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ABSTRACT

A comprehensive model for planning and evaluating secondary vocational education programs in Georgia was developed to assist the state's vocational supervisors and directors in planning and improving vocational programs so as to make them more effective in enhancing students' basic and employability skills. The model is based on the following assumptions: educators in local schools bear primary responsibility for program improvement; decisions to modify vocational programs should be data based and related to the goals of the local educational agency; the Georgia Department of Education has a mandated responsibility for compliance reviews; annual data from local schools provide an opportunity for continuous monitoring of quality indicators; and, once available, data on programs may be used for multiple purposes. The four major elements of the model are needs assessment, context review, process components, and product outcomes. These were chosen because they correspond approximately to the variable classes in the outcome index (employment context, educational process, outputs, outcomes, and benefits). This guide to using the model begins with a discussion of the objectives of the comprehensive planning model, the procedures followed in developing the model, and compliance expectations. Program planning and evaluation in Illinois, North Carolina, Ohio, and Oregon are discussed next. The third section describes the assumptions and elements of the model, and the final section examines the model's applications to vocational education (local program questions, implementation of the model, and planning and evaluation issues to be addressed in the future). (MN)

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FOREWORD

The delivery of vocational education to secondary students may be the single most important concern confronting American education today. All students have a right to high-quality instruction. Students in vocational courses, however, need special attention since the competitive strength of the nation depends on a skilled work force.

The ability of the country to keep pace with international competitors rests with the continued output of high-quality products and services. Decisions concerning vocational program initiation, modification, and continuation affect the quality and level of skill proficiency. Educational agencies must be clear on their expectations for vocational programs, courses, and students.

Statistics on enrollments, student career plans, and placements in business or industry provide relevant information for managing vocational education. Administrators at every educational level in the local districts as well as personnel in the Georgia State Department of Education, need to specify program goals and program success indicators. The model for planning and evaluating vocational education programs described in this document provides a conceptual framework for making program decisions at any level of education. The variables may be slightly different, or they may receive different emphases at the state rather than the local level. However, the indicators of need or indicators of benefit should be useful for data-based analysis purposes at either level. Factors affecting vocational instruction are dynamic and often subject to unanticipated change. Managers need a model for assessing such factors as student enrollment trends, community influences, and student achievement. The conceptual model presented in this document allows readers to examine educational processes, take note of outcome indicators, and respond to anticipated needs before they become imperatives.

Vocational supervisors and directors should find this model helpful in identifying courses to enhance students' employability or to teach basic skills for education after high school. The value of the model lies in its ability to focus attention on relevant areas for program improvement, such as the need to recruit students into appropriate programs--appropriate not only for the student, but for the job market as well.

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1. INTRODUCTION

This model began with a request from the Georgia Department of Education to develop a process model for planning and evaluating vocational education programs. The request grew out of an educational reform movement in Georgia that produced the Quality Based Education (QBE) Act of 1984 and a spirit of inquiry into new ways of delivering vocational education. Vocational education is commonly defined as organized programs, services, and activities which are directly related to the preparation of individuals for paid or unpaid employment, or for additional preparation for a career requiring other than a baccalaureate or advanced degree (Center for Education Statistics, p. 3, n.d.). This model is a response to the desire for high-quality vocational education. The model is predicated on a belief in the value of data-based management decisions.

The National Center drew on a long history of involvement in vocational education programming to develop this model. Chief among these activities was a data-based management approach created by Harold Starr (1986). This approach describes a method of using empirical data to improve planning and evaluation decisions. In particular, the outcomes index inherent in these methods allows comparisons among vocational programs and occupations. Antecedents of the outcomes index can be found in early reports from the National Center (Starr, Merz, and Zahniser 1982). Context, outcomes, and benefits elements can be found in these reports. Other National Center documents influencing the development of this model are the following: Brannon (1985); Campbell and Panzano (1985); Darcy (1979); Farley et al. (1985); Franchak (1983); McKinney (1985); and Stevenson (1979). Also, information was obtained from several states in an effort to assess the state-of-the-art practice in collecting planning and evaluation data.

Programs from four states--Illinois, North Carolina, Ohio, and Oregon--are summarized in chapter 2 of this document. The state programs were examined to gain insights into the best methods of program planning and development. The conceptual model presented on the following pages contains fundamental elements of planning and evaluation embedded in a flow chart of relationships and processes. These concepts are described in chapter 3. Chapter 4 contains applications of the model to vocational processes. Some of these applications are unique to Georgia. Finally, issues and unresolved problems associated with the use of

the model are summarized under the heading "Next Steps" in chapter 4.

Objectives

The objectives for this deliverable are as follows:

- o To develop a comprehensive vocational education program planning and evaluation conceptual model
- o To describe its application to vocational education in Georgia

The model described in this document is applicable to local, regional, and state levels of secondary vocational education. The focus of this report, however, is at the state level. The assumptions and values implicit in the model must be adopted statewide if the information gathered from local schools is to have meaning as aggregated data. Implicit in this model are two key elements: the outcomes index and on-site reviews. The index serves as a triggering device for on-site reviews. In that sense, the outcomes index monitors the quality of vocational programs annually in an accountability mode. The on-site review, on the other hand, examines processes associated with the management of secondary vocational education instructional programs. The on-site review is for program improvement of in-place programs or for review of new programs.

Procedures

The comprehensive process model was developed following a series of interviews with state department staff in Georgia, observation of a Dekalb County vocational programs evaluation, conversations with persons in other state departments of education, and a review of documents in the Educational Resources Information Center (ERIC). All of these activities contributed to the development of the model; however, the discussions with the Georgia staff were most helpful.

This comprehensive program planning and evaluation model is predicated on the following principles:

- o Excellence is achieved not by meeting minimum standards for compliance reviews, but by obtaining quality information for use by dedicated personnel to meet identified student and community needs.

- o The Georgia Department of Education plays a leadership role in vocational program improvement.
- o Program improvement site visits to local schools should be driven by program need, not by chronological time.

The following guidelines were used in the development of the model:

- o To the degree possible, data available from the planning and evaluation model should be compatible with the departmentwide GENESIS project.
- o Program improvement should be dynamic and driven by local strategic planning.
- o Recorded vocational program data, transmitted within the state, should be accurate, reliable, and easy to understand.
- o The time lag between the collection and report of data should be minimized.
- o Program performance indicators must be relevant to planning and evaluation indicators.
- o Data produced by the implemented model with its outcomes index and program improvement reviews must be accessible to those who need it.
- o Data on students, equipment, staff, and other variables must be in a form to be aggregated across classes to yield measures for programs.

These guidelines are based on characteristics of data desired by the Center for Education Statistics (1986). The characteristics of these data follow:

- o Accurate. Given access to the same information in the school district, different individuals should be able to provide the same data on the data request sheet.
- o Comparable. Concepts such as "program completers" should be comparable within schools and across school districts.
- o Timely. Data should be available when it is needed and in a form that facilitates its use.
- o Easily Obtained. Minimal respondent burden should be necessary to provide the information requested.

Two cautions are noted when using the model--

- o A time lag will occur between the time when suggestions for program improvements are made during the on-site review and the time-related changes show up in the outcomes index. The time lag will occur because process factors often are only indirectly related to program outcomes. For example, time is required to influence placement rates or performance skills.
- o The coding of the variables for the index may not always subscribe to orthodox measurement assumptions. For example, it may be necessary to code a basically dichotomous variable 1, 2, 3 in order to reflect a site history of compliance for the index formula or some other unique site situation.

Compliance Expectations

The advent of the Quality Based Education (QBE) Act raised expectations for high-quality vocational education in Georgia. Performance coupled with accountability seems to be the current emphasis in education. New performance standards are being written for all of education, and student mastery of competencies in core courses as a graduation requirement is desired.

Vocational education courses at the secondary level are receiving much the same treatment as other subjects at secondary and elementary levels. Standards are being written and funding is being placed on a schoolwide full-time equivalent (FTE) basis. The burden for planning specific vocational programs and courses will fall on local supervisors and teachers. Decisions to approve or modify these programs and courses will continue to be made by the state staff according to overall priorities in the state. This combination of local interests and state perspective must be nurtured to reflect equitable decision-making responsibilities. In this environment, a premium is placed on relevant, high quality data for planning and evaluating programs. State data managers have an excellent opportunity--and responsibility--to influence decisions with reality-based data. Of course, the data must be timely and in a form that can be used by appropriate persons. The collection, analysis, and transmission of evaluative data for managing vocational programs is one of the greatest needs of education in Georgia at the present time. Most of the responsibility for enforcing the requirements of QBE will fall on the Standards and Evaluation Division of the Georgia Department of Education.

At the federal level, the data requirements for compliance of vocational programs are still evolving following the demise of the

original Vocational Education Data System (VEDS). However, it appears likely the states will be asked to provide very little data. Public Law 98-524 no longer requires specific enrollment-based data, except for section 423 which is concerned with the access to vocational-technical education programs by handicapped secondary school students. Section 423 does require information on total handicapped enrollment by program at the 4-digit classification of Instructional Programs level, by type of instructional setting, and by type of handicapping condition. (A prudent state administrator would collect the same type of information for disadvantaged students as backup for surveys done by the National Assessment of Educational Progress.)

A pressing need at this time is for data definitions. No agreed-upon definitions exist. Without definitions, no meaningful data can be aggregated across state lines. An important clue to federal data needs may be found in the type of information being collected by the National Assessment of Vocational Education (NAVE), 1986. The NAVE study plan indicates an interest in a state's capacity to address the priorities identified in the Perkins Act. NAVE's studies will focus on special populations and on conditions affecting secondary and postsecondary vocational education. The nation's changing economic skill requirements remain a priority for all education and training systems. The mandate for the National Assessment calls for descriptions and evaluations of the following:

- o The vocational education services being delivered to special populations
- o The effects of the act on modernizing the nation's vocational education system and meeting the changing needs of the workplace
- o The resources required to meet adequately the nation's job training needs
- o The impact of vocational programs on the academic skills and employment opportunities of students
- o The coordination of vocational education programs with employment training and economic development opportunities in the states
- o The coordination of vocational education programs and services available for students who are handicapped or disadvantaged
- o The skill levels and occupational competencies developed by the states to assess their vocational education programs

- o The effectiveness of vocational education programs for individuals with limited English proficiency
- o The effectiveness of bilingual vocational and instructor training in meeting the needs of adults with limited English proficiency (see attachment A)

It appears that most of the national data needs will be met through on-going data collection activities of the Center for Educational Statistics such as the National Assessment of Educational Progress and the longitudinal studies. States have few obligations for providing enrollment data to Washington on a routine basis. In fact, compliance guidelines for the Carl D. Perkins Vocational Education Act have not been issued to date.

The proposed plan for Data on Vocational Education (DOVE), authorized by the Perkins Act, differs from VEDS in several ways. First, the system relies on sampling rather than surveying the providers of vocational education programs. Second, the national collection is no longer confined to using data collected by the states. Third, the new legislation gives wide discretion to the secretary of education in determining the scope, structure, and frequency of data collections.

The data needs of vocational education at the national level appear to be broadly defined in relationship to general education. Enhanced elementary and secondary common core data elements are being field tested in 10 states at the present time. These teacher and school surveys contain questions about vocational education. Following the administration of these questionnaires in 1988, student transcript data will be collected from the same schools in 1989. This nationally representative sample of teachers and schools will be considered the primary source of data on what students know and can do. Other sources of data nationally are surveys by the National Assessment of Educational Progress (NAEP) and the national longitudinal surveys. The NAEP surveys, in some cases, will allow data for states to be disaggregated and compared; however, this data is not likely to be present in sufficient quantity to meet state planning needs.

Data elements for determining baseline measures and the speed of progress toward educational goals are dependent upon the underlying values and vision for the populace of a state. With this in mind, the comprehensive planning and evaluation model put forth in this document has been constructed using the values and assumptions inherent in the Quality Based Education Act of 1984, the enabling legislation for public education in Georgia.

2. PROGRAM PLANNING AND EVALUATION ACTIVITIES IN OTHER STATES

State responses to the changing federal compliance requests have been varied. Some have placed more responsibility for planning and evaluation decisions at the local and district levels. Others have maintained strong centralized data collection and processing capabilities. Most have kept the Vocational Education Data System (VEDS) questions in one form or another. Responses to these questions have filled an information need in the states for accountability data. Four state planning and evaluation systems are described on the following pages. They are summarized in a table at the end of this chapter.

Illinois

The state board for vocational education in Illinois is midway in the process of implementing a new plan entitled Education for Employment. It will not be fully implemented until 1988, and it represents only the initial stage of a comprehensive planning and evaluation system. The goals of quality, efficiency, and expanded opportunity for students to enroll in vocational education drive this new plan. The plan features the identification of 61 regions in the state to serve as a support system to the 750 local high schools in Illinois. The existing nine vocational administrative districts are superimposed over these regions. Each district contains a state staff member who is responsible for vocational education. The staff member works with the regions within his or her district. These regions cut across school district lines and are the vehicles for planning and evaluating vocational education programs.

An advisory committee is appointed for each program in each region; with the advice of these committees, annual applications for new and existing programs are tentatively approved at the regional level. Over 100 programs are possible for approval, but each program can be classified into 1 of the 5 traditional service areas of agriculture, business, industrial, health, and home economics.

The use of site visits to review programs is in the pilot stage. Currently, a committee comprised of state staff, peer review teachers from neighboring regions and persons from the community spend time on site reviewing programs in each of the 61 regions. The regions are likely to experience these reviews on a 4-year cycle. Data on enrollment trends, costs, student satisfaction, employer satisfaction, and placement will be made available

to the site team prior to the visit. Assessment of student competencies is planned for employability skills and technical skills, but this assessment is not intended to be uniform for the entire state. This last point is consistent with the principle of local autonomy. There is no state curriculum in Illinois. However, the State Board of Education has supplied each of the regions with lists of tasks related to generalizable employability skills. A great deal of labor market information is made available to the 61 regions. Enrollment is interpreted by committees in the districts. Task lists for specific occupations are verified in each of the 61 regions by incumbent workers. Currently, these occupational task lists are then transformed into courses and vocational programs. New courses are determined by the regions based on labor market information, local verification of task lists, and student interest in the courses. There are no maximum or minimum enrollments for each class. This is determined by the local school district.

Records on student progress will be maintained at the local level and used by the region to plan courses. For example, each district defines the term program completers as students who have completed a sequence of courses in one or more vocational programs. Data on program completers are collected by the state office. The questionnaire is sent to the local region for a 6-month follow-up of local program completers. Disadvantaged, limited English proficiency, and handicapped students also are followed-up in the same manner. In the future, computers in the region will be used to transmit local data to a state-managed database. Also, a 3- to 5-year follow-up of program completers is in the planning stage. It is important for a state to have a comprehensive planning and evaluation system. Fragmented data can sometimes give misleading information. One of the primary uses of evaluative data on vocational programs is accountability to taxpayers as well as program planning.

North Carolina

The two increasingly influential factors in determining occupationally orientated vocational education programs in local schools in North Carolina are student demand and completer employment rates, as specified by the North Carolina General Assembly. Job skills courses now must be justified annually based on unemployment rates for the county for the latest 2 available years. These rates for 16- to 19-year-olds are determined by the Employment Security Commission from a formula supplied by their office in Atlanta, Georgia. The unemployment rates for the vocational job skills course completers for the last 2 available years must be lower than the youth unemployment rate for the county. Programs are allowed 2 years to phase out when no job need exists; cooperative programs may be maintained up to 3 years to increase their enrollment or redirect efforts due to duplication. The vocational program completer unemployment rate for the state is about 6 percent (higher for completers of special needs programs),

but the unemployment rate for youth statewide is more than double this rate.

Following a local control philosophy, local plans for vocational education programs are submitted to regional program coordinators for initial approval prior to formal approval by the state board. Applications for programs must meet the standards required by the 1985 General Assembly. These standards include a minimum of 3 programs per school and at least 12-18 students per class as interpreted by the Revised Vocational Education Program of Studies.

Vocational education in North Carolina is to be available to all students who desire it in the public schools as an integral part of the educational process. As in many other states, vocational education is defined as prevocational, introductory courses, consumer and homemaking, industrial arts, and preparation for advanced education, as well as skill development. Only the occupationally oriented courses are required to meet the youth unemployment rates of the county. However, cooperative vocational classes must meet special criteria. Eighty percent of the cooperative program completers¹ must be placed in occupations related to the content taught in the classroom. Twenty percent of the local educational agencies (LEAs) in each of the eight regions are randomly selected yearly to submit forms on the cooperative program to regional vocational coordinators. Follow-up of vocational job skills course completers is conducted annually by the state department of education in the spring. Local education agencies complete a paper form that is mailed to the state office. The state is moving toward an electronic network that allows data to be entered at the local education agency. Editing of programs should occur at the local level where students and classes can be followed-up.

Each vocational program is required to have an advisory committee comprised of employers and others who represent the occupational clusters and non job content within a program area. The number of members is determined by the size of the program within the local educational agency. A separate committee, a Vocational Education Improvement Council (VEIC) (Brannon 1985), functions within each LEA undergoing the federally mandated program review in the manner of a quality circle to provide input into the improvement and expansion of the 2-year local plan. The VEIC serves the complete local school administrative unit (LSAU). In addition, program area improvement task forces exist for each program area in the LSAU. The chairperson of each program area task force serves on the VEIC. Serving on this council are teachers, business representatives, and administrators.

¹Program completers are those students who have satisfactorily concluded at least a second course in a sequence of courses for a secondary vocational program.

The work of these local committees provides the primary basis for on-site reviews by state department staff and others. Most often these visits are invited by the locals. The visits usually are associated with the development of a new program or the review of a new teacher.

Vocational program reviews are scheduled once every 5 years, but these reviews focus on documentation of program improvement activities. The reviews are conducted by state staff by the mail and telephone. Generally, site visits for individual programs or teachers are not used for these reviews. Reviews usually consist of determining the congruence between data and the local improvement planning generated by the program area improvement task forces (by state staff program area specialists) and the local planning generated by the VEIC (by the regional coordinators).

Ohio

The Ohio Program for Improvement, Development, and Expansion (PRIDE) of vocational education features a centralized information system with interconnected linkages to other state agencies the Ohio Bureau of Employment Services, for example, orientation meetings for school district administrators in vocational planning districts are held in December as part of the Local Education Agency Plan (LEAP) process to plan for the next school year. The vocational planning districts are coterminous with the Department of Labor's Service Delivery Areas to facilitate use of labor market information. In January of each year, local district administrators submit a plan for vocational programs to be offered in the fall of the next school year. This plan and the subsequent reimbursement of the programs are adjusted to actual class enrollments. The PRIDE and the LEAP processes complement one another for program improvement purposes.

The PRIDE process is conducted in each school district every 5 years. The review schedule is known many years in advance. The district appoints a self-review committee community comprised of educators, community members, and others to examine a vocational program's curriculum, instructional process, facilities, equipment, staff, and assessment of students. Former students and employers are included among this local self-review committee. This committee's recommendations are read and commented on by a state supervisor. The supervisor makes a visit to the school, advises the teacher and district administrator of the changes needed, and files a report with the state board and the school district. A district has 5 years to make up deficiencies in programs without loss of reimbursement. Currently, Ohio reimburses for 12 vocational program fields, including adult vocational education, at the secondary level. All of the program fields in one district receive visits from state staff during the one week of review. This contains any disruption to one week during a 5 year period.

Programs must meet strict guidelines to qualify for cost reimbursement. These can be no more than 25 but at least 15 students in each junior class. Enrollments are sometimes relaxed for seniors. Programs must have at least 60 percent placement of program completers² in related occupations, and an unemployment rate of program completers that is at least 10 percent better than the prevailing employment rate for youth aged 16-21. For example, if the unemployment rate is 19 percent, then the allowable number of unemployed vocational program completers would be no more than 10.9 percent. Graduates who are going on to postsecondary education or military service, or those who are looking for work are excluded from the computation of these statistics. The Ohio standards also tie the availability of vocational programs to the percentage of graduates entering college or degree-granting high education programs. As the percentage of college enrollments increases, the percentage of students enrolled in vocational education is allowed to decrease. Local school districts that fail to meet the program completers placement criteria are allowed 3 years to improve their performance.

Programs are initiated on anticipated demand in an area. There must be a need for 25 workers in an occupation per year in order to offer a program. Districts may either conduct their own surveys to establish this number or accept the Department of Labor's statistics. Another approach used is an agreement between two contiguous districts to combine their employment needs, allowing one district to offer the program.

Questionnaires are mailed by the state department of education to collect 1-year and 5-year follow-up information. Machine readable forms were considered and rejected because of problems with accuracy. Respondents had difficulty completing the forms. Currently, school-based data are filled in on program completers by district administrators, one form per class. The form is transmitted to the state department where it is keypunched into magnetic tape and prepared for analysis.

The strong centralized accounting procedures allow easy access to records for state accountability and planning purposes. The relatively strict guidelines for reimbursement may tend to limit local offerings of creative programs except for experimental pilot activities.

Oregon

The Planning for Progress vocational education planning and evaluating documents developed by Oregon State University in 1981 have been used with success by local school districts; however, budget constraints at the state level have forced changes. This

²A program completer is a student who has successfully completed a series of classes in at least one program area.

process took 6 months of lead time at a cost of approximately \$3,000 per medium-sized district. Currently, some local districts are continuing this process as members of the Alliance for Program Improvement at Oregon State University. New procedures for program reviews have been scaled down to fit available resources. The Planning for Progress procedures are not required by the Oregon Department of Education.

Current procedures call for periodic reviews of program goals, processes, and outputs in one of 16 regions. The Office of Civil Rights (OCR) reviews and the program planning reviews occur at the same time. Three sequential meetings are held. The first is a meeting between the state department representative and the regional coordinator. The second involves a meeting with the state department representative and a team of representatives from the respective secondary school district. Usually, this team is comprised of an administrator, an instructor, and an advisory council member. Records from the school are reviewed, and decisions are made on program options; final approval of programs is reserved for the state staff. It usually takes 6-8 weeks between the two meetings. The reviews occur once every 5 years for each school. The third meeting is held upon completion of the evaluation to review findings and discuss planned activities to strengthen program operations. The same district teams are involved in the last two meetings.

Programs are approved based on the match with labor market data. These data most often come from the state for the standard 18 cluster areas or from local surveys for experimental programs. One occupational database in the Employment Security Office serves needs in vocational education, Job Training Partnership Act (JTPA) programs, the Department of Economic Development, vocational rehabilitation, and other areas.

Reimbursement of program costs are based on a weighted student credit hour. That is, a weighted student equals one student for 1 year for 2 hours a day. Most of the vocational classes are offered for 2 hours a day, 5 days a week. exceptions, such as a student who takes only one semester of the class would receive a 0.5 weighted credit. Cooperative program students receive an additional 0.5 credit per year; 0.5 credit also is given for participation in youth organization activities. Therefore, it would be possible for a vocational student to earn two credits per year if he or she were in a co-op program and active in a student organization. Student records are completed on forms at the local school and mailed to the state office to be processed. Larger districts transmit student records on data tapes. This accounts for approximately one-third of the records at this time.

Advisory councils are required for each program in the school district. They play an active role in the design and implementation of the skill development programs. Coordination with postsecondary institutional programs are encouraged; this articulation is indicated in the local plans. Program variations are

approved on an as needed basis. Variations seem to be tending toward shorter-term programs due to problems in scheduling two-period classes.

In addition to the program planning reviews, a team of state staff reviews assurances and reports, and if problems are detected, visits the school district to determine if the school is in compliance with state standards. Vocational education state staff serve with others in this compliance audit.

Formerly, students were followed up during the first 6 months following graduation, 3 years after graduation, and in a longitudinal data base. The 3-year study and the longitudinal surveys used samples of students. The samples were usually too small to be used in a reliable manner. The limited budget, limited time, and the diversity of the districts--geographic location and size--tended to work against the collection of reliable data. The follow-up surveys other than the 6-month study were discontinued due to lack of funds. The follow-up surveys were conducted by the local school district using state forms. A nominal grant to the local district allowed staff to invest time in finding out what happened to students. This normally resulted in a higher percentage of returns than forms mailed from the state office. Although the amount of data being collected for program planning and evaluation purposes in Oregon at the present time is less than a few years ago, the programs are better coordinated than they have been due to the activity at the district level. More versatility is also provided in the data as machine-scoring increases.

Summary

A cursory review of data collection forms from these states and others shows a number of 1986 and 1987 publication dates. Many states are changing their data collection procedures to take advantage of new information processing technology and the flexibility allowed under the Perkins legislation for meeting data needs. Florida, for example, has developed a computer-based student follow-up network for transmitting information from local districts to the state department of education. As much as one-third of the data is transmitted electronically. States are moving toward the student full-time equivalent (FTE) indicator as a measure for reimbursing the cost of a vocational program. Others, such as Arkansas, are going to a student credit hour indicator for reimbursement. This freedom to plan is placing more and more responsibility at the local level. As these measurement systems develop, it is becoming increasingly clear that states are using cost containment as one of several criteria for evaluating vocational programs.

These four states represent different approaches to planning and evaluation decisions in vocational education. They are geographically distributed throughout the country. The following

table lists selected features of these planning and evaluation systems.

Despite a common definition for a vocational education program, the states have elected to apply this definition differently. Oregon and Illinois, for example, are building programs around families of occupations. Ohio and North Carolina, on the other hand, have tended to expend the number of program offerings.

All states require an advisory council for local programs. In most cases this is one council for each vocational program. The councils are viewed as a primary means of ensuring that the skill-training courses are relevant to the employment needs of the communities. In a few cases, the councils operate at a regional level and offer advice about the needs of programs across school districts within their region.

Requirements for minimum and maximum student enrollments in courses are left up to the local districts in Illinois. Ohio and North Carolina require minimums in vocational classes; however, these may be relaxed somewhat for senior classes.

Consistently, states are requiring labor market data to justify job skill programs. Sometimes these data may be collected locally among employers to indicate the need for a new program, but more often they come from employment security offices at the district level. Of course, the number of program graduates placed in related occupations is the ultimate indicator for job skill course continuation. Other placements, such as military service and advanced schooling, are counted as successful placements for a course. Typically, school districts have up to three years to improve their placement rates.

Site visits by outside review teams continue to occur. The frequency of team visits varies somewhat, but consistent with the Perkins Act, most school districts receive a visit at least once every five years. The direction of change, however, is toward fewer site visits. In Illinois, the site visit occurs at the district level when advisory committee are formed for rural, less populated sections of the state. There must be a need for a visit before one is made in North Carolina or Oregon. In Ohio, the visit is done by one supervisor for each of the vocational programs. As information on local school programs becomes more available, routine site visits will be fewer.

The states contacted were all following up their program completers within the year following graduation. Sometimes this occurred in the fall; most often it was late winter before the forms were returned and summarized. Ohio sends this survey by mail from the state office directly to the program completers. Other states, such as Illinois, rely on local school officials to maintain contact with students after they graduate from high school. The reasoning seems to be that school officials closer to

TABLE 1

SELECTED FEATURES OF VOCATIONAL PROGRAM PLANNING AND EVALUATION SYSTEMS IN FOUR STATES

System Characteristics	Illinois	North Carolina	Ohio	Oregon
Number of vocational programs	100 plus programs in five areas based on occupations	8	12	18 clusters
Use of advisory committees	Yes	Yes	Yes	Yes
Min-Max student enrollment for existing programs	None	12-18	15-25	None
Criteria for starting new programs	Labor market demand, local verification of need, student interest	Student demand and/or labor market demand (there must be three programs per school)	Annual demand for 25 persons in the occupation	Labor market and student interest
Time allowed for redirection (in years)	Determined by local planning committee	2-3	3-5	60 day follow through plus up-to-1 year for correction
Use of site visits	Yes	Yes, when need is demonstrated	Yes	None, other than the standards visit
Site visit personnel	State staff and peers as needed	Regional coordinator and others as necessary	State supervisor	State supervisor, local administrator, teacher, and advisory council member at the district meeting
Vocational student follow-up	1 year	1 year	1 year and 5 years	1 year

the student are in the best position to find out what he or she is doing after graduation.

3. DESCRIPTION OF THE CONCEPTUAL MODEL

This chapter contains the assumptions of the model, and a brief review of the main headings in the model.

Assumptions of the Model

This model contains categories of variables intended to represent major elements of a program planning and evaluation process. It is conceptual in nature; the items within the categories are exemplars of the major headings. The concepts at all levels of specificity represent variables to be measured or addressed at some point in the implementation of the model. The following assumptions provide a frame of reference for the model:

- o Program improvement is a responsibility of vocational educators at all levels, but educators in local schools bear primary responsibility because education is fundamentally a local enterprise.
- o Decisions to start, stop, or modify vocational programs should be data-based and related to the goals of the educational agency.
- o The Georgia Department of Education has a mandated responsibility for compliance reviews.
- o Annual data from local schools provide an opportunity for continuous monitoring of quality indicators.
- o Once available, data on programs may be used for multiple purposes.

Program evaluation occupies center stage in this document because of the QBE emphasis on quality and accountability in education. Standards for vocational education are being revised and developed at the present time in Georgia. State staff need to identify variables useful for evaluating vocational programs. Performance indicators for students and programs must be quantifiable and verifiable for use in the outcomes index. Current expectations call for this information to be made available to program reviewers prior to program improvement site visits. All of the programs would be reviewed approximately once every five years.

The planning and evaluation model described in this report identifies some of the variables to be examined by the site team during their visit. The variables in the model also represent candidates for the outcomes index.

The site team visits are expected to dwell on program improvement activities. Most likely these visits will focus on educational processes necessary to the development and operation of a high quality vocational program. Some of the processes are student counseling associated with enrollment in vocational courses, curriculum development and improvement, and follow-up of vocational program completers.

A self study report would be developed prior to the site team visit. This report would document, among other factors, the needs in the community for vocational program completers. Activities leading to the planning and development of local vocational programs should have preceded the self study. The active involvement of advisory councils, for example, can be extremely useful in specifying the needs in a community.

Some of the same variables in the model can be used for planning and/or evaluation activities. The participation of program completers in the labor force, for example, provides valuable feedback on the use of occupational skills acquired in the courses, and it reflects the availability of occupational openings in the community--an important planning variable. Local planning committees, such as the ones currently operating in North Carolina, should be used to anticipate needs of students and employers.

The vocational education program planning and evaluation model illustrated in figure 1 contains process and product variables. It includes context and needs factors. These broadly based concepts can be applied at the state, regional, or local education levels. Factors such as the diversity of local education agencies make application of the model more difficult at the state level than at the local level. The question of model application will be addressed in the next chapter of this report. Although this project concerns itself primarily with state-level planning and evaluation, the model has applications at the local level.

The four major elements of the model--needs assessment, context review, process components, and product outcomes--correspond approximately to the classes of variables in the outcomes index--employment context, educational process, outputs, outcomes, and benefits. Elements in the model form categories for variables likely to be selected as indicators in the index. Quality Based Education (QBE) standards and compliance expectations of the Perkins legislation represent influences acting upon educational

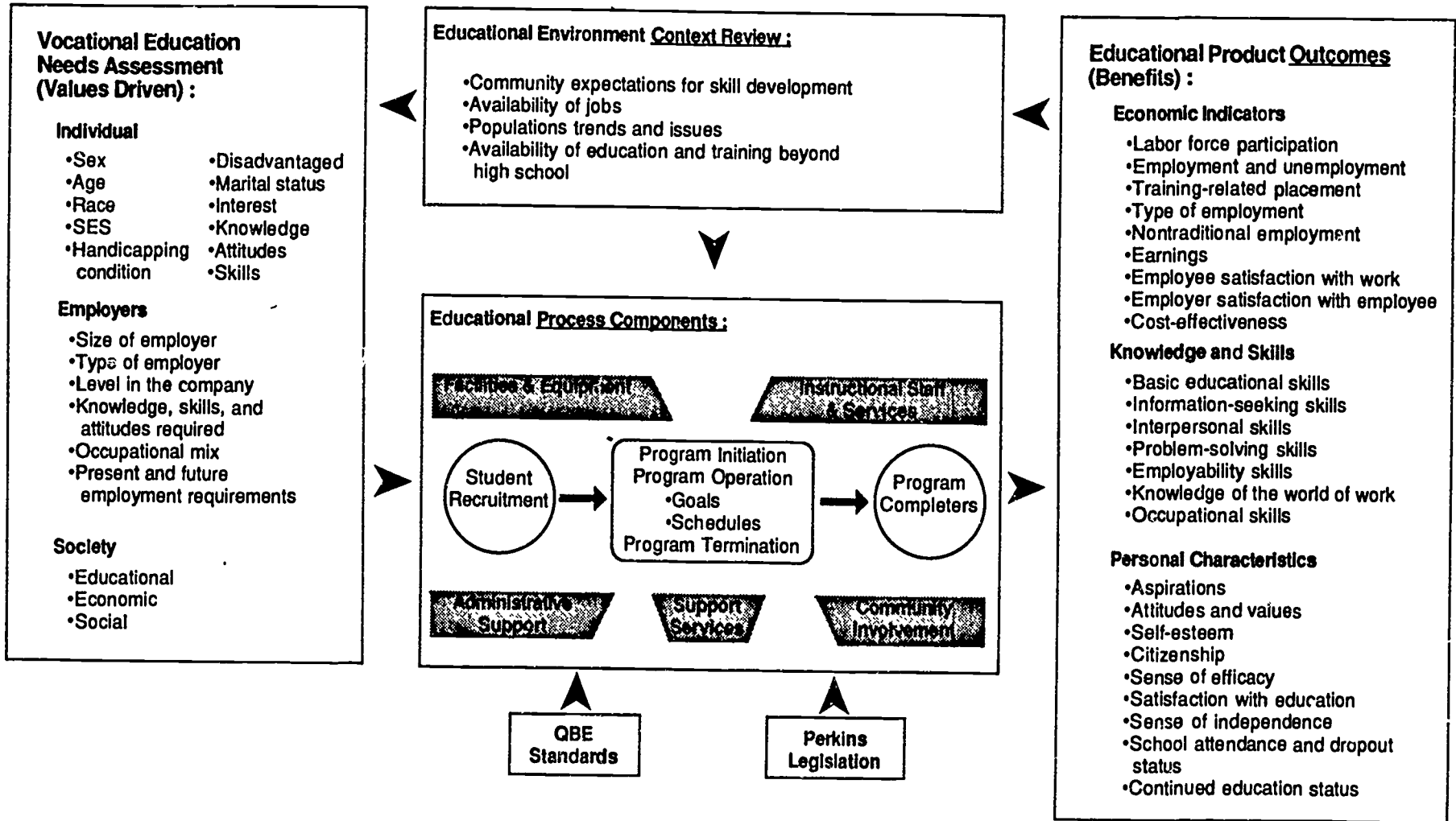


Figure 1. Program planning and evaluation conceptual model

processes at all levels. The major elements of the model are intended to portray a self-renewing system with processes designed to support the flow of information to decision makers.

Process data, such as information about employers, can be used to assess needs in the local community. Not only can future employment requirements be estimated, but the size and type of business can be noted as information for curriculum changes in the classroom. Other process data bearing on the issue of program development are population trends in the community; the availability of education and training beyond high school; and the availability of facilities, equipment, and instructional staff. Product data most often relate to students. Data on students' knowledge, interests, and attitudes are helpful when counseling them to enroll in specific vocational courses. Data on students' knowledge, attitudes, and skills acquired in the vocational classes are indispensable to program evaluation. The educational product outcomes category in the model also contains personal characteristics of the student; these variables greatly influence the acquisition of skills for the workplace. The economic indicators in the outcomes category are product-related measures of vocational education, but they are one step removed from direct measurement of student skills. The economic indicators are influenced by such factors as the opportunity for employment in the area.

Elements of the Model

Needs assessment is essential to sound program planning and evaluation. It affects the decision to offer new classes and how these classes relate to employment opportunities. A valid assessment can identify youth and adults in need of vocational education. It can pinpoint knowledge and skills to be taught and suggest ways of teaching these students.

A context review can help identify community expectations for skill development. Some communities, for example, send a higher percentage of their graduates to postsecondary education than others. Out-migration of population or a sudden influx of new businesses can change the need for specific skill instruction dramatically .

Process components of the educational system can make or break vocational programs. Administrative support for state-of-the-art equipment can result in graduates with competitive skills for good jobs. Not every program completer wants a job; many will want to continue his or her education. The quality of the programs taken in high school influences the ease of transition into postsecondary education. Guidance and counseling of students for vocational education continues to be one of the most important

support services in the schools. Placement services are another important area for support service improvement in vocational education.

The portions of the model that focus on student recruitment and program completers deserve special attention. The students to be recruited should be those who can benefit most from vocational instruction, for example, academically talented students who need to explore career fields prior to making choices for postsecondary education. Mentally handicapped students who may be suffering a learning disorder are also included in this group. These students may need tangible feedback experienced through learning by doing. Recruitment of students requires coordinated effort among vocational teachers, administrators, and guidance counselors. The program completers portion documents the quality of the instructional experience. Are students taking a series of courses in a particular program area? Why are students not completing courses? Are they leaving to take jobs? Are they leaving because the classes are not satisfying to them or their parents? The questions need to be addressed if program planning is to be effective in meeting the needs of employers, students, and the community.

Although teacher education and reeducation are not central in this model, teachers can significantly influence the success of vocational programs. The teacher, as manager of the instructional process, has the final word on activities provided for instruction. A teacher who is current on workplace requirements can help students prepare for needed skills and available employment opportunities.

Similarly, parents have a great deal to do with the quality of vocational education provided by the schools. If funds are available, the chances of conducting a high-quality program are better than in poverty-stricken districts. An active involvement of advisory council members and community groups can support productive educational activities.

Quality Based Education legislation in Georgia and the Carl D. Perkins Vocational Education Act at the national level have stimulated rethinking about how to deliver programs. Fifty-seven percent of the basic state grant from the Perkins Act goes to special needs programs in the states. Quality Based Education is resulting in a core curriculum that is likely to have the effect of increasing graduation requirements at the secondary level.

It is no wonder, then, that educational product outcomes received major attention in the model. Student knowledge and skills must be assessed in order to know the effectiveness of vocational programs. This information must be related to the characteristics of students coming into the program as well as the

ones exiting the program, either as program leavers or as program completers. The success of graduates in the market place is influenced by a number of other factors already mentioned by discussions of the context category. Such success indicators must be applied judiciously in the evaluation of vocational programs.

4. APPLICATIONS OF THE CONCEPTUAL MODEL TO VOCATIONAL EDUCATION

Throughout this report, elements of planning and evaluation of vocational education programs have been discussed in various contexts. This section of the report will focus on common processes necessary to the operation of a vocational program. These processes deal with serving populations, scheduling classes, initiating courses, testing students, and validating programs. Next, a few thoughts are offered on implementation of the model. The report closes with "next step" questions.

Local Program Questions

The following selected questions are directly related to local program operations. Nevertheless, it is the need for excellence at this level that should influence state program improvement initiatives. The questions probably tend to be more relevant to planning decisions than evaluation, but data from one activity are used by the other.

Whom Should Vocational Education Serve?

The advent of Quality Based Education and the Carl D. Perkins Vocational Education Act has put in focus the need for quality education with particular reference--in the case of the Perkins act--to special needs groups. The conceptual model described in this document suggests variables for planning and evaluation considerations. For example, if a school district has targeted dropout prevention as a goal for the district, this model's characteristics of individuals may be useful in identifying students who are likely to drop out of school. If a district is interested in upgrading literacy training among adults, these same characteristics may be used to identify prospective adults for day and evening school classes. Significantly, one of the factors in the Virginia Polytechnic Institute study of vocational enrollment patterns was adult enrollment in secondary daytime vocational education programs (Frantz, Strickland, and Elson 1986). Displaced homemakers were present in many of the programs that reported increased vocational enrollment.

How Should Classes be Scheduled?

Increased graduation requirements have placed pressure on students who are trying to schedule two-period vocational classes. One of the very difficult problems that must be faced by a school administration is the need to schedule adequate time for students to get their work done in laboratory classes. This may lead to the more fundamental question of what job skills courses can be taught at the high school level and what courses must be taught as postsecondary instruction? A school district must make some basic decisions on what training it will offer. The role of an advisory committee from the community can be invaluable in assessing the need for skill development. The availability of education and training beyond high school may help to decide this question.

What Courses Should be Offered?

Community expectations for skill development and the availability of jobs also will influence the variables for the outcomes index used to evaluate the effectiveness of vocational programs at a given location. Low scores on the index could suggest the need for new programs or improved instruction.

Secondary schools are decreasing their emphasis on skill development and have begun to offer more technology-based courses. These courses are adaptable to single-period classes. However, care must be taken that vocational education does not become so general and basic that the students fail to connect the competencies taught in class to work skills.

What Achievement Tests Should be Used?

The availability of student occupational competency achievement tests raises the possibility of using these tests to measure student progress toward occupational objectives. The tests can be administered in such a way as to protect the confidentiality of the student. Regional Education Service Agencies may or may not play a role in the administration and data processing of these tests. Generally, more control can be exercised over data processing activities and the accuracy of results if this operation were to be centralized.

Traditionally, educators have been reluctant to use achievement tests to compare programs in schools or to compare similar programs from school to school. The following are some of the reasons for this reluctance:

- o The characteristics of some programs make comparisons difficult. For example, the differences between cosmetology and auto body work are so great that there are few measures common to both areas.
- o The lack of standardization in schools and programs mitigates against valid comparisons of outputs. One program may have an excellent reputation, so the students entering that program bring with them an aptitude for learning; another program in another location may not be so fortunate. Any comparison of programs must be accompanied by sufficient analysis to control for major sources of variation.
- o The results of achievement tests, once completed and identified with a school, have a tendency to become public knowledge. Even if the privacy of individual student scores could be protected, average achievement levels of classes or programs could be politically damaging to the teacher and the school staff if the results were made public. The notion of a public "report card" has not been acceptable in the past to governors, superintendents, and principals.

Nevertheless, the technology exists for schools or states to collect achievement data on occupational programs. The National Occupational Testing Institute (NOCTI) in Big Rapids, Michigan, maintains a battery of Student Occupational Competency Achievement Tests (SOCAT) for approximately 35 programs of vocational education at the secondary and postsecondary levels. Some states are using them to assess student skill proficiency and to award certificates to students. The tests are adjusted for readability and contain a performance section as well as a written section. Students must be able to demonstrate practical knowledge of skills as well as pass a written test of competency.

How Should Industry be Involved in the Validation of Programs?

Industry validation for selected programs exists in the Trade and Industries (T&I) program field. The National Automobile Technicians Foundation (NATF) certifies high school programs in auto mechanics in eight speciality areas. A school must pass the review in three of the eight areas for a program to be certified. The capacity of the program to offer training is measured by (1) looking at the instructor's qualifications, (2) inspecting the equipment, and (3) examining the curriculum. Teams of three-five industry persons conduct the inspection over a 3-day period. Included in this review are conversations with employers of program graduates.

There were 10 schools enrolled in this pilot program in Georgia in 1986; 4 earned certification. The program is completely voluntary. A similar validation activity is being developed in construction trades and the area of graphic arts in 1987. These types of validations offer the promise of better industry-related reviews in the future than have existed in the past for those vocational programs producing entry-level occupational graduates.

Implementation of the Model

There are many decisions to be made concerning the implementation of this conceptual model. Not the least of these decisions is the trade-off between program reviews and site visits. Economies of scale dictate a review of all programs when a program improvement team is on site. However, the visit may be triggered by low scores on outcome index indicators for one program. Exactly how this problem will be resolved is uncertain at this time. There are several options, for example-

- o program reviews may be conducted as the need arises
- o program reviews may be held in abeyance until site visits to school districts can be scheduled
- o the outcomes index results may be treated as information only to be used in concert with other program improvement activities.

The choice of options will be made by the Georgia Department of Education and will be based on results from the pilot test of the model, the degree of disruption a local district is willing to tolerate, and other factors.

There are several other "choice points" in implementing this model. A few are listed below:

- o At what level should the data be collected? The sample unit should be determined by the need for information. For example, if gain scores for student achievement are needed, data on individual students are required. On the other hand, many program management questions can be addressed using averages from a class.
- o Should all data come from a management information system? Typically, MIS data are collected routinely, using systematic processes, at minimum expense. Should information for program planning be limited to readily quantifiable information? If the answer is no, then arrangements for using data from other sources need to be made.

- o How should the data be transmitted from local districts to regional agencies and the state? The question of who should input the data into computers, at what location and how frequently must be addressed. Project GENESIS contains plans for terminals to be located in every school district in the state; however, a data collection system is needed prior to completion of Project GENESIS. An interim strategy for transporting data must be formulated.

Ultimately, data from all school districts must be comparable, collected and processed at the least expense to the taxpayer.

In general, when implementing innovations, it is better to do the following:

- o Think broadly and creatively before delimiting the implementation plan
- o Proceed from the known to the unknown
- o Start small and expand as the interest and capability of participants grow
- o Build on the strengths of the existing system

Next Steps

This document is the first of a series to be developed in support of a comprehensive planning and evaluation system for vocational education in Georgia. Others will deal with the development of an outcomes index to be used in a desktop audit of programs, revision of on-site review questions and procedures, collection of data for the outcomes index, and an implementation plan and workshop. There are several questions that remain to be addressed in these documents. All of these questions will not necessarily be resolved during this project, but they bear on the quality of vocational education in Georgia. A partial list of these questions follows:

- o What public information is needed about the quality of vocational programs?
- o Do we need an Educational Development Plan (EDP) for each vocational student?
- o What contribution is secondary vocational education making to adult retraining for jobs?

- o How are basic skills being provided to vocational students?
- o What are the common data needs between secondary and postsecondary vocational education?
- o To what degree should the vocational education planning and evaluation data interface with project GENESIS?
- o How can consumer-orientated evaluation reports be written?
- o What are the necessary interface relationships between the public schools and JTPA service delivery area?
- o How can comparison data with nonvocational students be obtained?
- o When should data be collected from the schools?

These questions and others will be addressed in future documents produced by this project.

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