the NGT

session, the researcher employed focus group methodology to solicit the experts' perceptions of the utility and usability of the proposed program planning model that was designed to apply the key factors generated from the NGT session.

According to Key (1974), "Descriptive research is used to obtain information concerning the current status of the phenomena" (p. 126). This study used two methods of descriptive research and ordinal-level data to interpret group suggestions and opinions into a collection of descriptive information for decision making.

Population

The respondent population was selected through a nomination process. The vocational planning experts were nominated by the state director and management team from the Oklahoma Department of Vocational and Technical Education. Participants selected for the study were considered leading authorities in their field by their nominators. Each nominator was asked to submit a list of three to five names, using the following criteria: (1) Participants must be knowledgeable about the factors that should be considered in planning educational programs; (2) participants must be practicing vocational administrators, responsible for successful vocational programs; (3) participants must be willing and able to express their opinions openly regarding factors and priorities and to entertain new alternatives; and (4) participants must take seriously the business of planning. The researcher used the nomination list to make the final selection of participants for the study.

Each nominee was invited by the researcher, via telephone conversation, to participate in the study. A matrix was developed to assist the researcher in selecting a meeting date that would assure adequate participation for the workshop. Based upon availability, nine of the nominees were selected for the study. Random selection was not considered because the NGT and focus group methodology rely on expert opinion.

In selecting the participants, consideration was also given to the geographical setting of the schools as defined by the population of the town in which they are located, i.e., rural, urban, and metropolitan statistical area. For the purpose of this study, rural was defined as any location with a population of 12,000 persons or less; urban was defined as any location with a population between 12,001 and 50,000; and metropolitan statistical area (MSA) was any location with a population of 50,001 or more. Participants in the study came from the following areas: Kiamichi Area Vocational and Technical School (AVTS), Wilburton, Oklahoma, 1990 census population 3,300; Eastern Oklahoma County AVTS, Choctaw, Oklahoma, 1990 census population 10,550; High Plains AVTS, Woodward, Oklahoma, 1990 census population 14,500; Indian Meridian AVTS, Stillwater, Oklahoma, 1990 census population 37,150; Tulsa County AVTS, Tulsa, Oklahoma, 1990 census population 368,900; and Metro AVTS, Oklahoma City, Oklahoma, 1990 census population 410,400. According to the definition used in this study, Kiamichi AVTS and Eastern Oklahoma County AVTS were considered rural schools, High Plains AVTS and Indian Meridian AVTS were considered urban schools, and Tulsa County AVTS and Metro AVTS were considered

metropolitan statistical area schools.

The nine individuals selected for the study represented three rural, four urban, and two metropolitan statistical areas. However, one rural and two urban school participants dropped out due to scheduling conflicts leaving two rural, two urban, and two metropolitan statistical area participants for a total of six participants in the study. The small number of participants for the focus group was within the guidelines recommended by Morgan (1988): "Combining both practical and substantative considerations, it appears that four was the smallest size for a focus group, and the upper boundary appears to be around 12" (p. 44). Krueger (1988) also stated that small focus groups with four to six participants are becoming increasingly popular because the smaller groups are easier to recruit and host and are more comfortable for the participants. This sample of participants came from schools that were representative in size and setting to the population of Oklahoma's area vocational-technical schools. This method of sample selection was suggested by Morgan (1988) when he wrote:

> A typical solution, given the small size of focus group samples, is to work with theoretically chosen subgroups from the total population. It is good advice to concentrate on those population segments that are going to provide the most meaningful information. (p. 45)

According to job title, the following positions were represented: one superintendent, three assistant superintendents, one deputy superintendent, and one instructional and career services support manager. Three of the participants were male and three were female. Four had doctorate degrees and two had master's degrees.

Collection of Data

The data for the study were collected in a single day in a workshop session conducted October 30, 1992. An agenda for the workshop is located in Appendix C. The day was divided into two parts. During the first half of the day, NGT was employed to generate and rank order the most important factors considered in the decision to add, modify, or terminate vocational programs. During the second half of the day, the researcher used focus group methodology to evaluate the utility and usability of the proposed decision-making model for adding, modifying, and terminating vocational programs. The important factors generated in the morning session would then become the recommended or suggested factors to be used in the proposed model when it is placed into practice.

The proposed decision-making model (Appendices I-M) was sent to the panelist one week earlier for their comment, review, and familiarization. An example transcript of the focus group session is located in Appendix P.

The NGT and focus group sessions were held at Indian Meridian Area Vocational-Technical School in Stillwater, Oklahoma. During both sessions, the room was set up in an open "U" shape. Two flip charts were positioned at the open end of the "U" to allow all participants an unobstructed view. Hot coffee and doughnuts were offered to participants as they entered the room. The researcher was assisted by two members of his staff and the state planner for vocational-technical education in Oklahoma. One staff member was responsible for typing participants' responses for both sessions on a lap top computer in WordPerfect 5.1, while the other staff member tabulated voting results and wrote

out the final rankings on a flip chart for everyone to see. The state planner served as an assistant to the researcher while conducting the NGT. Her responsibility was to help categorize the participants' responses into related areas during the NGT and serve as the focus group moderator in the afternoon session. The state planner was used primarily because of her skill and experience in conducting focus group sessions. She has received master training status through Zenger-Miller, Development Dimensions International (DDI), and the Pacific Institute. Master training status is awarded to individuals who have been trained, observed and certified by the company to have demonstrated standards of excellence in group facilitation. The researcher also spent considerable time with the state planner reviewing the rigorous standards of focus group facilitation outlined by Krueger (1988) as is pertains to research. Krueger recommended 12 hours of facilitation training for someone with no previous focus group experience.

Collection of NGT Data

To begin the NGT session, the researcher provided a welcoming statement clarifying the purpose of the session to the participants. The researcher then asked the participants to read and sign the Participant Consent Form shown in Appendix E and the Authorization to Record Form in Appendix F. All six participants signed and returned their forms. The researcher then explained the five steps in conducting the NGT to the participants. The steps were also written on the chalkboard at the front of the room for everyone to see throughout the morning. Following Delbecq et al. (1986), the five steps used in the NGT were:

(1) silent generation of ideas; (2) round-robin sharing of ideas; (3) discussion and clarification of ideas; (4) voting; and (5) tabulation.

The construction of the NGT questions followed suggestions by Mortensen and Holmes (1983) that the questions must be clear and concise to enhance an understanding of its parameters and implications, be of immediate relevance, and be learner centered (i.e., relevant). As suggested by Conserva, Inc. (1980), a pilot test of the NGT questions and script using a population that closely resembles the group members was conducted to ensure clarity. For the pilot test, the researcher enlisted the help of two vocational-technical school administrators, the research coordinator and the state planner from the Oklahoma Department of Vocational and Technical Education (Appendix Q). Each was given the NGT questions and asked to respond in regard to the clarity, conciseness, and relevance to the purpose of the study. They each offered recommendations for improving the NGT script and questions.

After explaining the five steps of the NGT, the researcher read the first question to the participants: "What are the most important factors considered in the decision to add vocational programs at your school?" The question was also written on a flip chart at the front of the room. To answer the first question in step one, the nominal group session began with the silent generation of ideas. Participants were instructed to work independently to formulate their ideas in response to the question and to write their responses on 5 x 8 cards using a magic marker. Approximately ten minutes was given for the silent generation of ideas. During step two, the participants shared their ideas in a round-robin fashion, one

person at a time, by handing the researcher one card at a time. The researcher would then place the card on the flip chart using double-sided tape. The guidelines suggested by Mortensen and Holmes (1983) were used to guide the nominal group session with the exception of using 5 x 8 cards and double-sided tape instead of writing the participants' responses on a flip chart. The researcher chose this method for two reasons: (1) to save the time spent writing each response on the flip chart and (2) to make it easy to remove or rearrange cards. When ideas were found to duplicate each other, the cards with the duplicating responses would be removed and the remaining cards would be rearranged in related categories to assist the participants in synthesizing the information for voting purposes.

Once all ideas were presented, they were discussed, clarified, categorized into related areas, and combined by group consensus in step three. The researcher then had a set of factors considered most important to the participants in deciding to add a vocational program. To prepare for step four, the researcher assigned a letter to each factor to be voted on. The factors were identified alphabetically to avoid confusion with the numerical rankings. Participants were instructed to select their top ten choices from the list of factors and assign a numerical ranking to each, with 10 indicating their most important factor and 1 their least important factor. This technique followed suggestions by Conserva (1980): "Using a rating technique, participants rate their perception of each activity's importance (e.g., on a scale from 1 to 10, with 10 representing the most important activity). Participant ratings can then be averaged, and those activities

with the highest mean importance ratings are selected for implementation" (p. 49).

Participants cast their votes individually on a ballot developed by the researcher specifically for the study (Appendix O). The research assistant then collected the voting ballots and transferred the results to the tally sheet (Appendix N). To calculate the mean, the numerical scores for each factor were then totaled and divided by six (the number of participants). The mean was used to rank order the list of important factors.

The five steps in the NGT were repeated for each question in each of the three categories to add, modify, or terminate vocational programs. The NGT session ended with a statement of appreciation.

Collection of Focus Group Data

Focus group methodology was used primarily to elicit the participants' experiences and perceptions regarding a program decision-making model. The primary goal was to evaluate the utility and usability of the proposed decision-making model for adding, modifying, or terminating vocational programs. Six panelists participated in the focus group session. The small sample size was chosen to produce substantive content, while keeping the session within a two-hour format. The two-hour length was recommended by Morgan (1988): "Duration of the group is usually fixed at one to two hours, and only a relatively narrow range of group sizes is practical, so the number of groups is the primary dimension of variability" (p. 42).

Data collection in the focus groups required audio taping the discussion

and then transcribing those tapes. The researcher's assistant took additional notes on a lap top computer. Those sources were reviewed to determine the perceived strengths and weaknesses of the model (Appendices I-M), possible barriers to using the model, and possible solutions to overcoming or eliminating those barriers. Additional questions concerning the proposed model were asked: How would you modify or improve the model? How many of you would use the model? And how would you use the model?

To formulate and present the focus group questions, the researcher followed guidelines suggested by Krueger (1988):

1. Focus group questions should be asked in a logical and sequential flow.

2. Focus group questions should be focused and properly phased to assist the participants in understanding their parameters.

3. Focus group questions should be pilot tested to ensure clarity. (pp. 65-67)

Drafts of the script and questions for the focus group session were reviewed by two area vocational-technical school administrators, the research coordinator, and the state planner from the Oklahoma Department of Vocational and Technical Education (Appendix Q). A pilot test of the focus group discussion was also conducted two weeks before the actual focus group session using four individuals from the Oklahoma Department of Vocational and Technical Education (Appendix R). As suggested by Krueger (1988), the pilot test took into consideration not only the nature of the questions but also the interactions between participants and the moderator procedures. Attention was also given to the logical, sequential flow of the questions and to the ability of probes to elicit

the information desired. As a result of the pilot test, the questions were changed to improve clarity.

One week prior to the workshop the participants were sent a copy of the proposed decision-making model which included an overview and steps for using the decision-making model, a sample data reference guide, a data source and weight assignment sheet, a hypothetical example of the proposed program decision-making model, and the matrix worksheets for adding, modifying, or terminating vocational programs, (Appendices I-M). This material was sent for their comment, review, and familiarization of the material. Participants were asked to become familiar with not only the focus group questions, but the entire packet of material and to contact the researcher with any questions. This was done to help facilitate discussion during the one-day workshop. The focus group session was held in the same room where the NGT session was held earlier the same day. To record the focus group session, two audiovisual technicians from the Oklahoma Department of Vocational and Technical Education set up the audio equipment the afternoon before the workshop.

The guidelines suggested by Krueger (1988) were used by the focus group moderator:

1. Specific questions will be used to follow up participant responses for clarification.
2. The moderator's comments will be nonjudgmental.
3. Technical terms, local jargon, and complex ideas will be clarified with follow-up questions.

4. When a participant makes a strong statement or has an interesting but novel idea, the other participants will be asked how they feel about the idea.

5. Everyone in the group will have the opportunity to contribute to every topic or question. (pp. 72-90)

The focus group moderator opened the session with a welcoming statement clarifying the procedures and ground rules to be followed during the focus group activity. Those procedures and ground rules are contained in the focus group script (Appendix H). The moderator used a focus group script to ensure that all questions were covered in the discussion. This procedure was encouraged by Morgan (1988): "It is useful to organize the discussion topics into a guide that the moderator can follow. The moderator needs to be free to probe more deeply when necessary, skip over areas that have already been covered, and follow completely new topics if they arise" (p. 56).

Following the moderator's welcoming statement, the researcher presented the decision-making model and answered any questions the participants had about how the model works. One question was asked by a participant. How does what we are doing with the model fit in with the factors that were generated this morning? The researcher explained that the factors generated by the experts in the morning session were an important part of developing the model and would be the model's "suggested" factors when it goes into practice. That answer was acceptable.

Following the clarification session, participants answered a series of questions concerning the usability and utility of the program planning model. Interaction among the participants was encouraged. Morgan (1988) supported

this process when he reported that:

> The hallmark of focus groups is the explicit use of the group interaction to produce data and insights that would be less accessible without the interaction found in a group. (p. 12)

The researcher chose a qualitative approach to ensure the participants' opportunity to fully express their views in regard to the focus group questions. The participants were advised that they would be asked in a focus group activity to evaluate the utility and usability of the proposed vocational program planning model. They were asked the following questions:

1. What are the strengths of the decision-making model?
2. What are the weaknesses of the decision-making model?
3. What are other possible barriers in using this model?
4. How could you eliminate these barriers or weaknesses?
5. How would you modify or improve the model?
6. How many of you would use the model?
7. How would you use this model?

The primary data collected for this study came from the focus group discussion, so the experiences and perspectives of the participants became the study's most important data. Both the audio tape recordings and the transcriptions of those tapes were used to analyze the data. The analysis process will be described in-depth later in this chapter.

Analysis of the Data

Analysis of the NGT Data

During the ranking stage (step five) of the NGT, the expert panelists were asked to generate and then rank order the key factors to consider when making the decision to add, modify, or terminate vocational programs. The panelists were instructed to select their top ten choices from the generated list of factors and assign a numerical ranking to all ten. A score of 10 was given to their most important factor and a score of 1 to their least important factor. Panelists recorded their responses individually on the voting ballot (Appendix O). The research assistant then collected the voting ballots and transferred the results to the tally sheet (Appendix N). The numerical scores for each factor were then added and divided by six (the number of panelists). This mean was used to rank order the list. Simply, the factor with the highest average was the most favorable solution.

Statistical analysis was conducted in two ways. First, the Kendall Coefficient of Concordance W was calculated to determine the degree of agreement among the experts in the NGT. This type of correlation test was useful in determining the extent of agreement among the experts on several rankings of N objects. In this case those N objects were the NGT factors generated and ranked by the experts. The Kendall Coefficient of Concordance W, according to Siegel (1956), is a correlational test used to determine the level of agreement among judges on a number of issues. Seigel had the following to

say about the Kendall Coefficient of Concordance W:

> Imagine how our data would look if there were no agreement among the several sets of rankings, and then to imagine how it would look if there were perfect agreement among the several sets. The coefficient of concordance would then be an index of the divergence of the actual agreement shown in the data from the maximum possible (perfect) agreement. Very roughly speaking, W is just such a coefficient. (p. 230)

In order to test the significance of the relationship at the .05 level, the W coefficient had to be converted to a Chi Square value. According to Siegel (1956) when N, (in this case the number of factors) is larger then 7, the distribution of the Kendall Coefficient of Concordance W approximates that of the distribution of Chi Square values. Therefore the W's were converted to Chi Square values. The formula for the calculation of W is the rank sum of the participants' individual factors expressed as a deviation. After the rank sums were determined, the mean was calculated and the deviations squared. The sum of the squares was then divided by 1/12 times the number of judges (six) squared times N^3-N. The null hypothesis for the Kendall W was that the participants' rankings were unrelated. The analysis results are described in greater detail in Chapter IV (Tables II, III, and IV). Second, interval-level statistics were used to calculate the mean, deviation, and standard deviation of the factors generated from the NGT. Descriptive tables were drawn (Tables VI, VII, and VIII) to show the deviations that occurred between participants from three different school settings (rural, urban, and metropolitan statistical areas) as they ranked the key factors. The purpose was to determine which of the group (or groups) deviated the most from the panel as a whole, as well as the level of agreement each group had for each of

the key factors. Because of the very small sample size (six), no statistical technique was found that would provide valid and useful analysis data; therefore, a visual inspection was suggested instead. The results of this activity are discussed in greater detail in Chapter IV.

Analysis of Focus Group Data

To analyze the qualitative data of the focus group activity, written transcripts were developed from the tape recordings of the sessions (Appendix P). Recording the focus group captured meaning and enthusiasm that could not be revealed by written word alone. By having transcriptions of the tapes available, the researcher was able to identify unique experiences described by a single participant and review similar incidents described in different words. The tapes were useful during the analysis phase to support the researcher's interpretation of the raw data. Both the tapes and notes were used to identify the context, enthusiasm, and emphasis expressed by the participants. This concept is supported by Krueger (1988):

> Some types of nonverbal communication are often overlooked in the analysis when the researcher relies only on transcripts. The researcher should consider the energy level or enthusiasm within the group. Enthusiastic comments and excitement for the topic should be factored into the statements of findings. Also note the degree of spontaneity and the extent of participant involvement. (p. 118)

The researcher used the guidelines presented by Krueger (1988) in Focus Groups, A Practical Guide for Applied Research. In his book, Krueger characterized data analysis by quoting Yin (1984): "Data analysis consists of examining, categorizing, tabulating, or otherwise combining the evidence to address the initial provisions of

a study" (p. 106).

To analyze the data, the researcher conducted the following two-step process:

Step one: The researcher read each transcript and marked sections that related to each question in the questioning route. The researcher also marked participant comments that were worthy of future quotation. The researcher listened to the tape while reading the transcript to ensure that participants were correctly identified and that the statements were accurate and complete.

Step two: Data from the focus group transcripts were reduced by reviewing and analyzing the raw data to develop summaries based upon the questions asked in the focus group session. These summaries are described in greater detail in Chapter IV.

Krueger (1988) listed six factors for consideration when conducting data analysis that were followed in this study:

1. Consider the words.
2. Consider the context.
3. Consider the internal consistency.
4. Consider the specificity of responses.
5. Find the big ideas.
6. Consider the purpose of the report. (p. 115)

These factors guided the researcher in analyzing the data for this study. The analysis proceeded along the following continuum presented by Krueger (p. 109):

The Analysis Continuum

Raw data ⟷ Descriptive Statements ⟷ Interpretation

Krueger (1988) explained that on one side of the continuum are the raw data, or the exact statements of the focus group participants as they responded to the specific questions. Midway on the continuum are the descriptive statements or summary statements of respondent comments. In this part of the continuum, the researcher developed a brief description that was based on the raw data. This was done to simplify the reader's task by providing illuminating quotes. According to Krueger, interpretation is the most complex role for the researcher. Every attempt was made by the researcher to move back and forth between concrete bits of data and abstract concepts, between inductive and deductive reasoning, and between description and interpretation. Yin (1989) stated, "The ultimate goal is to treat the evidence fairly, to produce compelling analytical conclusions, and to rule out alternative interpretations" (p. 107).

According to Krueger (1988), the researcher serves several functions in the focus group activity: moderating, listening, observing, and eventually analyzing and using an inductive process, through which " . . . the inductive researcher derives understanding based on the discussion as opposed to testing or confirming a preconceived hypothesis or theory" (p. 30). To report the focus group results, the researcher used the descriptive summary style suggested by Krueger: "This style of reporting begins with a summary paragraph and then includes illustrative quotes" (p. 129). The quotes selected are intended to help the reader understand the way in which the respondents answered the questions.

Accuracy of Content Analysis

Internal validity is concerned with how one's findings match reality. One of the assumptions underlying qualitative research is that reality is holistic, multidimensional, and ever-changing; it is not a single, fixed, objective phenomenon waiting to be discovered, observed, and measured. "Assessing the isomorphism between data collected and the 'reality' from which they were derived is thus an inappropriate determinant of validity" (Merriam, 1988, p. 156). The researcher used two basic strategies suggested by Merriam to strengthen internal validity:

1. Member check - Data were returned to the people from whom they were derived, with a request to check the accuracy of the results. Verification letters are located in Appendix S.

2. Peer examination - A research coordinator who attended the full-day workshop was asked to comment on the procedures and findings (also Appendix S).

Ethical Concerns

When the researcher entered the lives of the vocational planning experts for this qualitative case study, ethical problems could have emerged during the collection of the data and in the dissemination of findings. Common ethical concerns are the right to privacy, the notion of informed consent, and the issue of deception (Merriam, 1988). The researcher sought and was granted an Oklahoma State University Institutional Review Board (IRB) clearance before beginning his research. IRB clearance required that the researcher address any issue dealing with the anonymity and confidentiality of the participants. The researcher was

also required to describe how the participants' confidentiality would be protected. In this description, the researcher stated that the audio tapes from the focus group activity would be kept in a locked desk drawer in his office. Likewise, the transcribed material from the tapes would also be kept in this drawer. To protect anonymity of the panelist, a code was used in place of their name in every case.

The definition of what is right and acceptable is communicated in the choice of language, the constraints accepted, the security devised to protect information, the establishment of informed consent at entry, and the provision of genuine reciprocity with collaborating participants (Locke, Spirduso, & Silverman, 1987). Diener and Crandall (1978) offered sound advice:

> There is simply no ethical alternative to being as nonbiased, accurate, [and] honest as is interpersonally possible in all phases of research. In planning, conducting, analyzing, and reporting his work, the scientist should strive for accuracy, and whenever possible, methodological controls should be built in to help. (p. 162)

Summary

The identification of the most important factors to consider in the decision to add, modify, or terminate vocational programs were completed using the Nominal Group Technique (NGT). Six experts representing rural, urban, and metropolitan statistical areas participated in the study. The NGT used three questions to obtain key factors in this study. The questions were developed using the guidelines from Delbecq, et al., (1975).

To determine the mean of the experts' ranking for each key factor, descriptive statistics were used. Standard deviations of each category of experts

were calculated to compare ranking by the groups. A Kendall Coefficient of Concordance W was calculated to determine the extent of agreement by all the experts on the most important criteria.

The product of the NGT is consensus of opinions. Because the source of the information is a representative sample of experts in vocational program planning, their consensus of opinion has value and fulfills the purpose of this study in compiling a list of key factors, according to Delbecq et al. (1975).

The researcher used focus group methodology with six participants to evaluate the utility and usability of a proposed decision-making model for adding, modifying, and terminating vocational programs. A pilot test of the focus group was conducted two weeks before the workshop to test the nature of the questions, the logical sequence and flow of the questions, interaction among participants, and moderator procedures. The focus group session was recorded on audio tape and later transcribed to hard copy. The data were analyzed using both the audio tape recordings and the tape transcriptions.

CHAPTER IV

PRESENTATION OF FINDINGS

Introduction

The purpose of the study was to develop a decision-making model that area vocational-technical school planners and administrators can use to ensure a more appropriate basis for making decisions in relation to the manpower delivery system. In order to develop the decision-making model and make it relevant to Oklahoma area vocational-technical schools, it was necessary to first generate a list of important factors to consider when deciding which programs to add, modify, or terminate. This list would later be used as the suggested factors to use when employing the model. An expert panel representing rural, urban, and metropolitan school settings was used to generate the list.

This chapter presents the findings of the research and is organized around the study's four research questions. The first section identifies the key factors suggested by the experts through the NGT, and describes how the final consensus of key factors was produced. The second section identifies the key factors which the experts ranked as most important. The third section describes the differentiation of rankings by the three experts groups from rural, urban, and metropolitan school settings. The forth section begins with a discussion of the

proposed decision-making model developed through this study, presents a graphical illustration of the proposed model along with its companion steps and ends with the findings of the focus group activity which describes what suggestions the vocational planning experts had on the utility and useability of the model.

Research Question Number One

What are the most important factors identified by vocational planning experts in the decision to add, modify, or terminate programs at their school?

To answer this question, the researcher employed the Nominal Group Technique (NGT) process. Six experts representing rural, urban, and metropolitan statistical areas participated in the study. The NGT process used three questions to obtain key factors in this study. The questions were developed using the guidelines from Delbecq, et al., (1975). The expert panelists generated 79 NGT responses that represent factors to consider in the decision to add, modify, or terminate vocational programs: 29 for adding programs, 27 for modifying programs, and 23 for terminating programs. A record of the unranked data for all three categories of add, modify, and terminate is listed in Table I.

Research Question Number Two

According to these experts, what relative rank or value does each of these important factors have? During the ranking stage (step five) of the NGT, the expert panelists were asked to generate and then rank order the key factors to consider when making the decision to add, modify, or terminate vocational

TABLE I

KEY FACTORS TO CONSIDER IN THE DECISION TO ADD, MODIFY, OR TERMINATE VOCATIONAL PROGRAMS: A SYNOPSIS OF 79 NGT RESPONSES

I. What are the most important factors to consider in the decision to add vocational programs at your school?

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1. Being able to locate a quality instructor to teach the new technology.
2. Potential salary of completers.
3. Potential growth in that industry (field expanding).
4. Available space and equipment.
5. Student interest in the program.
6. Supply support, i.e., curriculum development.
7. New laws for licensure.
8. Government regulations.
9. Start-up and ongoing cost.
10. Superintendent/board relationship.
11. Vocational program relates to mission of school.
12. Board approval or opposition.
13. Technical support from industry.
14. New/expanding technology.
15. Need as indicated or defined by industry.
16. Extent to which it fits future plans of the school.
17. Student entrance requirements.
18. Funding sources, i.e., grants.
19. Availability of clinical facilities outside of your own, i.e., health care.
20. Funding flexibility at the state level, i.e., can't, trade out funding when trading out programs.
21. Employability requirements.
22. Is there a training advantage? Will training bring better opportunity for jobs?
23. Politics (doesn't just include what happens at the state legislature).
24. Will it "sell" to the public?
25. Ability to expand or retract programs to minimize risk and maximize return.
26. Articulation potential of the program. Salary and credibility.
27. Administrative visionary leadership. Salesmanship of school's direction.
28. How easy is the program to market? Enrollment potential.
29. Dissonance of administration/faculty--competing for same local dollars.

TABLE I (Continued)

II. What are the most important factors to consider in the decision to modify vocational programs at your school?

1. Changes in labor demand.
2. New technology.
3. Changes in work processes/practicing (e.g., manufacturing and management).
4. Instructor update and training.
5. Instructor availability.
6. Governance restraints.
7. Change in client base--type and number.
8. Credentialing and/or licensure requirements.
9. Low job placement.
10. Job demand after completion.
11. Instability of enrollment.
12. Cost of operation.
13. Employer satisfaction.
14. Accountability of program.
15. Availability of space and equipment.
16. Technology changes--curriculum updates.
17. Philosophical shifts, i.e., outcome-based education.
18. Long-term structural changes in labor force.
19. Student retention.
20. Enrollment potential.
21. Equipment upgrades (new technology).
22. Change in laws/regulations.
23. Funding incentives.
24. Speed with which program becomes technically outdated (cost of change).
25. Related placement over time.
26. Special interest groups (teacher's union, pet projects, etc.).
27. Change in laws/regulations/standards.

III. What are the most important factors to consider in the decision to terminate vocational programs at your school?

1. No job demand.
2. Funding changes.
3. Teacher quits/retires/dies.
4. Program not relevant to industry needs.
5. Instructor qualifications.
6. Reaction of board.

TABLE I (Continued)

III.	What are the most important factors to consider in the decision to terminate vocational programs at your school?

7. Outdated technology.
8. Legal changes.
9. Low enrollment.
10. Teacher out of date/not accountable.
11. Cost of equipment and modifications to update the program.
12. Change in the vision or mission of school.
13. Quality of student pool.
14. Poor "value added" potential of the program.
15. Impact on enrollment.
16. Financial impact re: tuition.
17. Poor accountability data, i.e., job placement, wage, retention, etc.
18. Poor ratio between supply/demand.
19. Response of community.
20. Funding restraints.
21. Inability for school to stay technologically up to date.
22. Staff unwilling to support district goals.
23. Low retention.

programs. The panelists were instructed to select their top ten choices from the generated list of factors and assign a numerical ranking to all ten. A score of 10 was given to their most important factor and a score of 1 to their least important factor. Panelists recorded their responses individually on the voting ballot (Appendix O). The research assistant then collected the voting ballots and transferred the results to the tally sheet (Appendix N). The numerical scores for each factor were then added and divided by six (the number of panelists). This mean was used to rank order the list. Simply, the factor with the highest average was the most favorable solution.

Through the NGT voting process, the 79 factors generated by the experts were reduced to 35 with the following breakdown: 13 factors for adding programs, 12 for modifying programs, and 10 for terminating programs. Results of the rankings, as well as the panelists' individual scores for each category of add, modify, and terminate, are found in Tables II, III, and IV.

Research Question Number Three

Do vocational planners from rural, urban, and metropolitan school settings rank the important factors differently?

This question was looked at in two ways. First, to determine the extent of agreement among the six planning experts and secondly to determine if differences existed between the three different groups of experts from rural, urban, and metropolitan school settings.

The Kendall Coefficient of Concordance W was used to show the

TABLE II

PRIORITY RANK OF KEY FACTORS FOR ADDING VOCATIONAL PROGRAMS

Important Factors	Panelist							
	A	B	C	D	E	F	Total	Average
1. Labor market demands	10	10	2	10	9	9	50	8.33
2. Start-up/ongoing cost/funding	9	9	4	8	7	10	47	7.83
3. Training advantage/salary	8	8	9	7	8	6	46	7.66
4. Available curriculum & resources	5	7	5	9	3	5	34	5.66
5. Quality instructors	6	6	10	4	4	3	33	5.50
6. Responds to customer needs	4	-	-	2	10	8	24	4.00
7. Administrative leadership	-	2	7	6	-	7	22	3.66
8. Program relates to mission	1	5	8	-	5	-	19	3.16
9. New laws for licensure	2	4	3	5	1	2	17	2.83
10. Student interest	-	3	6	3	-	1	13	2.16
11. Board interest	7	-	1	-	-	4	12	2.00
12. Potential growth	3	1	-	-	6	-	10	1.66
13. Politics	-	-	-	1	2	-	3	.5

Rank sums total = 330 Rank sums mean = 25.38
Kendall (W) = .4329 Converted to Chi Square value = 30.52
Critical value at .05 = 21.03 df = 12

TABLE III

PRIORITY RANK OF KEY FACTORS FOR MODIFYING VOCATIONAL PROGRAMS

Important Factors	Panelist						Total	Average
	A	B	C	D	E	F		
1. Changes in labor demand	10	10	10	8	8	5	51	8.50
2. New and/or changing technology	2	9	6	10	7	6	40	6.66
3. Program accountability	1	5	9	9	10	4	38	6.33
4. Funding availability	9	8	-	6	5	9	37	6.16
5. Changes in the workplace	3	3	8	7	9	2	32	5.33
6. Changes in client base	7	-	7	4	6	1	25	4.16
7. Educational/philosophical shifts	4	4	2	-	4	8	22	3.66
8. Changes in laws/regulations/standards	-	1	3	5	1	10	20	3.33
9. Available space/equipment	8	2	5	2	2	-	19	3.16
10. Available instructors	5	7	-	3	3	-	18	3.00
11. Special interest groups	6	-	1	1	-	7	15	2.50
12. Governance restraints	-	6	4	-	-	3	13	2.16

Rank sums total = 330 Rank sums mean = 27.5
Kendall (W) = .3080 Converted to Chi Square value= 20.32
Critical value at .05 = 19.67 df = 11

TABLE IV

PRIORITY RANK OF KEY FACTORS FOR TERMINATING VOCATIONAL PROGRAMS

Important Factors	Panelist						Total	Average
	A	B	C	D	E	F		
1. No job demand	10	10	10	10	9	7	56	9.33
2. Program not relevant to industry	8	9	9	6	10	4	46	7.66
3. Poor accountability data	6	7	8	7	8	9	45	7.50
4. Low enrollments	9	6	7	5	7	10	44	7.33
5. Funding changes	4	8	2	9	3	8	34	5.66
6. Instructor qualifications	7	3	6	1	5	6	28	4.66
7. Poor "value-added" potential	2	4	4	4	6	3	23	3.83
8. Legal changes	3	2	3	8	4	1	21	3.50
9. Change in vision of school	1	5	5	3	2	2	18	3.00
10. Political factors	5	1	1	2	1	5	15	2.50

Rank sums total = 330 Rank sums mean = 33
Kendall (W) = .6024 Converted to Chi Square value= 32.52
Critical value at .05 = 16.92 df = 9

correlation and extent of agreement among the six experts on the NGT. The Kendall Coefficient of Concordance W, according to Siegel (1956), is a correlational test used to determine the level of agreement among judges on a number of issues. In this case the issues were the factors generated by the NGT process. The formula for its calculation is the rank sum of the panelists' individual factors expressed as a deviation. The rank sums for each of the expert's responses to each of the key factors for adding, modifying, and terminating vocational programs are found in Tables II, III, and IV. In order to test the significance of the relationship at the .05 level, the W coefficient had to be converted to a Chi Square value. According to Siegel (1956) when N, (in this case the number of factors) is larger then 7, the distribution of the Kendall Coefficient of Concordance W approximates that of the distribution of Chi Square values. Therefore the W's were converted to Chi Square values.

The calculated W of .4329 for adding vocational programs (Table II) was converted to a Chi Square with a value of 30.52. A Chi Square value equal to or greater than 21.03 is required at the .05 level of significance to reject the null hypothesis that the expert rankings were unrelated. Since the calculated value of W exceeded the critical value, the null hypothesis was rejected. The Chi Square value indicates a strong relationship among the individual experts on the ranking of the top 13 factors for adding vocational programs.

The calculated W of .308 for modifying vocational programs (Table III) was converted to a Chi Square with a value of 20.32. A Chi Square value equal to or greater than 19.67 is required at the .05 level of significance to reject the

null hypothesis that the expert rankings were unrelated. Since the calculated value of W exceeded the critical value, the null hypothesis was rejected. The Chi Square value indicates a strong relationship among the individual experts on the ranking of the top 12 factors for modifying vocational programs.

The calculated W of .602 for terminating vocational programs (Table IV) was converted to a Chi Square with a value of 32.52. A Chi Square value equal to or greater than 16.92 is required at the .05 level of significance to reject the null hypothesis that the expert rankings were unrelated. Since the calculated value of W exceeded the critical value, the null hypothesis was rejected. The Chi Square value indicates a strong relationship among the individual experts on the ranking of the top 10 factors for terminating vocational programs.

According to Delbecq et al. (1975), the product of the NGT is consensus of opinions. Because the source of the information is a representative sample of experts in vocational program planning, their consensus of opinions has value and fulfills the purpose of this study in compiling a list of key factors. Likewise, according to Siegel (1956):

> A high or significant value of W may be interpreted as meaning that the observers or judges are applying essentially the same standard in ranking the factors under study. Often their pooled ordering may serve as a "standard," especially when there is no relevant external criterion for ordering the objects. (p. 237)

To determine if differences existed between the panel of experts, three groups were purposely selected for this study. The three groups were each composed of two members from the categories of rural, urban, and metropolitan schools. According to Dalkey (1969), statistical analysis to test significant

differences between the three groups is limited because of the small numbers of subjects in each group.

The ranking differences between the three groups are shown in Table V. The ranking priority of the factors for each group was determined by adding the ranking points for each factor and using the larger number as the highest ranking factor. The information in Table V provides a reference to the raw data and is intended to give a comparison of the rank order assigned by each group in relation to the points each factor received. The three groups of panelists (rural, urban, and metropolitan) did not differ significantly in their choices in any of the factor rankings for all three categories of add, modify, and terminate.

To verify the priority ranking of the raw data found in Table V, the raw scores were entered into the Systat statistical program to determine the rank means and standard deviations. The total group rank mean scores, standard deviations, and each group's deviation from the total group rank mean are presented for all three categories of add, modify, and terminate in Tables VI, VII, and VIII. The names of each factor are listed in numerical order below each table to assist the reader. The deviation scores for each group in all three categories are shown in the columns under each group heading to indicate the amount of mean deviation each group had from the total group mean. Finally, the deviations from the total group rankings are shown for each of the factors. The expression of central tendency shows the variance of ranking by the panelists.

In Table VI, the standard deviation scores indicated that factor 13 (.76) had the lowest standard deviation from the total group mean, with factors 3 (.94)

TABLE V

PRIORITY RANK OF KEY FACTORS BY EXPERT CATEGORY
RURAL, URBAN, & MSA SCHOOLS

Rural Schools Rank	Urban Schools Rank	MSA Schools Rank	Total Rank	Factors
FOR ADDING PROGRAMS				
1	5	1	1.	Labor market demands
2	6	3	2.	Start-up/ongoing cost/funding
3	1	4	3.	Training advantage/salary
4	2	5	4.	Available curriculum and resources
5	3	6	5.	Quality instructors
10	10	2	6.	Responds to customer needs
12	4	7	7.	Administrative leadership
8	9	9	8.	Program relates to mission
7	8	11	9.	New laws for licensure
11	7	13	10.	Student interest
6	11	10	11.	Board interest
9	13	8	12.	Potential growth
13	12	12	13.	Politics
FOR MODIFYING PROGRAMS				
1	1	3	1.	Changes in labor demand
4	3	4	2.	New and/or changing technology
8	2	1	3.	Program accountability
2	8	2	4.	Funding availability
9	4	6	5.	Changes in the work place
7	5	8	6.	Changes in client base
6	12	5	7.	Educational/philosophical shifts
12	6	7	8.	Changes in laws/regs/standards

TABLE V (Continued)

Rural Schools Rank	Urban Schools Rank	MSA Schools Rank	Total Rank	Factors
FOR MODIFYING PROGRAMS (cont.)				
5	7	12	9.	Available space/equipment
3	10	10	10.	Available instructors
10	11	9	11.	Special interest groups
11	9	11	12.	Governance restraints
FOR TERMINATING PROGRAMS				
1	1	3	1.	No job demand
2	2	4	2.	Program not relevant to industry
4	3	1	3.	Poor accountability data
3	4	2	4.	Low enrollments
5	5	5	5.	Funding changes
6	9	6	6.	Instructor qualifications
7	7	7	7.	Poor "value-added" potential
10	6	9	8.	Legal changes
8	8	10	9.	Change in vision of school
9	10	8	10.	Political factors

TABLE VI

INDIVIDUAL GROUP MEAN DEVIATION SCORES
FOR ADDING VOCATIONAL PROGRAMS

Factor Rank Order	Total Group Rank Mean	Deviation From Total Group Mean			Total Group Standard Deviation
		Rural Schools	Urban Schools	MSA Schools	
1.	8.33	1.67	-2.33	.67	2.86
2.	7.83	1.17	-1.83	.67	1.95
3.	7.66	.34	.34	-.66	.94
4.	5.66	.34	1.34	-1.66	1.88
5.	5.50	.50	-2.00	-2.00	2.29
6.	4.00	-2.00	-3.00	5.00	3.83
7.	3.66	-2.66	2.84	.16	3.09
8.	3.16	-.16	.84	-.66	3.02
9.	2.83	.17	1.17	-1.33	1.46
10.	2.16	-.66	2.34	-1.66	2.11
11.	2.00	1.50	-1.50	0	2.64
12.	1.66	.34	-1.66	1.34	1.39
13.	.50	-.50	0	.50	.76

1. Labor market demands
2. Start-up/ongoing cost/funding
3. Training advantage/salary
4. Available curriculum
5. Quality instructors
6. Responds to customer needs
7. Administrative leadership
8. Program relates to mission
9. New laws for licensure
10. Student interest
11. Board interest
12. Potential growth
13. Politics

TABLE VII

INDIVIDUAL GROUP MEAN DEVIATION SCORES
FOR MODIFYING VOCATIONAL PROGRAMS

Factor Rank Order	Total Group Rank Mean	Deviation From Total Group Mean			Total Group Standard Deviation
		Rural Schools	Urban Schools	MSA Schools	
1.	8.50	1.50	.50	-2.00	1.34
2.	6.66	-1.16	1.34	-.16	2.31
3.	6.33	-3.33	2.67	.67	1.97
4.	6.16	2.34	-3.16	.84	3.13
5.	5.33	-2.33	2.17	.17	2.75
6.	4.16	-.66	1.34	-.66	2.79
7.	3.66	.34	-2.66	2.34	2.43
8.	3.33	-2.33	.67	2.17	3.40
9.	3.16	1.84	.34	-2.16	2.61
10.	3.00	3.00	-1.50	-1.50	2.52
11.	2.50	.50	-1.50	1.00	2.87
12.	2.16	.84	-.16	-.66	2.34

1. Changes in labor demand
2. New and/or changing technology
3. Program accountability
4. Funding availability
5. Changes in the workplace
6. Changes in client base
7. Educational/philosophical shifts
8. Changes in laws/regulations/standards
9. Available space/equipment
10. Available instructors
11. Special interest groups
12. Governance restraints

TABLE VIII

INDIVIDUAL GROUP MEAN DEVIATION SCORES
FOR TERMINATING VOCATIONAL PROGRAMS

Factor Rank Order	Total Group Rank Mean	Deviation From Total Group Mean			Total Group Standard Deviation
		Rural Schools	Urban Schools	MSA Schools	
1.	9.33	.67	.67	-1.33	1.10
2.	7.66	.90	-.16	-.66	1.61
3.	7.50	-1.00	0.00	1.00	.96
4.	7.33	.17	-1.33	1.17	1.70
5.	5.66	.34	-.16	.16	2.70
6.	4.66	.34	-1.16	.84	2.05
7.	3.83	-.83	.17	.67	1.21
8.	3.50	-1.00	2.00	-1.00	2.22
9.	3.00	0.00	1.00	-1.00	1.53
10.	2.50	.50	-1.00	.50	1.62

1. No job demand
2. Program not relevant to industry
3. Poor accountability data
4. Low enrollments
5. Funding changes
6. Instructor qualifications
7. Poor "value-added" potential
8. Legal changes
9. Changes in vision of school
10. Political factors

and 12 (1.39) next in value. These standard deviation scores indicate that factors 13, 3, and 12 had the least variance in the ranking. Factor 6 had the greatest standard deviation (3.83) in the total group ranking. It can also be noted that factors 1 (2.86), 8 (3.02), and 7 (3.09) had some variance in the total group ranking.

Table VI also shows the deviations of the three groups from the total group mean of the 13 factors. The urban school planners deviated one or more points from the ranking mean on 10 of the 13 factors. The rural school planners had the greatest consistency of agreement, indicated by the smallest amount of deviation from the group means. The total group mean score ranking produced a natural break between factors 3 (7.66) and 4 (5.66) which would indicate that the panelists placed the greatest emphasis on the factors ranked 1 through 3.

In Table VII, the standard deviation scores indicated that factor 1 (1.34) had the lowest standard deviation from the total group mean, with factors 3 (1.97) and 2 (2.31) next in value. These standard deviation scores indicate that factors 1, 3, and 2 had the least variance in the ranking. Factor 8 had the greatest standard deviation (3.40) in the total group ranking. It can also be noted that factors 4 (3.13), 5 (2.75), and 6 (2.79) had some variance in the total group ranking.

Table VII also shows the deviations of the three groups based on population (rural, urban, metropolitan) from the total group mean of the 12 factors. The rural school planners deviated two or more points from the ranking mean on five of the 12 factors. The MSA school planners had the greatest consistency of agreement, indicated by the smallest amount of deviation from the

group means. The total group mean score ranking produced a natural break between factors 1 (8.50) and 2 (6.66).

In Table VIII, the standard deviation scores indicated that factor 3 (.96) had the lowest standard deviation from the total group mean, with factors 1 (1.10) and 7 (1.21) next in value. These standard deviation scores indicate that factors 3, 1, and 7 had the least variance in the ranking. Factors 5 had the greatest standard deviation (2.70) in the total group ranking. It can also be noted that factors 4 (1.70), 6 (2.05), and 8 (2.22) had some variance in the total group ranking.

Table VIII also shows the deviations of the three groups from the total group mean of the 10 factors. The urban school planners deviated one or more points from the ranking mean on five of the 10 factors. The rural school planners had the greatest consistency of agreement, indicated by the smallest amount of deviation from the group means. The total group mean score ranking produced a natural break between factors 1 (9.33) and 2 (7.66).

Research Question Number Four

What suggestions do vocational planning experts have on the utility and useability of the proposed decision-making model?

Before this research question was answered, it was useful to present a graphic illustration of the proposed model and discuss its development in this study.

The proposed program planning model developed in this study was

modeled after the Young et al. (1972) model and Allen's (1990) Van Buren Vocational-Technical Education Center model. The model was also developed using information gleaned from an extensive review of the literature as well as comments and suggestions from the focus group panelists. Components from both models were used to develop the proposed model for this study. The following list provides an overview of the specific components used from each model.

Specific components used from the Young et al. (1972) model were:

1. A listing of occupational programs by title (vertical axis).
2. A listing of "Priority Criteria" by column.
3. A "Rank Priority Order" column.
4. A separate page listing of the criteria used in the matrix along with specific weighted values (cell scores) and definitions for each criteria.

Specific components used from the Allen (1990) model were:

1. Matrix worksheets.
2. Sample data reference guide.
3. Evaluation criteria and cell score calculations.

Even though components from both models were used to develop the proposed model for this study, further changes and improvements were made to those components in developing the model. In comparing the proposed decision-model for this study with the Allen (1990) and Young et al. (1972) model, differences can be outlined by comparing the way criteria was developed and selected and by comparing the differences in the model components.

1. Criteria development - The criteria or factors developed for Allen's (1990) model was generated by a single individual and endorsed by the school's administrative team. It was unclear how the components were developed for the Young et al. (1972) model. The factors developed for this study's decision-making model was generated by a group of six vocational planning experts through the use of nominal group technique.

2. Criteria selection - In Allen's (1990) model the selection of which criteria to use in the decision to add, modify, or terminate vocational programs was made by the school's Director of Career Vocational-Technical Education Services. The selection of which criteria to use in the decision to add, modify, or terminate vocational programs for this study's model was made by a group of six vocational planning experts from a variety of school settings (rural, urban, and metropolitan).

3. Model components - When comparing the Allen (1990) and Young et al. (1972) model to the proposed decision-making model for this study, the following differences were found.

Allen's (1990) model has a criteria selection and data source identification worksheet for adding, modifying, and terminating programs and a separate worksheet for criteria weight determination. The Young et al. (1972) model had a single sheet of criteria to choose from. The proposed decision-making model for this study combined Allen's two worksheets to eliminate a needless step and to simplify the instructions and process. The proposed decision-making model for this study allows the user to select the factors (criteria) and assign their weights on the same worksheet (Appendix K) Data Source and Weight Assignment Worksheet.

A second important difference in the model components was that Allen's (1990) model separated the data sources into three categories of add, revise, and terminate, causing the user to look in three different locations when working with the model. The proposed decision-making model for this study keeps the sources in a single, easy to find location (Appendix J). Separating the data sources creates unnecessary duplication and confusion for the user when looking up information. Many of data sources are appropriate whether the decision is to add, modify, or terminate a program, i.e. demand data, student interest, etc.

A third important difference in components was found in the instructions. One of the first steps in the instructions for the Allen (1990) and Young et al. (1972) models was the selection of the most important factors or criteria to use in the decision to add, modify, or terminate vocational programs. Both models asked the user to select the factors but offered no suggested list to consider in this decision. The proposed decision-making model for this study provides a list for consideration to the prospective user on factors to consider for all three categories of add, modify, or terminate vocational programs.

A fourth difference in the model components was also found in the instructions. Both the Allen (1990) and Young et al. (1972) models were difficult to follow in regard to their processing instructions. It would have been useful to have helpful hints or notes to guide the user through the maze of worksheets. The proposed decision-making model for this study provides both helpful notes and references to the appropriate appendix worksheet in the instructions. These items were added to help clarify and assist the user's understanding of the instructions.

A final difference in the components of the Allen (1990) and Young et al (1972) models and the proposed decision-making model for this study was in the overall layout of the models. Neither the Allen model or the Young et al. model were graphically illustrated to allow the reader to see the "big picture" of where their model fits into the larger scope of program planning or how they flow from one step to the next. The proposed model for this study provides a graphic illustration to alleviate the previously mentioned concerns (Figure 3).

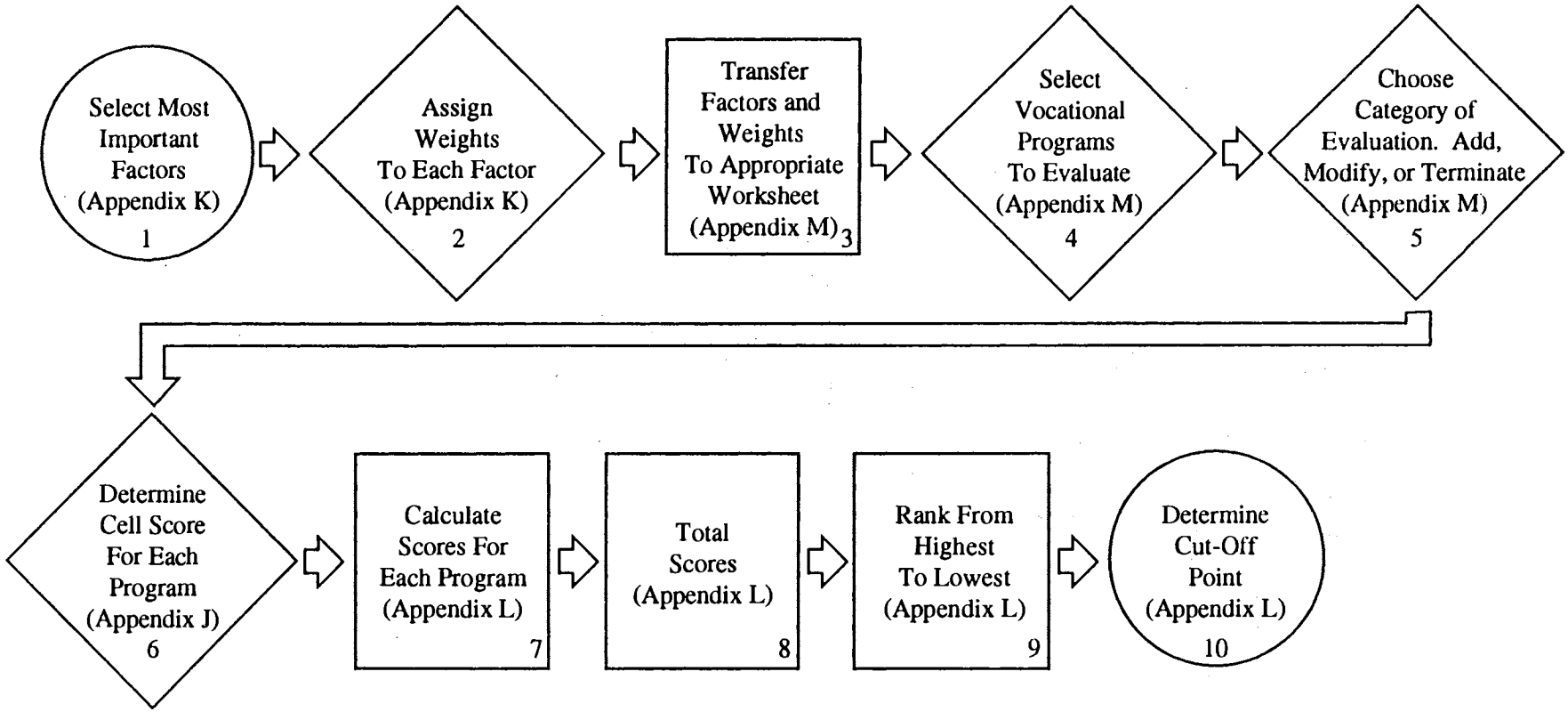

Figure 3. Proposed Decision-Making Model

The program planning model proposed in this study included processing instructions, a sample data reference guide, a data source and weight assignment sheet, hypothetical example of the proposed program decision-making model, and a separate matrix worksheet for adding, modifying, or terminating vocational programs. A graphic representation of the proposed model developed in this study is illustrated in Figure 3 along with the companion steps for using the model. The complete decision-making model, including the companion worksheets, is found in Appendixes I - M. The proposed program planning model assumes that a local planning committee has been formed to look at the school's educational goals, objectives, and mission prior to using the model. What follows is a step-by-step procedure in using the model.

Steps in The Proposed Decision-Making Model

Step 1: Using group consensus, select the ten most important factors for each category (add, modify, and terminate) from the Data Source and Weight Assignment Worksheet (Appendix K) that best meet the goals and objectives of the area vocational-technical school district. Use an X to mark your selections. You may also generate additional factors if the ones in this example do not completely address your local situation. A suggested list of the most important factors to consider in the decision to add, modify, or terminate is provided for your consideration in Tables II, III, and IV of this study. The decision to use ten factors was arbitrarily decided upon by the researcher as a reasonable number for accomplishing the purposes of assessing vocational programs.

Note: The example presented here assumes that you are interested in performing action for all three evaluation categories of add, modify, and terminate. If this is not the case, only perform action on the categories of interest.

Step 2: Again, using group consensus, on the same chart (Appendix K) weight each of the ten factors selected for adding, modifying, and terminating by assigning a value of 3 to the most important factor, 2 to the moderately important, and 1 to the least important. Record the values in the "Weight" columns next to your X.

Note: Determination of the assigned weight should be a group activity performed by a program planning committee at the local school.

Step 3: Using the completed Data Source and Weight Assignment Worksheet, (Appendix K) transfer the ten important factors and their weights to the appropriate Matrix Worksheet (Appendix M) in the following manner:

a. Select all factors that weighted a 3 and record the factor title and its weight on the Matrix Worksheet. The first title will be recorded in the upper left vertical column and the weight will be recorded in the shaded row below that column titled "Weight." (See Appendix L for an example.)

   (If more than one factor is weighted the same value, then record the factor and weight in any order desired.)

b. Select all factors that weighted a 2 and record the title and weight to the right of any 3s that were recorded.

c. Select all factors that weighted a 1 and record the title and its weight on the chart to the right of any 2s that were recorded.

d. Review the completed chart to verify that all factors and weights in each evaluation category are accurate and listed in order by weight priority.

Note: There is a different Matrix Worksheet for each of the three categories of adding, modifying, and terminating programs.

Step 4: Select and record on each of the Matrix Worksheets (Appendix M) the titles of all vocational programs to be evaluated.

Step 5: Choose a specific evaluation category (either add, modify, or terminate) and complete steps 6 through 10 below. Repeat the same steps for each of the other evaluation categories.

Step 6: Referring to the Data Reference Guide (Appendix J) and beginning with the first factor on your Matrix Worksheet, review the data source and cell scores for each vocational program listed on the Matrix Worksheet. Determine the cell score that each program will receive by looking up the appropriate information on each program. Several sources of local, state, and national information will be needed to perform this activity.

Note: The specific cell score will depend on the performance of the program being evaluated. For instance, a vocational program with poor enrollment history will receive a low cell score for that particular cell.

Enter the cell score for each program on the Matrix Worksheet in the upper half of the box (Score). Repeat the same process for factors 2 through 10.

Step 7: Score all programs on the worksheet under each data element column by multiplying the upper half score by the weight. (See Appendix L for an example.) Record the amount in the lower half of each box.

Step 8: Add all scores in the lower half boxes ("Weight X Score") across for each vocational program. Enter the amount in the "Total Score" column of the worksheet.

Step 9: Look at the scores in the "Total Score" column and rank each vocational program as follows: (a) highest to the lowest number for adding and modifying and (b) lowest to the highest number for terminating programs. Record each ranking number in the "Rank" column on the worksheet.

Step 10: Use the outcome of ranking each vocational program to rationally and systematically support management's decision to add, modify, or terminate vocational programs.

Note: How far to go down on the list as a cutoff point for the vocational programs is a local decision influenced by many factors.

The proposed decision-making model for this study is but a single step in Norton's larger program planning model described in Chapter III. In the case of Norton's comprehensive vocational education program planning model, it is step 7 - select the best alternatives. The proposed decision-making model developed in this study offers a method of considering several variables at one time in order to assist in the process of deciding which program(s) to consider for adding, modifying, or terminating. The proposed decision-making model should not be consider a comprehensive planning process, but rather an important step in the larger scheme of planning vocational programs.

Focus group methodology was used primarily to elicit the experiences and perceptions the panelists had regarding a proposed program decision-making model. The primary goal was to evaluate the utility and usability of the proposed

decision-making model for adding, modifying, or terminating vocational programs. To report the focus group results, the researcher used the descriptive summary style suggested by Krueger (1988): "This style of reporting begins with a summary paragraph and then includes illustrative quotes" (p. 129). The quotes selected are intended to help the reader understand the way in which the respondents answered the question. The focus group results were organized and reported in an outline form that follows the questions asked during the focus group activity. Listed below are the questions used during the focus group activity:

1. What are the strengths of the decision-making model?
2. What are the weaknesses of the decision-making model?
3. What are the barriers to using this model?
4. How could you eliminate these barriers or weaknesses?
5. How would you modify or improve the model?
6. How many of you would use the model?
7. How would you use this model?

The references for each quotation in this section refer to the raw data transcripts from the focus group activity. A sample of those transcripts can be found in Appendix P. What follows are the results of the focus group activity organized around the seven questions posed during this session. Each question is followed by the researcher's summary of the participant's comments, supported by selected quotes.

1. What are the strengths of the decision making model?

The panelists cited a number of strengths, with two characteristics mentioned most often: the flexibility of the model and the ease of use. Panelists in general were concerned about the subjectivity of making program decisions and felt that the model would help alleviate that concern. Panelists also saw the

model as a way of involving more people in the decision-making process at their school. The panelists stressed that the model presented an organized way of looking at vocational programs and determining the need to add, modify, or terminate them. Factors mentioned with less frequency related to using the model to eliminate some of the political concerns at the local level. Typical comments by the panelists included:

> The model is not complex; it seems pretty easy to use and to explain. (R-2).
>
> Hopefully, the model will take away as much subjectivity as you can take away in the planning process. (U-1).
>
> I see the model as an opportunity for more people to be involved in the decision-making process. (R-1).
>
> The model is very flexible and limitless because you can add as many programs as you want and as many factors as you think are necessary. (U-1).

2. What are the weaknesses of the decision-making model?

The panelists cited a number of weaknesses of the model, with three characteristics mentioned most often: the availability of good data, the time factor in preparing the forms and gathering the data, and finally, the establishing of the weights. A caution that came out of this discussion was that the model should only be used as one piece of the total planning process. One comment exposed a weakness in using the model to evaluate a single program. Typical comments by the panelists included:

> It's only as good as the data you find ultimately that you can make decisions on, and I'm afraid our data is not very good. (M-1).
>
> When you assign the weights, that will pretty much dictate the scores. I may weight it as a 3, you may weight it as a 1, and that

> could totally flip-flop the outcome in the end. That may be a little bit of an over exaggeration, but it would certainly be a major factor in the overall effectiveness of the model. (R-2).
>
> I see one weakness as the time requirement to fill it out, or to gather the data. To complete the whole planning process, to get the total plan ready--all takes considerable staff time. (U-1).
>
> It doesn't appear at this point to have much usefulness if you just need to go in and look at one particular program. I realize I can do
>
> that for one program, but once I've done that, I now have a numerical value for that one program. What does that tell me? (M-2).

3. What are the barriers to using this model?

The panelists mentioned only two barriers. The first barrier concerned tieing the model to the program evaluation process. The second item seen as a barrier was the lack of commitment from the school's administration and board to closely examine their programs. The comments were as follows:

> One of the barriers could be if the model is not looked at in relation to the type of evaluation that we do on programs, we will have a dual system. If you plan a program based on these factors and we don't evaluate based on these factors, then we're in trouble and at cross purposes. (M-1).
>
> I don't know if this is a weakness or a barrier, but it might be both: the lack of commitment on the part of administration and their board to really take a close look at their programs. (M-2).

4. How could you eliminate these barriers or weaknesses?

Barrier A: Availability of data. To eliminate this barrier, panelists suggested developing a list of possible data sources. On a long-range basis, it was suggested that a data base infrastructure be developed that would allow access to a statewide data base. One panelist suggested developing a data base book for each school listing placement, completion, and other items for planning purposes.

Another panelist had the following to say:

> . . . that way, Tulsa Technology Center would get a book annually that would provide them last year's placement, last year's completion status, last year's secondary service, . . . if the state is going to support a model like this, then the data resource guide should be a very important priority area. (M-2).

Barrier B: Establishing weights. Panelists suggested that a group process or committee approach would lend some credence to the process of establishing weights. One panelist had the following to say:

> You could use staff or maybe even a combined internal/external committee to help establish the weights, determine what the criteria are going to be, making sure you've got industry representation. (M-2).

Barrier C: Time. The time barrier came back to the development of an easily accessible and reliable data source. Panelists felt that if the data source was available, time would be saved. One panelist had the following to say:

> If the state department would just put that data book in our hands once a year that has cost of programs, completion rates, etc., as well as our own local evaluation data, that would eliminate a lot of the time problem. (M-1).

Barrier D: Incongruence in weighing factors. Only one suggestion addressed this barrier--to divide the data into three categories: (1) statewide hard data, i.e., annual growth, annual openings, etc.; (2) state-supplied local performance data, i.e., enrollment, placement, cost of program, etc.; and (3) specific local data, i.e., space availability, facilities, teacher availability, etc.

Barrier E: Lack of administration and board commitment to closely review their programs. The panelists cited a number of suggestions for addressing this issue: First, administration must exert more leadership in the area of program planning.

Second, the Oklahoma Department of Vocational and Technical Education must take a more proactive stance on how programs are funded. And third, if the model is going to be accepted and used, it must receive full backing from the Oklahoma Department of Vocational and Technical Education. The following comments were made:

> I think when the administration has a real strong commitment to a project or program . . . one of two things will happen. The board will either come along and embrace that concept, or they will have a new chief executive officer very shortly. The bottom line is that administration must exert more leadership when it comes to program planning. (R-2).
>
> If this model is truly going to be accepted and used, if that's your desire, there needs to be more teeth in it. There can still be local flexibility built into it, but it needs to have total support from the ODVTE. (M-2).

5. How would you modify or improve the model?

The central suggestion for modifying or improving the model was to extend its use to other programs and services, such as adult training and development (AT&D) and business and industry service (BIS) programs. Many of the comments made earlier about the model's weaknesses overlap into this question. The inference being that if the weaknesses of the model are addressed, then the model will be improved. One panelist had the following to say about improving the model:

> I would like to see a modification to do exactly what M-2 was talking about earlier and that is to extend the use of the model to AT&D and BIS programs. I think that just makes the model stronger. (M-2).

6. How many of you would use the model?

All six panelists said they would use the model.

7. How would you use the model?

Each panelist had similar yet somewhat different ideas about how they would use the model. This is to be expected due to the model's flexibility. Some panelists said they would use it in a group planning process, while others would use it as an evaluation procedure to make recommendations to the superintendent. Another panelist wanted to fold the model into a long-range planning process, gradually using it more frequently as the data fed into it improved. Typical comments by the panelists included:

> I think we would do exactly what we did here today and that is take all of our administrators, directors, and assistant directors and have them identify potential programs and then say, "Let's develop the data and see if we can get some agreement on a decision." It's going to be tough, let me tell you, to get agreement on this. Then when you get to the weighing, that's where it's going to be like pulling eye teeth. (U-1).

> I think people at my level would be able to use it as a monitoring and evaluation process for the programs that we are working with and can make recommendations. I'm not going to be making the final decision about what we do with these programs. I would use the model to recommend programs to the superintendent. (U-2).

In their closing comments, the panelists raised additional questions. One panelist brought up the subject of criticality, while another was concerned about the implementation of the model.

Criticality was described as a factor that is critically important in making decisions about a program, where the data may not pick up on the importance of the factor. The panelist used the agriculture production industry as an example, where a small percentage of people supply food for the nation. In this case, the point was made that if you look at demand based upon numbers, it will probably

not be there, yet the agriculture production program is critical to our nation. The following comment was made by one of the panelists:

> For example, less than two percent of the population of the United States is now involved in agriculture, and we are the breadbasket of the world. I would submit to you that those two percent are very, very critical for this nation. (M-1).

Implementation of the model was the final topic. Panelists in general agreed that the model would be accepted more readily if it were sold from the field rather than from the state level. One panelist felt that it was important to at least make an initial pitch at a superintendents' meeting to create interest and then pilot the model in a few schools. Success stories would be provided later. Typical comments by the panelists included:

> What if we try a simple approach? Like one Lay's potato chip--you can't just eat one. Why don't you guys go to a superintendents' meeting and take five or ten minutes and say, "Ladies and gentlemen, this is what we're working on. This is where we are right now, and we're going to pilot this in a couple of schools that might be interested." Drop it on them and walk away. You will then get phone calls from those who are interested. (M-2).

> I believe if key superintendents would implement this thing, and then after a year get up and tell about the success of using the model, this would go further than selling it from the state level. (R-1).

Summary

Employing the NGT process using three questions, expert panelists generated 79 responses that represent factors to consider in the decision to add, modify, or terminate vocational programs. The top five choices in descending rank order for each of the three categories were as follows: <u>For adding</u>

vocational programs: (1) labor market demands; (2) start-up/ongoing cost/funding; (3) training advantage/salary; (4) available curriculum & resources; and (5) quality instructors. For modifying vocational programs: (1) changes in labor demand; (2) new and or changing technology; (3) program accountability; (4) funding availability; and (5) changes in the workplace. For terminating vocational programs: (1) no job demand; (2) program not relevant to industry; (3) poor accountability data; (4) low enrollments; and (5) funding changes.

The Kendall Coefficient of Concordance W was used to show the correlation and extent of agreement among the six experts. In all three areas, of adding, modifying, and terminating vocational programs, the calculated value of W exceeded the critical value, and therefore the null hypothesis was rejected. The null hypothesis was that the expert panel rankings were unrelated. The converted Chi Square value indicated a strong relationship among the individual experts in all three areas.

In regard to the deviation scores for the three groups, urban school planners deviated one or more points from the ranking mean on 10 of the 13 factors for adding vocational programs. The rural school planners deviated two or more points from the ranking mean on five of the 12 factors for modifying vocational programs, while urban school planners again deviated one or more points from the ranking mean on five of the 10 factors for terminating vocational programs.

In the development of the proposed decision-making model for this study many changes, additions, and deletions were made to Allen's (1990) model.

Focus group panelists and reviewers all provided input to develop a new model for Oklahoma's area vocational-technical school administrators. Those changes, additions, and deletions were highlighted in this chapter.

While evaluating the proposed decision-making model, focus group members considered it to be very flexible and looked at the model as a means to alleviate the subjectivity of making program decisions. Panelists also saw the model as a way of involving more people in the decision-making process at their school. The panelists stressed that the model presented an organized way of looking at vocational programs to determine whether they needed to add, modify, or terminate them. Concerns in using the model centered around the availability of good data, the time factor in preparing the forms and gathering data, and finally the assigning of weights to each factor. All six panelists said they would use the model in planning vocational programs at their school.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of the study was to develop a decision-making model that area vocational-technical school planners and administrators can use to ensure a more appropriate basis for making decisions in relation to Oklahoma's manpower delivery system. As a result of an extensive review of the literature and feedback from an expert panel through focus group methodology, a model was developed in accomplishing this goal. Since the model has not yet been field tested for effectiveness, any results from its application obviously cannot be determined at this time. To provide appropriate criteria for the model, an expert panel was used to generate and rank order the most important factors when deciding which programs to add, modify, or terminate.

Summary

Four specific research questions were addressed to provide direction to this study. (1) What are the most important factors identified by vocational planning experts in the decision to add, modify, or terminate programs at their school?

(2) According to these experts, what relative rank or value does each of these important factors have? (3) Do vocational planners from rural, urban, and metropolitan school settings rank the important factors differently? (4) What suggestions do vocational planning experts have on the utility and useability of the proposed decision-making model?

The following summary of results were obtained upon completion of the analysis of the data:

1. The panelists generated 79 NGT responses that represent factors to consider in the decision to add, modify, or terminate vocational programs.

2. Through the NGT, the 79 factors were reduced to 35 with the following breakdown: 13 factors for adding programs, 12 for modifying programs, and 10 for terminating programs.

3. The three groups of panelists (rural, urban, and metropolitan) did not differ significantly in their choices in any of the factor rankings for all three categories of add, modify, and terminate.

4. A consensus of the panelists was reached on the priority rank of importance of the 35 factors. The ranked factors, in descending rank order for each of the three categories for adding, modifying, or terminating vocational programs, are as follows: For adding vocational programs: (1) labor market demands; (2) start-up/ongoing cost/funding; (3) training advantage/salary; (4) available curriculum and resources; (5) quality instructors; (6) responds to customer needs; (7) administrative leadership; (8) program relates to mission; (9) new laws for licensure; (10) student interest; (11) board interest; (12) potential

growth; and (13) politics. For modifying vocational programs: (1) changes in labor demand; (2) new and or changing technology; (3) program accountability; (4) funding availability; (5) changes in the workplace; (6) changes in client base; (7) educational/philosophical shifts; (8) changes in laws/regulations/standards; (9) available space/equipment; (10) available instructors; (11) special interest groups; and (12) governance restraints. For terminating vocational programs: (1) no job demand; (2) program not relevant to industry; (3) poor accountability data; (4) low enrollments; (5) funding changes; (6) instructor qualifications; (7) poor "value-added" potential; (8) legal changes; (9) change in vision of school; and (10) political factors.

5. Major findings from the panelists' discussion of the model include:

While evaluating the proposed decision-making model, focus group members considered the it to be very flexible and looked at the model as a means to alleviate the subjectivity of making program decisions. Panelists also saw the model as a way of involving more people in the decision-making process at their school. The panelists stressed that the model presented an organized way of looking at vocational programs to determine whether there was need to add, modify, or terminate them. Concerns in using the model centered around the availability of good data, the time factor in preparing the forms and gathering data, and finally the assigning of weights to each factor. All six panelists said they would use the model in planning vocational programs at their school.

Conclusions

The following conclusions were drawn based upon the interpretation of the findings of this study:

1. Although there was a great deal of agreement on the utility and useability of the model, the vocational planning experts indicated they do not currently use a formalized decision-making process or model in planning vocational programs at their respective area vocational-technical schools. Because no formalized decision-making process or model exists, it can be concluded that it is not possible to manage the decision-making process to guarantee its reliability or improvement over time.

2. Based upon the findings, that the most important factor identified for adding, modifying, or terminating vocational programs related to labor market demand, it can be concluded, that labor market information plays a critical role in the program decision making process.

3. Based upon the high degree of agreement among the panelists as indicated by the Kendall W, it can be concluded that the vocational planners from different school settings (rural, urban, and metropolitan) agree on the most important factors to consider in the decision to add, modify, or terminate vocational programs. Vocational planners in all three groups of rural, urban, and metropolitan, agreed on the overall importance of the factors generated for all three categories. However, individually the groups exhibited special interests that indicated their unique approaches to planning programs.

4. Through focus group discussion, vocational planning experts in this

study agreed that there is a need for administrators to make program planning decisions using relevant data in a systematic way, but that no process or model currently exist for their use. They also indicated that they would use the model presented in this study, therefore, it can be concluded that a decision-making model is needed in the field to provide structure to the program planning process.

Recommendations

Based upon the findings of this study, the following recommendations are made:

1. The model (Appendixes I-M) should be pilot tested in a variety of vocational school sizes to refine the model even further. This will require time to determine if the model actually improves the decision-making process. Pilot testing could also be used as a way to market the model to other area vocational-technical schools, given the success of the pilot sites.

2. As a part of pilot testing the model, several preparatory activities should be undertaken by local management: (a) form a program planning team that will make decisions; (b) determine the overall goals, objectives, mission, and vision of the school; (c) select the person(s) responsible for collecting and storing the data sources; and (d) establish a time frame for collecting the data so that sufficient time is allowed to analyze the data, complete the evaluation process, and prepare the reports.

3. Prototype or model instruments for measuring student interest, job availability, and employer satisfaction must be developed at the state level and

disseminated to the local area vocational-technical schools for improvement and refinement. This is critical not only to ensure accurate data but also to provide consistency and standardization during pilot testing.

4. To further standardize the pilot test across all tested sites, a "workbook" should be adapted from this study containing the appropriate data elements and a procedures section describing how to use the model effectively in the total planning process.

5. During the pilot testing, all factors and their weight determination to be applied in the model's evaluation process should be selected and approved by group consensus rather than by one person delegated with the responsibility.

6. As a part of the pilot testing and later in its implementation, the model's components for adding, modifying, and terminating should be reviewed and assessed periodically. The administrator and planning team must evaluate each factor and its parts (weight, definition, data source, and cell scores) to decide if any factor needs to be revised or replaced by another factor.

7. Relationships between the model's elements and decision outcomes relative to adding, modifying, or terminating programs should be analyzed over a period of years to establish its accuracy and reliability standards.

8. The search for newly developed and refined data sources should be an ongoing process by management in order to improve the model's evaluation accuracy.

9. A computer-based program could be developed for the decision-making model to improve its efficiency. Such a program could be integrated with existing

labor market and student data bases. The program could be used for (a) input of cell scores; (b) scoring, calculating, tabulating, and ranking of programs; (c) output of reports for each matrix worksheet showing the compiled data; and (d) modifying or changing the model's components.

10. The flexibility of the model could be further utilized by extending the use of the model and developing separate matrices and evaluation factors for different groups. These groups might include (a) business and industry service (BIS) programs; (b) adult training and development (AT&D) programs; and (c) other student service activities.

11. Given success of the tested model, it should be endorsed by the management team of the Oklahoma Department of Vocational and Technical Education in order to receive the credibility needed for implementation.

12. Given success of the tested model, it should be presented at state and national vocational education meetings or forums to introduce the process to vocational educators.

Vocational program planning is always a continuous and time-consuming process performed by administrators. This process must be done carefully, objectively, and thoroughly so that information gathered can provide management with reasonably well-defined programming options on which to base their decisions for improvement. In order to maintain a level of high-quality decision making to enhance Oklahoma's economic development, a useful model was needed to assist administrators in obtaining accurate and reliable information about vocational programs. This model was designed to improve administrators'

decision-making abilities in planning current and future vocational education programs. Furthermore, the model would provide data as evidence in support of management's decision to add, modify, or terminate vocational programs, as well as reduce the subjective and judgmental evaluation methods that are currently being practiced by management.

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APPENDIXES

APPENDIX A

LETTER TO VOCATIONAL PLANNING EXPERTS

October 9, 1992

1~ 2~ 3~
4~

Dear 2~:

Thank you for accepting my invitation to participate in a group discussion concerning the development of a vocational education program decision-making model. A model for applying decision-making information could be a great asset to area schools when deciding to add, modify, or terminate vocational programs. Your opinions and ideas are extremely important.

As I indicated by telephone, your participation is completely voluntary. Should you choose to participate, complete confidentiality will be upheld. The following is an outline of what the day will entail. The session will be divided into two parts. The morning session will be devoted to generating key factors that vocational experts consider valuable when making the decision to add, modify, or terminate vocational programs. The second half of the day will be a focus group activity to solicit your perceptions of a proposed decision-making model. This model has been designed to apply the factors identified during the morning session to make decisions concerning vocational education programs.

The meeting will be held at Indian Meridian AVTS in Stillwater, Oklahoma, on Friday, October 30, 1992. Please plan to begin promptly at 8:30 a.m. Doughnuts and coffee will be provided.

Thank you again for your valuable input and time. I appreciate your assistance and look forward to working with you. I have enclosed my card for your reference should you have any questions.

Sincerely,

Curtis G. Shumaker
Executive Director, SOICC

CGS:ch
Enclosures

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APPENDIX B

PARTICIPATING VOCATIONAL PLANNING EXPERTS

Mr. Jim Beard
Kiamichi AVTS
PO Box 548
Wilburton, OK 74525

Dr. Mary Ellis
Tulsa County AVTS
3400 South Memorial
Tulsa, OK 74145-1390

Mr. Bill Jackson
High Plains AVTS
3921 34th Street
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Dr. Anita Reynolds
Indian Meridian AVTS
1312 South Sangre Road
Stillwater, OK 74074-1841

Dr. Danene Vincent
Metro AVTS
1900 Springlake Drive
Oklahoma City, OK 73111-5217

Dr. Greg Winters
Eastern Oklahoma County AVTS
4601 North Choctaw Road
Choctaw, OK 73020-9017

APPENDIX C

AGENDA FOR MODEL DEVELOPMENT MEETING

8:30	Check-In (coffee and doughnuts)
9:00	Opening Remarks, Purpose and Overview of the Day
9:15	Generate and Rank Order Factors For Adding Vocational Programs
10:30	Break
10:45	Generate and Rank Order Factors For Modifying Vocational Programs
11:45	Lunch Provided (Indian Meridian AVTS Cafeteria)
12:30	Generate and Rank Order Factors For Terminating Vocational Programs
1:30	Focus Group Activity (Review of the Proposed Decision-Making Model)
2:00	Evaluate and Comment on the Proposed Decision-Making Model
4:00	Wrap-Up and Closing Comments

APPENDIX D

VOLUNTEER SOLICITATION FORM

This study is being conducted to identify the factors used by vocational educators in the decision to add, modify, or terminate vocational programs. Once these factors are identified and ranked, reviewers will test the utility and usability of a decision-making model to apply the identified factors.

This study is being conducted by the researcher in partial fulfillment of the requirements for the Degree of Doctor of Education. The purpose of the study is to develop a model that area vocational-technical school administrators can use to ensure a more appropriate basis for making decisions relating to the manpower delivery system.

If you choose to participate, you will be asked to participate in both a nominal group technique and a focus group activity. These two activities will require a full day of your time.

To protect your anonymity and confidentiality, you will not be asked to write your name on your responses. The researcher is the only person who will have access to this information. There is absolutely no penalty for not participating in this study. Your participation is completely voluntary.

APPENDIX E

PARTICIPANT CONSENT FORM

I, _____, voluntarily agree to participate in the above-titled research.

I understand that:

1. The purpose of the study is to develop a program planning model that area vocational-technical school administrators can use to ensure a more appropriate basis for making decisions related to the manpower delivery system.

2. I will be requested to participate in both a nominal group technique and focus group session. Both sessions combined will take a full day.

3. All of my responses are confidential and my name will not be requested, protecting anonymity.

4. The focus group session will be audiotaped to aid the researcher in recording responses.

5. My participation is voluntary and I have the right to withdraw from this study at any time.

6. This study is being conducted by the researcher in partial fulfillment of the requirements for the Degree of Doctor of Education.

7. The data collected for the study will be utilized to develop and modify a decision-making model for program planning.

8. I may contact Curtis Shumaker at (405) 743-5198 should I wish further information.

I have read and fully understand the consent form. I sign it freely and voluntarily. I understand I will receive a signed copy of the consent form.

Signature _____ Date _____

APPENDIX F

AUTHORIZATION TO RECORD FORM

I, _____, do hereby authorize the Oklahoma Department of Vocational and Technical Education to record (audio only) my comments during a focus group activity at Indian Meridian Area Vo-Tech School on Friday, October 30, 1992.

I understand that the audio cassette tapes produced by this recording will neither be sold nor used for any purpose other than for the research efforts of this study. I also understand that the researcher is the only person who will have access to this information in order to provide complete anonymity and confidentiality of those being recorded.

Dated this _____ day of _____ 1992

_____

Signature

APPENDIX G

SCRIPT FOR NOMINAL GROUP TECHNIQUE

Step 1: Silent Idea Generation

Leader: We are meeting today because we have common concerns about planning vocational education programs that respond to local manpower needs. The first step is to generate a list of key factors that influence you in the decision to add, modify, or terminate vocational programs. In order to identify these factors, we will use a rather structured process known as Nominal Group Technique. It consists of five rather distinct stages. The stages are listed on the flip chart at the front of the room. First, I will ask you to respond to a question or statement. You'll have about ten minutes to write down your ideas. Second, I'll ask each person for their ideas, one idea per person at a time as we go around the table. Third, we'll take some time to discuss the ideas. And finally, we'll vote on the factors that seem to be of greatest importance with respect to planning vocational programs. Please consider this question (points to flip chart at the front of the room with the question written on it): "What are the most important factors in the decision to add a vocational program at your school?" (Assistant passes out individual worksheets that have the question written on top but are otherwise blank.) (Allow approximately 10 minutes.)

Leader: Please look over your ideas. Take a few moments to distill your statements into short words or phrases. (Allow about 5 minutes for rewriting and finishing up.)

Step 2: Round Robin Reporting of Ideas

Leader: Now we are going to give each person the chance to share their ideas. We'll go around the table. Please give just one idea at a time; we'll go around as many times as we need to. If you have nothing to add, just say, "Pass." You may take your turn again whenever you'd like. Participant 1, would you give us one of your factors which influence the decision to add a vocational program at your school?

Participant 1: (Reads response.)

(Assistant records the response on an overhead chart in exact words, labeling the statement with an A. It is important to use alphabetical

identification to avoid later confusion with numbers when voting. Leader will make sure everyone can see the flip chart.)

Leader: Thank you. Does anyone have a response which is similar to this one? We can record it here.

During this stage we simply record everyone's ideas. In the next step, we will discuss them. Participant 2, would you like to share one of your ideas?

Note: The round robin reporting of ideas continues until everyone has offered as many ideas as they wish. The leader will encourage "hitchhiking." In other words, if one person's idea reminds someone else of an additional thought, it can be added to the list. The leader will make sure that the entire list is always visible by tearing off completed sheets and hanging them on the wall.

Step 3: Discussion for Clarification

Leader: Now that we have all the factors in front of us, we should make sure we all understand what each of these factors means. If you have any questions, simply ask by referring to the letter of the factor. The author of that factor will further explain.

Step 4: Voting

Leader: Each of you will receive a voting ballot that we will use to establish the order of importance of our factors. Please look over the entire list and select ten factors that you feel most strongly affect effective planning. The voting ballot has a number column starting with ten and ending with the number one. In this situation, ten would be the number with the highest priority, nine would be next, and so on. Decide which factor has the top priority. Simply place a letter beside the number that you feel each factor deserves. (Allow 5-10 minutes.)

Leader: While the participants take a short break, the leader and assistant will tabulate the scores on the enlarged tally sheets at the front of the room. As the assistant reads the results, the leader records the rank order numbers next to the appropriate identifying letter. (It is possible that consensus will not be reached here and that another vote will need to be taken after more discussion.)

The ranks are recorded for each factor as they were presented by the participants. Then the ranks are averaged. Simply, the factor with the highest average is the most important factor in the ranking. Following the break, the results are reported to the entire group. This process is repeated for all three areas for adding, modifying, and terminating a vocational program.

APPENDIX H

SCRIPT FOR FOCUS GROUP ACTIVITY

Good afternoon and welcome to the second half of our group activity. My name is Sarah Mussett. I am Coordinator of Planning for the ODVTE. Curtis has asked me to be your focus group moderator this afternoon. Assisting me in recording your responses is Carri Hoffman, also from the ODVTE. This afternoon, we are attempting to gain information about the utility, feasibility, and accuracy of the proposed decision-making model for adding, modifying, or terminating vocational programs. We have invited individuals who represent a variety of school sizes and geographical locations to share their perceptions and ideas.

All of you were hand selected because of your expertise and experience in the area of planning vocational programs. In the focus group activity, there are no right or wrong answers but rather differing points of view. Please feel free to share your point of view even if it differs from what others have said.

Before we begin, let me remind you of some ground rules. Please speak up so our recorders will pick up your voice. We're tape recording the session because we don't want to miss any of your comments. Only one person should talk at a time, or the tape will get garbled and we'll miss your comments. As in this morning, we will be on a first-name basis this afternoon, and in our later reports no names will be attached to comments. You may be assured of complete confidentiality. Keep in mind that we're just as interested in negative comments as positive comments, and at times the negative comments are the most helpful.

Our session will last about an hour and a half, and we will not be taking a formal break. The rest rooms are just out the door on the south side of the foyer, and the refreshments are at the back of the room. Feel free to leave the table for either of these or if you wish to stretch, but please do so quietly.

Since we are evaluating a product that has never been used and that you are unfamiliar with, Curtis will take a few minutes to explain how the model works. Ask him any questions you wish for clarity or further explanation; then we will begin with the first question.

Questions

1. What are the strengths of the decision-making model?
2. What are the weaknesses of the decision-making model?
3. What are the barriers in using this model?
4. How could you eliminate these barriers or weaknesses?
5. How would you modify or improve the model?
6. How many of you would use the model?
7. How would you use this model?

APPENDIX I

OVERVIEW AND STEPS FOR USING THE DECISION-MAKING MODEL

This section presents the entire decision-making model developed for Oklahoma vocational-technical school administrators and planners (Appendixes I-M). It includes the processing instructions, a sample data reference guide, a data source and weight assignment sheet, hypothetical example of the proposed program decision-making model, and a separate matrix worksheet for adding, modifying, or terminating vocational programs.

The hypothetical example (Appendix L) shows a completed matrix worksheet for adding vocational programs. Six programs were chosen hypothetically for this example. Using the Data Reference Guide, each of the six programs were evaluated against the ten factors. Scores were then calculated and totaled. If for example, management decided that the top three ranked programs receiving the highest "Total Score" were to be considered for adding to the school's offering of programs, then LPN, Surgical Technician, and Dental Assisting would be the programs selected.

It is suggested that vocational administrators and others desiring to use this type of decision-making model for evaluating and selecting vocational programs examine the entire processing steps, documents, and forms before attempting to work through the model.

The proposed program planning model assumes that a local planning committee has been formed to look at the school's educational goals, objectives, and mission prior to using the model. What follows is a step-by-step procedure in using the model.

Step 1: Using group consensus, select the ten most important factors for each category (add, modify, and terminate) from the Data Source and Weight Assignment Worksheet (Appendix K) that best meet the goals and objectives of the area vocational-technical school district. Use an X to mark your selections. You may also generate additional own factors if the ones in this example do not completely address your local situation. A suggested list of the most important factors to consider in the decision to add, modify, or terminate is provided for your consideration in Tables II, III, and IV of this study. The decision to use ten factors was arbitrarily decided upon by the researcher as a reasonable number for accomplishing the purposes of assessing vocational programs.

Note: The example presented here assumes that you are interested in performing action for all three evaluation categories of add, modify, and terminate. If this is not the case, only perform action on the categories of interest.

Step 2: Again, using group consensus, on the same chart (Appendix K) weight each of the ten factors selected for adding, modifying, and terminating by assigning a value of 3 to the most important factor, 2 to the moderately important, and 1 to the least important. Record the values in the "Weight" columns next to your X.

Note: Determination of the assigned weight should be a group activity performed by a program planning committee at the local school.

Step 3: Using the completed Data Source and Weight Assignment Worksheet, (Appendix K) transfer the ten important factors and their weights to the appropriate Matrix Worksheet (Appendix M) in the following manner:

a. Select all factors that weighted a 3 and record the factor title and its weight on the Matrix Worksheet. The first title will be recorded in the upper left vertical column and the weight will be recorded in the shaded row below that column titled "Weight." (See Appendix L for an example.)

(If more than one factor is weighted the same value, then record the factor and weight in any order desired.)

b. Select all factors that weighted a 2 and record the title and weight to the right of any 3s that were recorded.

c. Select all factors that weighted a 1 and record the title and its weight on the chart to the right of any 2s that were recorded.

d. Review the completed chart to verify that all factors and weights in each evaluation category are accurate and listed in order by weight priority.

Note: There is a different Matrix Worksheet for each of the three categories of adding, modifying, and terminating programs.

Step 4: Select and record on each of the Matrix Worksheets (Appendix M) the titles of all vocational programs to be evaluated.

Step 5: Choose a specific evaluation category (either add, modify, or terminate) and complete steps 6 through 10 below. Repeat the same steps for each of the other evaluation categories.

Step 6: Referring to the Data Reference Guide (Appendix J) and beginning with the first factor on your Matrix Worksheet, review the data source and cell scores for each vocational program listed on the Matrix Worksheet. Determine the cell score that each program will receive by looking up the appropriate information on each program. Several sources of local, state, and national information will be needed to perform this activity.

Note: The specific cell score will depend on the performance of the program being evaluated. For instance, a vocational program with poor enrollment history will receive a low cell score for that particular cell.

Enter the cell score for each program on the Matrix Worksheet in the upper half of the box (Score). Repeat the same process for factors 2 through 10.

Step 7: Score all programs on the worksheet under each data element column by multiplying the upper half score by the weight. (See Appendix L for an example.) Record the amount in the lower half of each box.

Step 8: Add all scores in the lower half boxes ("Weight X Score") across for each vocational program. Enter the amount in the "Total Score" column of the worksheet.

Step 9: Look at the scores in the "Total Score" column and rank each vocational program as follows: (a) highest to the lowest number for adding and modifying and (b) lowest to the highest number for terminating programs. Record each ranking number in the "Rank" column on the worksheet.

Step 10: Use the outcome of ranking each vocational program to rationally and systematically support management's decision to add, modify, or terminate vocational programs.

Note: How far to go down on the list as a cutoff point for the vocational programs is a local decision influenced by many factors.

APPENDIX J

SAMPLE DATA REFERENCE GUIDE

1. Factor: Labor market demands

   Definition: The statewide sum of annual growth and annual separations. (Sometimes referred to as annual openings.)

   Data Source: Oklahoma Workforce 2000 publication (Oklahoma SOICC).

   Cell Scores:
   3 = Large openings (150 +)
   2 = Medium openings (75 - 149)
   1 = Small openings (30 - 74)
   0 = Few to no openings (29 and below)

2. Factor: Start-up/ongoing cost/funding

   Definition: The start-up and ongoing cost of each vocational program divided by the average number of completers in that program. Low cost is desirable.

   Data Sources: ODVTE Average Start-Up Cost Summaries and Individual Program Costs Summaries.

   Cell Scores:
   3 = Does not exceed state average by more than 10%
   2 = Exceeds state average by 11 to 25%
   1 = Exceeds state average by 26 to 50%
   0 = Exceeds state average by more than 50%

3. Factor: Training advantage/salary

   Definition: Average annual earnings of vocational completers by program as recorded from the OES 202 Wage and Record file (Oklahoma Employment Security Commission).

   Data Source: Vocational Completer Earnings Report, 1992 (Oklahoma SOICC) and local surveys.

   Cell Scores:
   3 = High Earnings (Defined locally)
   2 = Medium Earnings (Defined locally)
   1 = Low Earnings (Defined locally)
   0 = Below poverty rate (Defined locally)

4. Factor: Available curriculum & resources

Definition: The presence and quality of prepared curriculum materials and resources that meet requirements for fulfilling an occupational program's training objective as defined by the Oklahoma Department of Vocational and Technical Education Evaluation Criteria.

Data Sources: Evidence of available training materials.

Cell Scores:
3 = High quality instructional materials readily available
2 = Satisfactory quality instructional materials readily available
1 = Acceptable quality instructional materials available
0 = No instructional materials available

5. Factor: Quality instructors

Definition: The availibility of instructors that meet requirements for fulfilling an occupational program's training objective as defined by the Oklahoma Department of Vocational and Technical Education Evaluation Criteria.

Data Sources: Evidence of available instructors.

Cell Scores:
3 = Qualified instructors are readily avialible
2 = Qualified instructors are somewhat available
1 = Qualified instructors are difficult to find
0 = Qualified instructors are not available

6. Factor: Responds to customer needs

Definition: The program's product or service meets all of the agreed upon customer requirements. The data would be specific to a particular school.

Data Sources: Local Survey of Customers

Cell Scores:
3 = Meets all of the customer's needs
2 = Meets most of the customer's needs
1 = Meets some of the customer's needs
0 = Does not meet the customer's needs

7. Factor: Administrative leadership

   Definition: Adequate leadership to successfully implement, operate, and evaluate the program.

   Data Source: Local assessment

   Cell Scores:
   3 = Strong instructional leadership
   2 = Adequate instructional leadership
   1 = Weak instructional leadership
   0 = No instructional leadership

8. Factor: Program relates to mission

   Definition: The proposed vocational program relates closely to the published mission of the school or community.

   Data Sources: Evaulation of program's goals and objects in relation to the published mission.

   Cell Scores:
   3 = Strong relationship between program and mission
   2 = Sound relationship between program and mission
   1 = Weak relationship between program and mission
   0 = No relationship between program and mission

9. Factor: New laws for Licensure

   Definition: An opportunity to provide a vocational program due to the creation of licensing requirements upon an existing or previously non-exising occupation.

   Data Sources: Licensed Occupations of Oklahoma, Oklahoma SOICC.

   Cell Scores:
   3 = Strong relationship between new law and mission
   2 = Sound relationship between new law and mission
   1 = Weak relationship between new law and mission
   0 = No relationship between new law and mission

10. Factor: Student interest

    Definition: A survey of current and prospective students relative to their interest in training for a particular occupation or occupational cluster.

    Data Sources: Local Surveys

Cell Scores:

3 = High number of prospects (Defined locally)
2 = Medium number of prospects (Defined locally)
1 = Low number of prospects (Defined locally)
0 = No student interest or prospects

APPENDIX K

DATA SOURCE AND WEIGHT ASSIGNMENT WORKSHEET (EXAMPLE)

Factors	Add	Weight	Modify	Weight	Terminate	Weight
1. Labor market demands	X	3				
2. Start-up/ongoing cost/funding	X	3				
3. Training advantage/salary	X	3				
4. Available curriculum & resources	X	2				
5. Quality Instructors	X	2				
6. Responds to customer needs	X	2				
7. Administrative leadership	X	2				
8. Program relates to mission	X	1				
9. New laws for licensure	X	1				
10. Student interest	X	1				
11. Board interest						
12. Potential growth						

Note: This worksheet represents only a small sample of factors that should be considered for use in the decision-making process.

APPENDIX L

HYPOTHETICAL EXAMPLE OF THE PROPOSED PROGRAM DECISION-MAKING MODEL

Matrix Worksheet
for Adding Vocational Programs

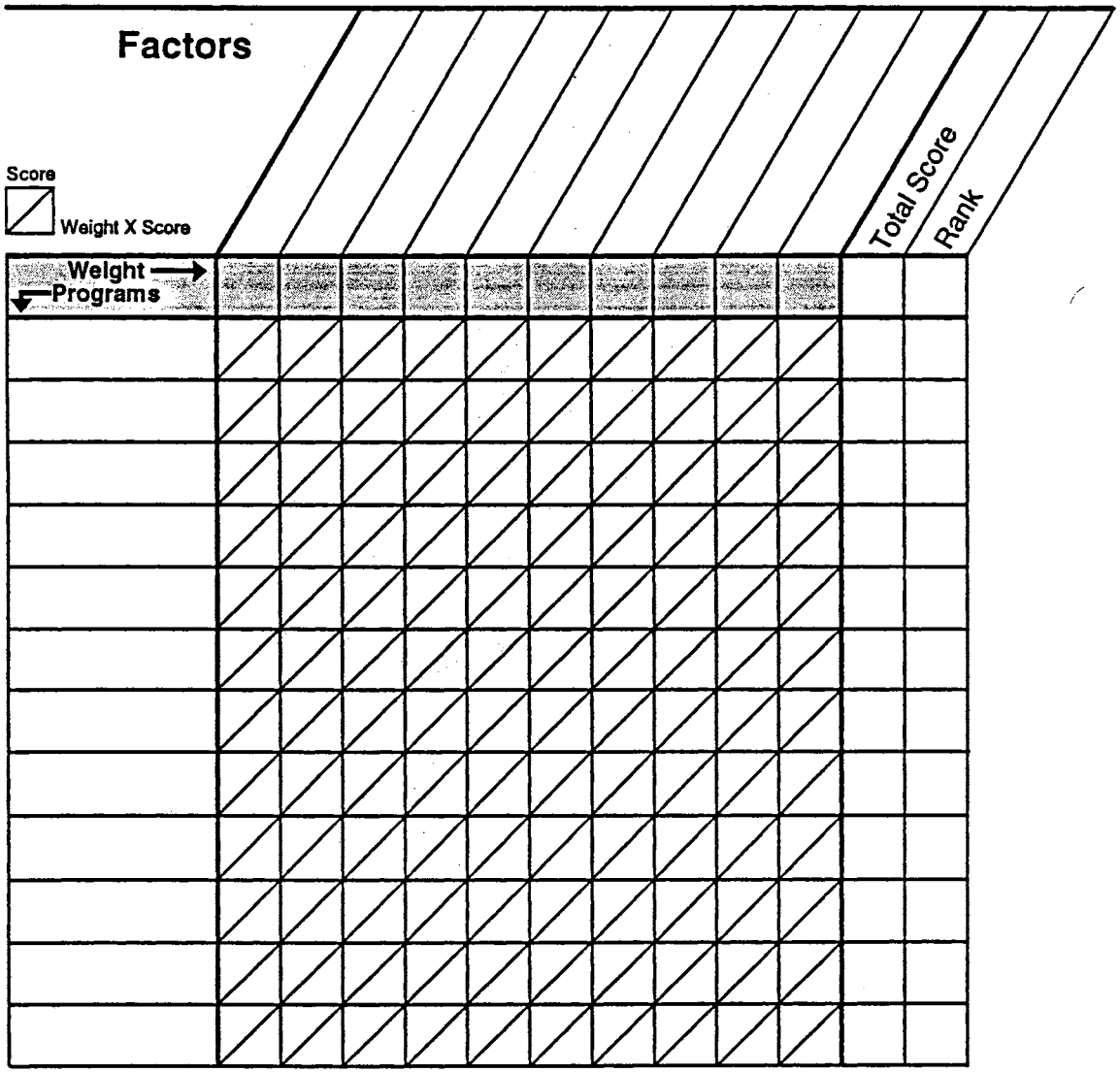
(Hypothetical Example)

Factors / Score: Weight X Score	Labor Market Demands	Start-Up/Ongoing Cost/Funding	Training Advantage/ Salary	Available Curriculum and Resources	Quality Instructors	Responds To Customer Needs	Administrative Leadership	Program Relates To Mission	New Laws For Licensure	Student Interest	Total Score	Rank
Weight → / ← Programs	3	3	3	2	2	2	2	1	1	1		
Ag Production	1/3	1/3	1/3	2/4	1/2	1/2	2/4	2/1	2/1	0/0	23	6
Diesel Mechanics	1/3	2/6	1/3	2/4	3/6	1/2	2/2	1/1	2/2	1/1	30	4
Dental Assisting	3/9	2/6	2/6	2/4	2/4	2/4	2/4	2/2	2/2	1/1	42	3
Brick Masonry	1/3	1/3	1/3	2/4	1/2	1/2	2/4	1/1	1/1	1/1	24	5
LPN	3/9	3/9	2/6	3/6	3/6	2/4	2/4	2/2	2/2	2/2	50	1
Surgical Tech.	3/9	2/6	2/6	2/4	2/4	2/4	2/4	2/2	2/2	2/2	43	2

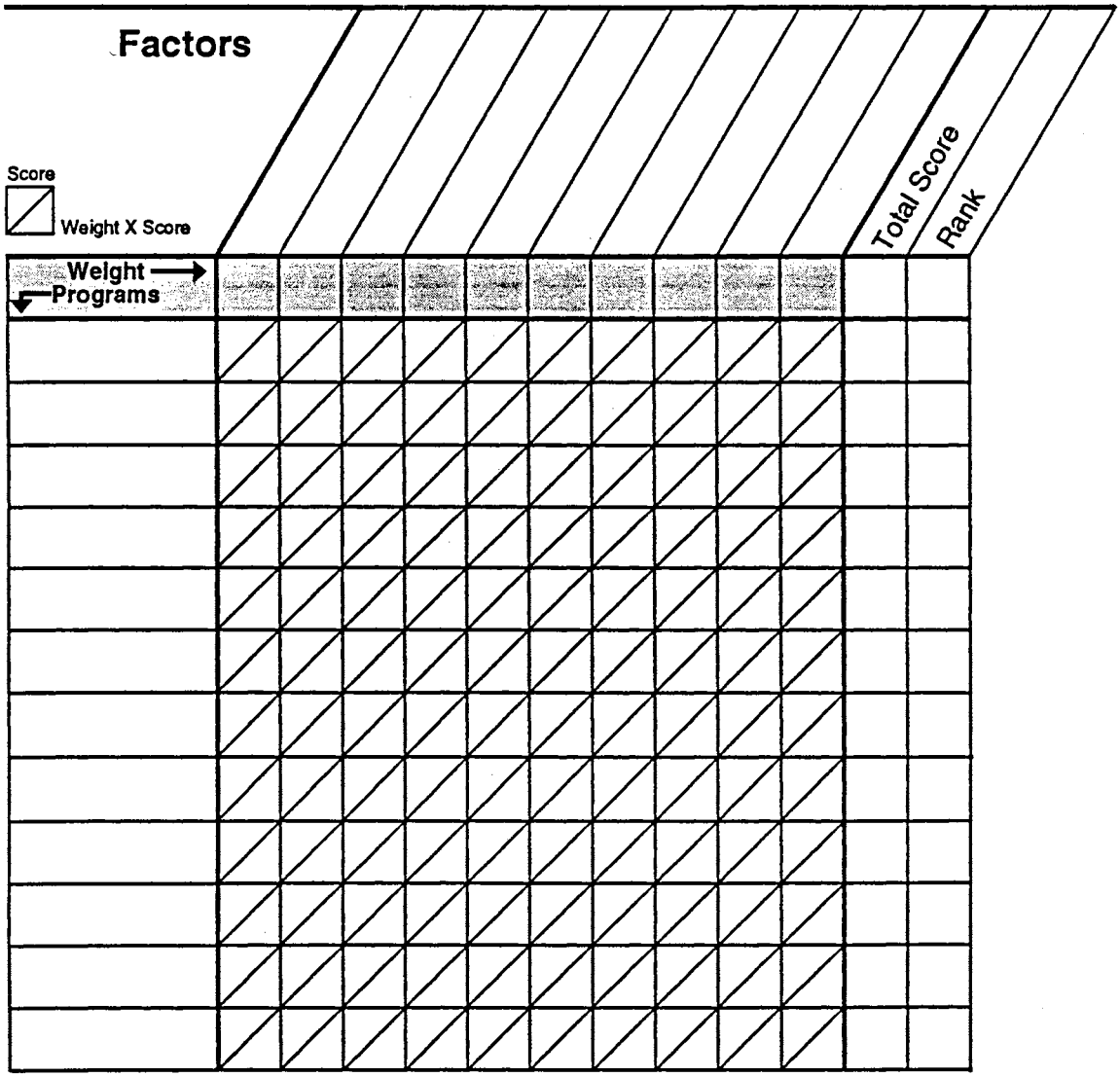
APPENDIX M

MATRIX WORKSHEETS FOR ADDING, MODIFYING, OR TERMINATING VOCATIONAL PROGRAMS

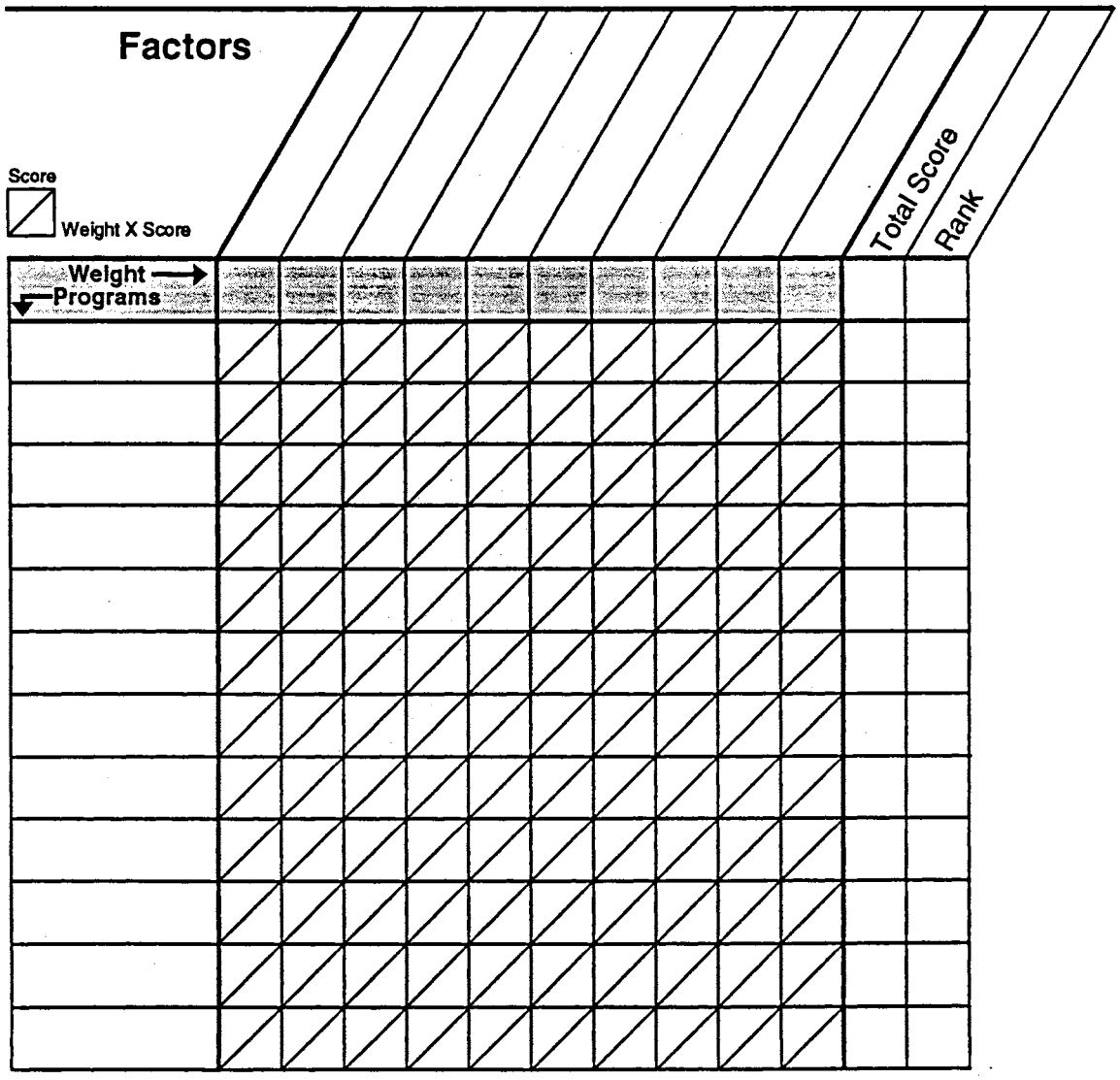
Matrix Worksheet
for Adding Vocational Programs



Matrix Worksheet
for Modifying Vocational Programs



Matrix Worksheet
for Terminating Vocational Programs



APPENDIX N

EXAMPLE TALLY SHEET FOR ADDING, MODIFYING, OR TERMINATING VOCATIONAL PROGRAMS

Factor Letter	Ranks Assigned by Participants	Row Total	Average of the Ranks	Priority
EX.	5,3,7,6,7	28	5.6	
A				
B				
C				
D				
E				
F				
G				
H				
I				
J				
K				
L				
M				
N				
O				
P				
Q				
R				
S				
T				

APPENDIX O

EXAMPLE VOTING BALLOT FOR ADDING, MODIFYING, OR TERMINATING VOCATIONAL PROGRAMS

Score	Factor
10	
9	
8	
7	
6	
5	
4	
3	
2	
1	

APPENDIX P

FOCUS GROUP TRANSCRIPT SAMPLE

Sarah: Let me talk to you just a little bit about how the discussion is going to go. What we're going to talk about is the strengths of the model, the weaknesses of the model, the barriers to using the model, how do we eliminate these barriers, and then follow the questions, depending on where the discussion goes. I will also ask how many people would actually use the model, and how they would you use it. There are a couple of other questions Curtis has at the bottom--"What do you think about the part of the model that allows the local school to choose the data type and weights?" and "What other questions would you have about the model that have not been asked?"
Sarah: Each of these questions are written on the flip chart. Do you want to see the whole list at one time or just one question at a time?
U-2: I think it would be helpful to have the whole list available. If I see that it's going to be covering another question, I'll avoid getting into it.
Sarah: Does everyone understand what we're going to do? Great! The first question we're going to talk about this afternoon is, "What are the strengths of the decision-making model?" Do you need me to put the model back up, or do you want to have it in front of you? Let's talk about the strengths of the model.
M-1: I think it causes you to analyze what factors you want to include. It's very important to give them some real thought. It causes you to analyze what you're actually going to do and how you are going to look at the program, and at your mix of programs.
U-2: An important factor here is that there is something supporting your decision versus someone saying, "I think we need to add this program."
Sarah: Thanks, U-2.
M-2: The model allows for the input of multiple factors.
Sarah: M-1, were you going to say something else?
M-1: Hopefully, the model will take away as much subjectivity as you can take away in the planning process.
U-2: It adds to the quality of vocational education.
R-1: It provide an opportunity to weight each of the factors you consider as input. It also provides an opportunity for more people in the school to be involved in the decision-making process.
U-1: I think the model could be used anywhere, particularly useful in that it can be adapted to the local level. I think that's very important.
Sarah: R-2, can you think of anything that hasn't been mentioned?
R-2: It's very flexible and straightforward. I thought it would be complex, but it is really easy to use and pretty easy to explain. The math is easy to figure out as well.
Sarah: U-1, were you going to say something?
U-1: The model is very flexible and limitless because you can add as many programs as you want and as many factors as you think are necessary. It also allows you to connect all the variables in the planning process together. There's some connectivity to it.
U-2: I see it as an opportunity to involve people in the community with the program planning process along with the school administration. You could take this model to the community, your customers--it has a lot of different possibilities.

R-1: There is also the possibility of using the model to maybe help eliminate some of the political aspects of program planning. If it were the district's policy to use this model every time, that would be helpful.
Sarah: Anything else to add on strengths of the model?
M-1: It may help the State Vo-Tech Department when they go to the legislature and ask for money for a particular program. It can be used as a justification for that program from the legislature.
M-2: Adding to that is if this is a State Department sanctioned model at some point, that would really help, even though it has local level flexibility, it would help to be able to say, "This is a model that the State Department of Vo-Tech supports." This would encourage us at the local level. It may also help alleviate some of the local political concerns.
M-1: It will also encourage our teacher education institutions to update their programs.
Sarah: Anything else on strengths?
R-1: It's an organized way of looking at your programs and determining whether you want to add, change, or terminate them.
Sarah: How about weaknesses now? "What are the weaknesses of the decision-making model?"
M-2: Difficulty in obtaining up-to-date data.
Sarah: Looks like everyone is shaking their head on that issue.
M-1: It's only as good as the data you find ultimately that you can make decisions on, and I'm afraid our data is not very good.
Sarah: What else? What's another weakness?
U-1: I see one weakness as the time requirement--to fill it out or to gather the data. To complete the whole planning process. To get the total plan ready--all takes considerable staff time.
R-2: There is a certain amount of subjectivity in assigning weights to each factor. When you assign the weights, that will pretty much dictate the scores. I may weight it as a 3, you may weight as a 1, and that could totally flip flop the outcome in the end. That may be a little bit of an overexaggeration, but it would certainly be a major factor in the overall effectiveness of the model.
R-1: Time factoring, getting staff to research all the data.
M-2: One of the concerns that I had--I'm sorry, I don't know how to express this very well, but--Curtis, when I look at your suggested factors here, there is significant overlap between annual growth, annual opening, and other labor market data, and you could weight the things so heavily in one direction that there might need to be some cautions in doing this.
R-2: I don't want to put words into M-2's mouth, but when you see numbers that are, say, easier to get like annual growth--you can go to a location and find out the annual growth from the projections data of a particular job. That may be easy to quantify. But when you get something like grant fund availability, what is that? How do you compare a weighted factor on something that's fairly easy to quantify to something that is not?
M-1: I think there needs to be some kind of a congruence in weighing the factors.
Sarah: What's another weakness?

U-1: Sarah, I have one more. Our emphasis appears to be more on just regular occupational programs, but for the model to work in a school, we have other programs that are not necessarily day-student driven. There are some other kinds of services that are provided, like the Learning Enhancement Center, that the model may need to be expanded to the point that it works for all facets of the school operation--not just day-time programs.
Sarah: U-1, are you thinking of programs and services?
U-1: Some services, yes. You could use the model there--you just need a different set of factors. How about for our AT&D and IT&D programs? I believe something like this could be very useful for other kinds of programs other than services.
Sarah: What else--another weakness?
M-2: One of the weaknesses is that this model is only one piece of the total planning process.
Sarah: Any more weaknesses before we try to do the third question, which is "What are other possible barriers in using this model?" Can you think of anything that's a barrier?
M-1: Has anyone done any work to determine whether or not the kinds of things that we've come up with or that have been suggested here in any way relate to the type of evaluation that's being done in those programs right now? One of the barriers could be if the model is not looked at in relation to the type of evaluation that we do on programs, we will have a dual system. If you plan a program based on these factors and we don't evaluate based on these factors, then we're in trouble and at cross purposes.
M-2: I don't know if this is a weakness or a barrier, but it might be both. The lack of commitment on the part of administration and their board to really take a close look at their programs.
Sarah: If we can't think of another weakness or barrier, what I'd like to do is spend a little time on the next question and that is, "How would you eliminate these barriers in relation to the model?" I don't think I'll chart those. How would you? Let's talk first about availability of data. Let's talk about that one first--availability of data. What are some things you could do to eliminate that weakness or that barrier? How can we improve the model by responding to the weaknesses that you've come up with here?
M-2: Are the factors that we've come up with today going to be given as examples if this model is proposed?
Sarah: Yes.
M-2: Perhaps we could come up with some possibilities of where to go to look for this type of data and give them our suggestions, like has been done here. For each of those areas.
M-1: One of the things I found is that people said they didn't know where to go to find the data, but another factor is that sometimes up-to-date data is just flat not available. Just not there.
R-2: Or too old to be of any use, or really much value, unless you want to run a trend line over a period of time.
M-1: Things are changing so fast that data two years old is not real reflective of

what the curve really looks like. It's irrelevant.
Sarah: Anything else you can think of that overcomes a weakness of the model? We're going to provide them data resources.
M-2: There may be, in terms of long-range plan. I think we have to develop a data base infrastructure. A long-range plan might be that, ultimately, we would be able to tap into a statewide data source. That's kind of a long-term thing that would help facilitate this model. It's not going to happen tomorrow.
M-1: Yes, the data that we've talked about using here used to be collected years ago, and it hasn't been, but I understand it's going to be. The data should be better, much more accurate, much more detailed, because we've spanned the time of ten years, and we've not had much data for vocational education. It's been a good while since we've really had a lot of in-depth data collected--like we used to have in the 1963 Act.
M-2: One of the things that we talked about at that time was taking the data that is available at the State Department and compiling it in book form by school. Rather than having a fat report that goes out on secondary service report or like the dropout report. That way, Tulsa Technology Center would get a book annually that would provide them last year's placement, last year's completion status, last year's secondary service, last year's . . . I can go on and on--whatever data is collected. I realize that puts a lot of work on the State Department, and if it's a need and if the state is going to support a model like this, then that should be a very important priority area.
M-1: In the metropolitan areas, I don't know about the smaller areas, but I can tell you that we're so complex in our organization, the information may be next door in Joe's office and I don't know it, or I may have had it and he doesn't know it.
Sarah: How about from the rural schools? Is that a problem--complex structures?
R-1: That could be something that could be helpful in doing this. Any time you're making decisions of that strata of importance.
R-2: I enjoy the data that we get. Not only does it have our school, but it has all of the area vocational schools. I go in and compare us with "like" schools. If they're doing certain things this way at this particular level, or whatever, it helps me develop some questions of what we bring to our schools compared to what other schools may be doing.
Sarah: . . . that is how to eliminate the barriers and weaknesses, and I think we talked about availability of data, we talked about some ways to eliminate or lessen such a barrier. Now let's talk about establishing weights and also possibly an explanation.
M-2: In terms of eliminating that barrier, and I haven't thought through this a whole lot, so I'll just toss this out for discussion. A group approach or a committee approach might lend some credence to this, rather than having one individual establishing the weights. You could use staff or maybe even a combined internal/external committee to help establish the weights, determine what the criteria are going to be, making sure you've got industry representation. Stakeholders--whoever that would be. That might help to eliminate that barrier.

APPENDIX Q

REVIEW TEAM FOR NGT AND FOCUS GROUP SCRIPTS AND QUESTIONS

Sarah Mussett
State Planning Coordinator
Oklahoma Department of Vocational &
Technical Education
1500 West 7th Avenue
Stillwater, OK 74075

Amy Polonchek
Research Coordinator
Oklahoma Department of Vocational &
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Tom Thomas
Economic Development Director
Great Plains AVTS
4500 SW Lee Blvd.
Lawton, OK 73505

Phil Waul
Assistant Superintendent
Central Oklahoma AVTS
3 Court Circle
Drumwright, OK 74073

APPENDIX R

FOCUS GROUP PILOT TEST PARTICIPANTS

John Howell
Assistant State Coordinator for
Area Vocational-Technical Schools
Oklahoma Department of Vocational &
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1500 West 7th Avenue
Stillwater, OK 74074

Ken King
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Sarah Mussett
State Planning Coordinator
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Todd Zdorkowski
Business Technical Asst. Specialist
Oklahoma Department of Vocational &
Technical Education
1500 West 7th Avenue
Stillwater, OK 74074

APPENDIX S

VERIFICATION LETTERS

TULSA TECHNOLOGY CENTER

Office of the Superintendent 3420 South Memorial Drive Tulsa Oklahoma 74145-1390 918 627-7200 ext 300 Fax 918 622-5613

GENE CALLAHAN, Ed.D.
Superintendent

MARY L. ELLIS, Ed.D.
Associate Superintendent

January 4, 1993

Mr. Curtis Shumaker
Director, SOICC
Oklahoma Department of
Vocational and Technical Education
1500 West Seventh Avenue
Stillwater, OK 74074-4364

Dear Curtis:

Thank you for the opportunity to review the analysis of the nominal group technique and focus group comments in determining key factors to consider in the decision to add, modify or terminate vocational programs.

I have read the findings and conclusions of the data gathered at the meeting at Indian Meridian Area Vocational Technical School on October 30, 1992. Your findings and conclusions are exceptionally accurate in capturing the group's thoughts. As you know, I have been involved in the vocational education enterprise for more than three decades. Your findings and conclusions are certainly in accord with my professional experience. The final results of your study should be particularly helpful to schools in making tough decisions concerning adding, modifying and/or terminating programs.

Best wishes for a successful and prosperous 1993.

Sincerely,

Mary L. Ellis
Associate Superintendent

pc: Dr. Gene Callahan

KIAMICHI Area Vocational-Technical School District No. 7

WILBURTON OFFICE
1004 Highway 2, North
P.O. Box 548
Wilburton, Okla. 74578

January 4, 1993

TO WHOM IT MAY CONCERN:

After examining the findings of Curtis Shoemaker, in regard to his analysis of the nominal group technique to focus group portion of his doctoral research, I feel the information accurately reflects the data gathered at the Indian Meridian Vocational-Technical School on October 30, 1992 and fully concur with his conclusions. My assessment of his findings are in keeping with my vocational experience which is approximately 23 years.

Sincerely,

Jim Beard

JIM BEARD
Deputy Superintendent

JB/wl

Indian Meridian Area Vocational-Technical School

1312 South Sangre Road, Stillwater, OK 74074
Phone (405) 377-3333 Fax (405) 377-9604

Dr. Fred A. Shultz, Superintendent

January 22, 1993

Mr. Curtis Shumaker
Director, SOICC
Oklahoma Department of Vo-Tech
1500 West Seventh Avenue
Stillwater, OK 74074-4364

Dear Curtis:

Thank you for allowing us to be a part of your research into factors to consider in adding, modifying or terminating vocational programs. It will be extremely beneficial to us as vocational administrators in making those types of decisions.

I have reviewed the analysis of our group activities and comments relating to our discussions on that project and find them to accurately reflect what transpired on October 30, 1992. I appreciate your sharing this feedback with us.

I was also pleased to discover that the factors arrived at by the group were similar to ones that we have used at our school in improving vocational programs. Good luck with the rest of your study!

Sincerely,

Anita Reynolds
Assistant Superintendent

HIGH PLAINS
AREA VOCATIONAL-TECHNICAL SCHOOL
3921 34th Street • Woodward, Oklahoma 73801-7000 • (405) 256-6618

January 8, 1993

To Whom It May Concern:

This is to verify that I, the undersigned, have reviewed Curtis Shumaker's analysis of the nominal group technique and focus group portion of his doctoral research. As a participant in both activities, I have read the findings and conclusions and agree that the information accurately reflects the data gathered at Indian Meridian Area Vocational Technical School on October 30, 1992.

Having experience in planning vocational programs for 28 years, I concur that Curtis's findings and conclusions are in keeping with my experience.

Respectfully,

Bill Jackson

Bill Jackson
Asst. Superintendent

mn

Eastern
Oklahoma
County
Area
Vocational
Center

January 4, 1993

To Whom It May Concern:

This is to verify that I, the undersigned, have reviewed Curtis Shumaker's analysis of the nominal group technique and focus group portion of his doctoral research. As a participant in both activities, I have read the findings and conclusions and agree that the information accurately reflects the data gathered at Indian Meridian Area Vocational Technical School on October 30, 1992.

Having been in the business of planning vocational programs for 8 years, I concur that Curtis's findings and conclusions are in keeping with my experience.

Sincerely,

Dr. Greg Winters
Superintendent

Paint a Bright Future

4601 North Choctaw Road • Choctaw, Oklahoma 73020 • FAX 405 390-9593 • Phone 405 / 390-9591

////Metro Tech
Administrative Offices • Springlake Campus
1900 Springlake Drive • Oklahoma City, OK 73111 • 405/424-TECH

January 4, 1993

To Whom It May Concern:

This letter is to verify that I, Danene Vincent, have reviewed the analysis of nominal group/focus group technique used by Mr. Curtis Shumaker for his doctoral research. I certify that I was a participant in both activities at Indian Meridian Area Vo-Tech on October 30, 1992. Having read the findings and conclusions, I found that the information recorded at the meeting on October 30th accurately reflects my memory of the activities and discussion.

Having been involved in vocational education for over 14 years, and having been involved with the planning of vocational education since 1986, I agree that Mr. Shumaker's findings and conclusions are in keeping with my experience.

Sincerely yours,

Danene Vincent

Danene Vincent, Ed.D.

votech
OKLAHOMA DEPARTMENT
OF VOCATIONAL
AND TECHNICAL EDUCATION

March 1, 1993

Curtis Shumaker
Executive Director
SOICC/NTSC
1500 W. Seventh Avenue
Stillwater, OK 74074-4364

Dear Curtis:

Thank you for sharing the results of the program planning focus group that was held at Indian Meridian Area Vocational Technical School on October 30, 1992. As an observer, I find that your analysis and comments accurately reflect the group interaction and conclusions.

Your decision-making model offers an excellent tool for schools to use when examining their program mix. This is particularly important in the context of dwindling resources and rapidly changing workforce needs.

Sincerely,

Amy Polonchek

Amy Polonchek
Coordinator of Research

g:\resrh\amy\letters\curtis

1500 West Seventh Avenue
Stillwater, OK 74074-4364
(405) 377-2000

2

VITA

Curtis Gene Shumaker

Candidate for the Degree of

Doctor of Education

Thesis: A DECISION-MAKING MODEL FOR ADDING, MODIFYING, OR TERMINATING VOCATIONAL EDUCATION PROGRAMS IN OKLAHOMA

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Monett, Missouri, December 21, 1957, the son of Gene E. and Sue A. Shumaker; married Deborah A. Saterbak, May 9, 1982.

Education: Graduated from Fairland High School, Fairland, Oklahoma, May 1976; received Associate in Agriculture degree from Northeastern A&M College, Miami, Oklahoma, May 1978; received Bachelor of Science in Agriculture Education degree from Oklahoma State University, August 1981; received Master of Science in Agriculture Education degree from Oklahoma State University, December 1986; completed requirements for Doctor of Education degree at Oklahoma State University in July 1993.

Professional Experience: Instructor, Yale Public Schools, Yale, Oklahoma, 1981-86; Graduate Research Assistant, Oklahoma Department of Vocational and Technical Education, 1986-88; Executive Director, Oklahoma State Occupational Information Coordinating Committee, 1988-present; Director of the National Occupational Information Coordinating Committee Training Support Center, 1991-present.

Professional Organizations: American Vocational Association, Oklahoma Vocational Association, Phi Delta Kappa, National Association of State Occupational Information Coordinating Committees, and the Oklahoma Association for Counseling and Development.