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ABSTRACT

Volume 1 of the report, covering the period July 1, 1974 to December 31, 1975, describes project goals, phases of operation, procedures followed, and results. Three planning and development districts in Appalachia were involved: Tennessee, North Carolina, and Virginia (encompassing an 18 county area). Three principal project goals were: (1) to develop a model regional information system for vocational technical education, (2) to test that model, and (3) to determine the feasibility of regional research and development efforts for information systems in terms of sharing information across political and geographic boundaries, range and scope of information requests, and problems in tracking manpower. Phases of operation included development of information files, user inservice training, system operation, and system evaluation. Results of a 57-item needs assessment questionnaire given to 40 administrators (with 36 responding) are discussed, while a data collection section reports on the sources used and variables considered. Twenty-five administrators, participants in a two-day workshop, evaluated the model, concluding that the Regional Information System offers great potential as a planning tool for vocational-technical education. Rankings are presented in tabular form. Further implementation considerations and recommendations are discussed. (MW)

FINAL REPORT

Project No. V0116VZ
Grant No. OEG-0-74-1747

DEVELOPMENT AND IMPLEMENTATION OF A MODEL REGIONAL INFORMATION SYSTEM FOR VOCATIONAL-TECHNICAL EDUCATION

Volume I of II Volumes

Research Project in Vocational Education
Conducted Under
Part C of Public Law 90-576

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January 1976

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SUMMARY OF THE REPORT

Time Period Covered

The final report of the project covers the period from July 1, 1974 to December 31, 1975.

Goals and Objectives of the Project

The project had three principal and 14 subordinate objectives as follows:

1. To develop a model regional information system for vocational-technical education.
   a. To identify specific components of a regional information system needed by vocational education clientele for decision-making purposes;
   b. To identify space requirements and alternative hardware and software components of a regional information system;
   c. To determine size and composition of staff needed to operate a regional information system;
   d. To identify feedback and evaluation criteria needed to keep the regional information system viable;
   e. To develop time and cost-sharing guidelines to optimize utilization of the information bases;
   f. To determine transportability of various components to different regions throughout the U. S.;
   g. To determine the optimum mix of input-output devices that will maximize information utilization.
2. To test a regional information system for vocational-technical education.
   a. To establish preliminary editions of essential data and information bases;
   b. To determine the form, style and content of a user's guide to facilitate accessing information in the system;
   c. To determine the feasibility of fixed versus mobile access points for the regional information system (number, type and location);
   d. To conduct in-service training for potential users of the regional information system.

3. To determine the feasibility of regional research and development efforts for information systems in terms of:

   a. Sharing of specific and generalized information across political and geographic boundaries;

   b. Range and scope of information requests from various user groups;

   c. Problems encountered in tracking migration of trained manpower across various geographic and political boundaries.

Phases of Operation

Four primary phases of operation were stated for the total project. They included:

Phase 1 - Development of Information Files
Phase 2 - In-service Training for Users
Phase 3 - Operation of System
Phase 4 - Evaluation of System

Phase 1 was originally scheduled to be completed by December 31, 1975. Development and evaluation of the model were completed during this time.

Procedures Followed

Three planning and development districts were chosen as the target site for developing the model; namely, First Tennessee-Virginia, Mountain Scenic; and Lenowisco. This region included 18 counties in three states including the following:

Tennessee	-	Hancock, Hawkins, Greene, Sullivan, Washington, Carter, Unicoi, Johnson;
North Carolina	-	Yancey, Mitchell, Avery, Watauga, Ashe, Alleghany, Wilkes; and
Virginia	-	Lee, Scott, Wise.

A mission profile was developed for the project encompassing selection of target area, development of objectives, identification of appropriate agencies and personnel to be contacted, needs assessment, component selection and development, data collection, file and program development, hardware/software requirements, space/staffing requirements, training program for users, documentation related to the project, system implementation, and dissemination/evaluation.

Meetings were held in February and March, 1975 with the directors and clientele of the three educational cooperatives located in the region. The proposed model was explained and cooperation enlisted from

administrators and vocational directors in the target area. It was assumed that interest in such a system would probably increase by involving those persons likely to use it.

In March, 1975 a 57-item questionnaire was given to the 40 administrators in the target counties. They were asked to indicate on a five-point scale the extent of use given to various information sources and to designate the areas in which current information was desired. Thirty-six responses were returned by 22 superintendents, 9 vocational directors, and 5 program planners.

Data collection was accomplished by conferring with personnel in the three planning and development districts; educational cooperatives; research coordinating units of the three states involved, employment security offices; the Tennessee Valley Authority; the Center for Business and Economic Research and the Bureau of Educational Research and Service, The University of Tennessee; departments of education in the states involved; the Bureau of Vital Statistics; the Tennessee State Department of Economic and Community Development and the Tennessee State Advisory Council for Vocational-Technical Education.

The existing Tennessee Management Information System (TMIS) data bases were stripped to secure appropriate data for developing student, personnel, and manpower supply components. Demand data were procured from the Center for Business and Economic Research, The University of Tennessee.

The following components were developed for the model:

Student File
Personnel File
Selected Data by County
Occupational Demand
Cost Projections for Vocational Programs
Sources of Occupational Training
Evaluation of Vocational Programs by Secondary and Area Vocational Graduates
Employment Status of Secondary and Area Vocational-Technical School Graduates
Evaluation of Employment by Secondary and Area Vocational-Technical School Graduates
Vocational Guidance
Career Education

The following non-computer-based hard copy was prepared for use with the system:

Equipment and Facilities
Rules and Regulations for Vocational-Technical Education
Individual and composite data packs for counties in the target area

On November 11 and 12, a workshop was held at the Upper East Tennessee Educational Cooperative to demonstrate the model. Approximately 30 administrators from the three development districts participated. After completing the workshop activities, participants evaluated the model.

In December, guidelines were developed for space, hardware, and software requirements. Staffing, feedback, and evaluation criteria requirements were also identified. The transportability of the system was studied as well as the feasibility of maintaining fixed and/or mobile access sites.

Results and Accomplishments

1. Eleven computer-based components for the model system.
2. Non-computer-based hard copy including equipment and facilities, rules and regulations for vocational-technical education, county data packs, and a composite data pack for one development and planning district.
3. Guidelines for staffing, space, hardware, and software requirements.
4. Guidelines for feedback/evaluation criteria and time/cost sharing.
5. Determination of the transportability and accessibility of the system.
6. Guidelines for a user's manual.
7. Recommendations for developing a Regional Information System based on the model.

Overview

The model Regional Information System was transportable, a factor which made the system economically feasible for local education systems by virtue of cost and time sharing. Its network of information, initiated at a Central Processing Unit (CPU), provided for the interchange of computerized information between Local Education Agencies (LEA's) and Development Districts (DD's).

Originally envisioned as focusing only on manpower demand and supply information, the model Regional Information System also provided other program planning information which administrators considered essential for developing effective vocational-technical education programs. In-service education to instruct users in efficient use of the system and an evaluation process designed to provide periodic feedback from users for revising and updating information were considered vital to the creation and maintenance of an effective Regional Information System.

b. To identify space requirements and alternative hardware and software components of a regional information system;

c. To determine size and composition of staff needed to operate a regional information system;

d. To identify feedback and evaluation criteria needed to keep the regional information system viable;

e. To develop time and cost-sharing guidelines to optimize utilization of the information bases;

f. To determine transportability of various components to different regions throughout the U. S.;

g. To determine the optimum mix of input-output devices that will maximize information utilization.

2. To test a regional information system for vocational-technical education.

a. To establish preliminary editions of essential data and information bases;

b. To determine the form, style and content of user's guide to facilitate accessing information in the system;

c. To determine the feasibility of fixed versus mobile access points for the regional information system (number, type and location);

d. To conduct in-service training for potential users of the regional information system;

3. To determine the feasibility of regional research and development efforts for information systems in terms of:

a. Sharing of specific and generalized information across political and geographic boundaries;

b. Range and scope of information requests from various user groups;

c. Problems encountered in tracking migration of trained manpower across various geographic and political boundaries.

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METHODOLOGY

I. SITE SELECTION

Three development and planning districts encompassing 7,272 square miles and having common boundaries were chosen for the target area; namely, First Tennessee-Virginia; Lenowisco, Virginia; and Mountain Scenic, North Carolina. Travel to each of the planning districts required approximately one day's time, thereby making the site feasible from the standpoint of accessibility.

According to the 1970 Census, population in the region was approximately 654,466. Outmigration, decreasing in the First Tennessee and Mountain Scenic districts, was on the increase in Lenowisco.

Transportation problems were prevalent in the Appalachian region due to the rugged mountains, ridges, lowlands, and valleys. The narrow, winding roads of the massive rural areas created barriers for achieving improvements in housing, health, industry, employment, and communications.

The major forms of employment in the First Tennessee-Virginia district were manufacturing and wholesale/retail trade. Mining and agriculture led as sources of employment for the residents of Lenowisco. In the Mountain Scenic region, workers were numerous in the textile, lumber, and furniture industries. Farming was on the decrease in all parts of the region.

In the Tennessee-Virginia district, the number of persons having no formal education decreased by approximately 27 percent over the last decade. However, Lenowisco had an average adult educational level slightly over eight years, and only 38 percent of the Mountain Scenic population were high school graduates.

The target site was chosen because of a priority need to increase the educational level and improve employment opportunities. By virtue of its accessibility and common boundaries, the region provided an opportunitiy to develop an effective model for cooperative program planning.

II. NEEDS ASSESSMENT QUESTIONNAIRES

Planning was initiated through the educational cooperatives in the region. In order to develop the most effective model, those educators likely to use it and affected by it were involved in the planning.

A 57-item questionnaire was developed for superintendents, vocational directors, and program planners in the target area. In the first section, administrators were asked to indicate on a five-point scale the extent of use given to various information sources. The second section of the questionnaire asked administrators for areas in which current information is desired.

Questionnaires were distributed to 40 administrators in the 18 counties. From this group, 36 responses (90 percent) were returned from 22 superintendents, 9 vocational directors, and 5 program planners.

Printed Materials Used for Information Sources

In analyzing the responses, it was found that periodicals were used to a considerable extent by almost 78 percent of the administrators. Over 50 percent of the group found newsletters and guides or manuals to be important sources of information. Similarly, almost half of the group used books to a considerable degree.

Computer printouts, conference proceedings, and services such as Crofts and Science Research Associates were information sources ranked low in importance by the respondents. Dissertations and microfiche were used least as references.

Table 1 presents the printed materials used by the administrators.

Table 1

Printed Materials Used for Information Sources by 36 Administrators in Appalachian Regions of Tennessee, North Carolina, and Virginia

Information Source	Rank in Importance
Periodicals, etc.	1
Newsletters	2
Guides/Manuals	2
Books	3
Handbooks	4
Personal Reference Collections	4
Project Information	4
Computer Printouts	5
Conference Proceedings	6
Services (Crofts, SRA, etc.)	7
Dissertations	8
Microfiche	8

Institutions Used for Information Sources

Almost three-fourths of the administrators used school reference libraries an average amount or above. Approximately one-half of the group found college libraries to be important sources of information.

Research coordinating units were considered to be above-average information sources by almost one-third of the administrators. Only 8 percent of the respondents used state libraries an average amount.

The institutions used for sources of information are shown in Table 2.

Table 2

Institutions Used for Information Sources by 36 Administrators in Appalachian Regions of Tennessee, North Carolina, and Virginia

Information Source	Rank in Importance
School Reference Libraries	1
Public Libraries	2
College Libraries	3
Bureaus of Research	4
Research Coordinating Units	5
State Libraries	6

Persons Used as Information Sources

Almost 78 percent of the group requested information of state department personnel to a considerable extent. High use was made of consultants as information sources by almost two-thirds of the group. Over 50 percent of the administrators considered colleagues as above-average sources of information.

Table 3 indicates the persons used as sources of information by the respondents.

Table 3

Persons Used as Information Sources by 36 Administrators In Appalachian Regions of Tennessee, North Carolina, and Virginia

Information Source	Rank in Importance
State Department Personnel	1
Consultants	2
Colleagues	3

Informational Areas Desired

Almost 70 percent of the respondents indicated a desire for career education information. A majority (61 percent) stated a need for vocational guidance and counseling information.

Approximately 50 percent of the administrators desired information related to distributive education programs, federal grant resources, student needs, program evaluation, job opportunities, and safety education. Almost one-half of the group indicated a need for information pertaining to cooperative programs, equipment/facilities, and economic trends.

Less than 30 percent of the administrators desired facts about special programs, vocational rehabilitation, student enrollments, EPDA personnel, technical education, or area vocational-technical schools. Only 17 percent of the respondents requested teacher personnel information.

Table 4 presents the information desired by administrators.

The types of information sources along with degree of use based on a 5-point scale, mean, and rank are shown in Appendix A.

Table 4

Information Desired by 36 Administrators in Appalachian Regions of Tennessee, North Carolina, and Virginia

Informational Area	Percentage	Rank
Career Education Programs	69.44	1
Vocational Guidance/Counseling	61.11	2
Distributive Education Programs	52.78	3
Federal Grant Resources	52.78	3
Student Needs	52.78	3
Program Evaluation	50.00	4
Job Opportunities	50.00	4
Safety Education	50.00	4
Cooperative Programs	47.22	5
Equipment/Facilities	47.22	5
Economic Trends	47.22	5
Exemplary Programs	44.44	6
Trade/Industrial Occupations	44.44	6
Program Planning	44.44	6
Consumer/Home Economics	41.67	7
Prevocational Programs	41.67	7
Work Study Programs	41.67	7
Curriculum/Instruction	41.67	7
Teacher Certification	41.67	7
Population Characteristics	41.67	7
Industrial Arts	38.38	8
Disadvantaged/Handicapped	38.89	8
Adult Education Programs	36.11	9
Health Occupations	36.11	9
Program Costs	33.33	10
Teacher Education	33.33	10
Agriculture Education Programs	30.56	11
State Federal Regulations	30.56	11
Special Programs	27.78	12
Vocational Rehabilitation	27.78	12
Student Enrollments	25.00	13
Education Profession Development Act (EPDA) Personnel	22.22	14
Technical Education	19.44	15
Area Vocational-Technical Schools	19.44	15
Teacher Personnel	16.67	16

Conclusions of Needs-Assessment Study

The following conclusions were reached as a result of the needs assessment study:

1. Publications such as periodicals, newsletters, guides, manuals, and books were used to a much greater extent by administrators than conference proceedings, dissertations, microfiche, and educational services such as Crofts.

2. School, public, and college libraries were used considerably more than state libraries by administrators.

3. The services of Bureaus of Research and Research Coordinating Units were not utilized to a great extent by administrators.

4. Administrators depended upon the expertise of state department personnel to a high degree but also made considerable use of consultants and colleagues.

5. The trend toward focusing instruction around career development appeared to be growing since almost 70 percent of the respondents indicated a need for information related to career education and vocational guidance counseling.

6. Almost two-thirds of the group desired information pertaining to vocational guidance and counseling, thereby emphasizing the thrust toward career development. Along the same line, over one-half of the administrators requested information related to student needs.

7. Approximately 50 percent of the respondents expressed interest in federal grant resources. However, only one-third of the group requested information about program costs. Perhaps a number of administrators saw no connection between obtaining funds and managing them in the most effective manner.

8. Since distributive education programs received a high rank in importance, administrators indicated that these programs were in great demand.

9. The impetus toward evaluation and accountability was affirmed by 50 percent of the group who indicated a need for this type of assistance.

10. Cooperative programs, safety education, and job opportunities were considered important informational areas by approximately 50 percent of the respondents. Again, the thrust toward career development was stressed.

11. Twenty-five percent or less of the administrators expressed a need for facts pertaining to student enrollments or teacher personnel. The installation of the Tennessee Management Information System (TMIS) and student reporting systems in North Carolina and Virginia apparently have apparently fulfilled this need to a considerable degree.

12. Only 20 percent of the group indicated a desire for facts related to technical education or area vocational-technical schools. Due to the amount of information already available in this area, there evidently was no need for additional assistance.

13. A limited number (22 percent) of the group indicated a need for information about EPDA personnel. Apparently administrators were unaware of the assistance and expertise offered by this group.

14. Only 39 percent of the respondents stated a desire for informational assistance in the area of the disadvantaged and handicapped. Although the Vocational Education Act of 1963 and its 1968 Amendments stressed priority attention to this group, this emphasis was not reflected in the study. Along the same line, less than one-third of the administrators requested information about vocational rehabilitation.

III. DATA COLLECTION

Data collection was a major activity of the project. A wide variety of sources were used (Appendix B); personnel from the three planning and development districts; educational cooperatives; research coordinating units of Tennessee, North Carolina, and Virginia; employment security offices in the target area; the Tennessee Valley Authority; the Center for Business and Economic Research and the Bureau of Educational Research and Service, The University of Tennessee; departments of education in the states involved; the Bureau of Vital Statistics; the Tennessee State Department of Economic and Community Development and the Tennessee State Advisory Council for Vocational-Technical Education.

Student and Personnel Components

Initially, a coding system was devised which encompassed state; planning development district; county; city and county school system; and individual school codes (Appendix C). Then a Student file was developed which included the following variables:

1. Birthdate
2. Sex
3. Marital Status
4. Veteran Status
5. Grade Level
6. Race
7. Plans for Training after High School
8. Plans for Training During High School
9. Vocational Club Membership
10. Prior Vocational Training
11. Type of Student (Regular, Disadvantaged, Handicapped)
12. How Long Have Parents Lived In County
13. Do You Plan to Work in County
14. Date Entered Program

Variables included in the Personnel file were:

1. Birthdate
2. Sex
3. Employment Status (10, 11, 12 mos.)
4. Degree (Associate, BS, BS + 30, MS, etc.)
5. Race
6. Program Level (Presecondary, Secondary, Post Secondary, Adult)
7. Type of Program (Regular, Cooperative, Cooperative C, Industrial Arts, Prevocational, etc.)
8. Job Title (Teacher, Guidance, Local Director, Supervisor, State Staff, etc.)
9. Years Employed in Education
10. Years Employed in Industry
11. Last Date Enrolled in School
12. Time Distribution (%) (Teaching, Administration, etc.)
13. Full or Part Time
14. Year Certificate Expires
15. Quarter Hours College Work (Incomplete Bachelor's)

Selected Data by County Component

Eighteen counties were encompassed in the three planning and development districts. An effort was made to collect data relating to education, population, and employment which would be useful for planning purposes. (Appendix D)

The data file for the counties of Hancock, Hawkins, Greene, Sullivan, Washington, Carter, Unicoi, and Johnson in the First Tennessee-Virginia Development District included these elements:

Educational Characteristics of First Tennessee-Virginia Development District

Educational Institutions
Median School Years Completed by Adults, 1950, 1960 and 1970
National Education Data
Net Enrollment County and City Public Schools, First Tennessee-Virginia Development District, Grades K-6
Net Enrollment County and City Public Schools, First Tennessee-Virginia Development District, Grades 7-12
Education Level of Persons 25 Years Old and Older, First Tennessee-Virginia Development District
Teachers, Salaries, Average Daily Attendance of Pupils and Expenditures per Pupil ADA, First Tennessee-Virginia Development District School Systems, 1973-74
Value of School Property 1973-74 in First Tennessee-Virginia Development District School Systems
Receipts, Total Available Funds and Total Expenditures During 1973-74 School Years, First Tennessee-Virginia Development District School Systems

Population Characteristics

First Tennessee-Virginia Development District
Population Density, First Tennessee-Virginia Development District
Population Centers
First Tennessee-Virginia Development District, 1970 and 1980 Population Composition
1974 Certified Population of Tennessee Incorporated Municipalities and Washington County, Virginia
Estimates of Total County Population, First Tennessee-Virginia Development District: Final 1971, Provisional 1972, and Provisional 1973
Population by Sex, Race, in the First Tennessee-Virginia Development District, 1970 Decennial Census
Age Composition
Population, Age 60 and Over, by Census Division, First Tennessee-Virginia Development District
Population Data, Tennessee Counties and Incorporated Municipalities, First Tennessee-Virginia Development District
Population Data, Virginia County, Independent Cities and City, First Tennessee-Virginia Development District
Population Trends by County: 1940-1970
Population Percent, Increase & Decrease
Population Trends, 1950-1970
Population Change in County Census Divisions, 1960-1970
Population Change, First Tennessee-Virginia Development District County Census Divisions
Net Migration Rate for FT-VDD 1950-1960
Net Migration Rate for FT-VDD 1960-1970
Components of Population Change, First Tennessee-Virginia Development District Counties
First Tennessee Region Population Change as of July 1, 1973
Number and Rate of Births, Deaths, Marriages and Divorces, First Tennessee-Virginia Development District Counties, 1971

Employment Characteristics

Composition of Employment by Industry - 1970
Civilian Work Force, 1940-1970
Annual Average Work Force Estimates for First Tennessee District
Total Employment - 1971
Daily Commuting Distances of First District
Covered Employment & Wages by County & Industry
Average Weekly Wages, First Tennessee-Virginia Development District Counties, 1969-1971
Employment by Residence, April 1973
Unemployment Rate for February, 1975
Unemployment Rate for 1971
Unemployment Rates, 1968-1970

Tennessee Manpower Information System (TMIS) Demand Data Analysis, Occupations Ranked in Descending Magnitude of Change
Employment by Manufacturing
Total Employment FT-VDD April 1971-1973
Tennessee Employment Projection by Industry to 1975
Employment by Occupational Demand Forecast, 1970-1980

Sources for these data were:

U. S. Census of Population 1950, 1960 and 1970
Annual Statistical Report, 1974, Tennessee Department of Education
104th Annual Report, 1973-1974, Virginia Board of Education
Research Center, First Tennessee-Virginia Development District
Fall Membership in Virginia's Public Schools, 1973, 1974, 1975
County and City Data Book, 1972, U. S. Census
Tayloe Murphy Institute, University of Virginia
Tennessee State Planning Office
The University of Tennessee Estimates for 1972, 1973, Center for Business and Economic Research Provisional
Tennessee Statistical Abstracts, 1971
Greater Bristol Area Chamber of Commerce
The First Tennessee Manpower Planning Process Model, January 31, 1974, Manpower Research, Virginia Employment Commission
Tennessee Department of Employment Security
Virginia Employment Commission
Tennessee Department of Economic Community Development Tennessee Civilian Work Force Estimates for 1971, 1972, 1973

The data file for the counties of Yancey, Mitchell, Avery, Watauga, Ashe, Alleghany, and Wilkes in North Carolina included these elements:

Population and Employment Characteristics

State/County Population Summary
Employment Status
Place of Work
Last Occupation of Experienced Unemployed
Income and Population
Occupation and Population
Industry and Population
Net Migration Rates
Projected Population, 1980, by Age, Color, and Sex

Education

Pupil Information - 1973-74, 1974-75 Enrollments
Projected Average Daily Membership 1975-76 thru 1978-79 by Grade
Number of Children Being Served by Exceptional Children Program
Pupil Membership by Ethnic Distribution, Fall 1974
Non Pupil School Enrollment

Number of 1974 High School Graduates by Sex and Race
Percent of Loss Compared to Enrollment
1975-1984 Projection of High School Graduates
Instructional and Non-Instructional Personnel by Sex and Race
Experience Status of Instructional Personnel
Source of Funds for Instructional Personnel
Certificate Holdings of Instructional Personnel
Personnel Receiving Local Salary Supplement
Pupil Teacher Ratio
Teacher Supply and Demand (Hard to Fill Positions)
Financial Information - Current Expense Disbursement by Source of Funds
School Food Service Data
Transportation Data by County
Employment by Occupational Demand Forecast for the Mountain Scenic Planning and Development Commission
Occupational Education Teacher Data - 1974-75
Occupational Education Enrollment - School Year 1974-74

Sources for these data were:

U. S. Census of Population, 1970
The University of Tennessee Center for Business and Economic Research
North Carolina Management Information System, 1975
Statistical Profile, North Carolina Public Schools, 1975

The data file for the counties of Lee, Scott, and Wise in Virginia contained these elements:

Population and Employment Characteristics

State/County Population Summary
Employment Status
Place of Work
Last Occupation of Experienced Unemployed
Income and Population
Occupation and Population
Industry and Population
1973 County Business Patterns

Education

School Enrollment Date
Years of School Completed, Total
Years of School Completed for Selected Age Groups
Vocational Education Secondary Enrollment 1974-75
Occupational Education Teacher Data 1974-75
Employment By Occupational Demand Forecast, 1970-1980, Lenowisco Planning District

Sources for these data were:

U. S. Census of Population, 1970
County Business Patterns 1973, U. S. Census
Vocational Education Reporting System of Virginia, 1974-75

Occupational Demand Component

Data for the occupational demand component were obtained from a study conducted in the 201-county Tennessee Valley by the Center for Business and Economic Research (CBER), The University of Tennessee. Employment projections by selected occupations and groups were determined for each of the 34 state-designated planning regions, councils of government, or development districts with one or more counties in the region (Corry and Price, 1975).

The study emphasized projected employment needs in the clerical, craftsman, operative, and laborer groups and included 96 occupations and groups. In developing the Regional Information System, the 96 occupations and occupational groups were reduced to 54 occupational codes to provide a supply interface from United States Office of Education (USOE) codes for vocational education programs.

The employment need projections in the Tennessee Valley study were based on relative industry expansions and interindustry shifts of occupations. The 1970 Population Census public-use Fourth Count tape tabulations of employment by county with a breakdown by occupation and industry provided substantial data. In developing projected employment needs, use was made of the census of population definition of employment by place of residence instead of workplace and by principal occupation only. Employment needs were expressed as potential job openings and were the total of two separate projections. The first estimate, labeled "industrial change," accounted for employment growth or decline and comparative occupational shifts; the second estimate added the numbers of workers needed to replace those leaving the labor force over the projection period.

These projections were modified in the Occupational Demand Subfile for the Regional Information System to reflect annual labor force separation rates by state and occupation, according to the Department of Labor's publication, Tomorrow's Manpower Needs. The average annual total job openings for each of the 54 occupational clusters reflected the TVA-CBER "industrial change" factors plus the updated separation factors.

The RIS Occupational Demand Subfile contained the following categories:

Code
Occupational Categories (54)
Total Employment for 1970 and 1975
Total Estimated Employment for 1976-1980

Separation figures for 1976-1980
Change figures for 1976-1980
Separation plus Change figures (hires required) for 1976-1980
New Work Force (old work force plus change) for 1976-1980

In addition, the RTS Occupational Demand Subfile contained Occupational Demand by Rank in Importance 1976-1980, Occupational Demand for 1977, and Estimated Average Entry-Level Wage per Month 1970-1980 for the 54 occupational categories. Wage data were obtained from the U. S. Department of Labor's publication, Occupational Outlook Handbook, 1972-1973.

Occupational Demand Subfiles were developed for the First Tennessee-Virginia, Mountain Scenic, and Lenowisco Development Districts (Appendix E).

Cost Projections for Vocational Programs Component

Cost data were obtained from a study entitled, "Cost Analysis of Secondary School Vocational-Technical Education Programs" conducted by the Bureau of Educational Research and Service, College of Education, The University of Tennessee (Harris and O'Fallon, 1973).

The cost projections, based on empirical data, reflected the mean cost of delivery per student contact hour for a variety of vocational programs and courses. Direct costs (salaries, equipment, materials, space) and indirect costs (ancillary/administrative services and fixed charges) were included in the projections.

This component enabled the program planner to make cost predictions for specific vocational-technical programs or courses. The Program Cost Projections component (Appendix F), included the following categories:

Program Course or Category
Base Year 1974-1975
Projected Cost Factors for 1976-1980

Sources of Occupational Training Component

These data were obtained from a study entitled, "Where to Find Post-Secondary Occupational Training Programs in Tennessee" conducted by the Tennessee Research Coordinating Unit for Vocational Education, College of Education, The University of Tennessee (Wilder, 1974). The initial information was collected to provide the National Center for Educational Statistics with data for its Survey of Post-Secondary Schools in the nation.

An effort was made to obtain similar data by mailed questionnaire for the Mountain Scenic Development District, North Carolina, and Lenowisco Development District, Virginia. Only a very small number of responses to this questionnaire were received.

The Sources of Occupational Training (Appendix G) enabled program planners, administrators, counselors and students to obtain information related to job training below the baccalaureate degree that is available within the local area.

Elements in this component included the following:

City and County
Admission Requirements
Program Title
Number Full Months Instruction Offered
Number Clock Hours Instruction Offered
Clock Hours Per Week Required Attendance
Tuition and Required Fees

Evaluation of Vocational Programs by Secondary and Area Vocational-Technical School Graduates in Tennessee Counties of First Tennessee-Virginia Development District Component

Information for this component was obtained from the Tennessee Management Information System (1972-1973). Data about vocational programs and instruction in unrelated courses were available through this component (Appendix H). Information was presented for individual counties and also summarized for the seven Tennessee counties. The following categories were provided for each occupational area:

Rating of Vocational Instruction
Rating of All Other Instruction
Rating of Vocational Shop or Lab
Rating of Guidance or Counseling
Rating of Job Placement

Employment Status According to Secondary and Area Vocational-Technical Graduates in Tennessee Component

The Tennessee Management Information System (1972-1973) provided data for this component (Appendix I) which offered various kinds of information related to graduates and their jobs. Presented by county and summarized, these categories were included for each occupational area:

Time Spent Seeking First Job
Placement Assistance Received from:
Vocational Teacher
School Job Placement
Other School Personnel
State Employment Agency
Private Employment Agency
Relative/Friend
Other
Number of Program Completers
Number of Non-Program Completers

Number of Jobs Held Since Leaving School
Number Moving from Where Trained
Number Unemployed and Looking for a Job
Time Spent Seeking a Job
Latest Job Effort
  School Job Placement
  Public/Private Employment Agency
  Employers
  Relative/Friend
  Newspaper Ads
  Other
  Number of Program Completers
  Number of Non-Program Completers
Number Hours Worked per Week
Number Miles Traveled from Home to Work
Wage Rate per Hour

Evaluation of Employment by Secondary and Area Vocational-Technical School Graduates in Tennessee Component

Data for this component, (Appendix J), were supplied by the Tennessee Management Information System (1972-1973). Information relating to vocational training and employment were accessible through this component which presented individual county and summarized data. The following information was provided for each occupational area:

Relation between Vocational Training and Present Job
Feelings about Present Job
Use of Vocational Training Skills on Present Job
Relation between Vocational Training and Present School

Vocational Guidance Component

This component presented INFOE, Information Needed for Occupational Entry, Secondary and Post-Secondary. A system involving microfiche, a card deck, and a reader-printer, INFOE offered an opportunity for exploring a wide variety of occupations.

Developed at the Tennessee Research Coordinating Unit, INFOE is available for purchase by school systems as a vocational guidance tool (Appendix K). Elementary INFOE (grades 4-6) and Junior INFOE (grades 7-9) can also be ordered.

Career Education Component

Approximately 70 percent of the respondents in the needs-assessment study indicated a desire for career education information. This component, (Appendix L), was designed to meet the needs of program planners wishing to develop an understanding of career education and those interested in establishing career education programs. The component included the following categories:

Career Education
  Definition
  Philosophy
  Goals
  Components
  Clusters
  Grade Levels
Career Education Goals
Community Participation
Initiating Career Education Programs
Sources of Career Education Materials (Printed and Audiovisual)
Selected ERIC Documents from the Center for Vocational Education, The Ohio State University
Career Education Products from the Center for Vocational Education, The Ohio State University

Non-Computer Based Hard Copy

The time schedule did not permit the inclusion of all data in the computer-based system. Therefore, hard copy was prepared for use with the system.

Facilities and Equipment

A study completed by the Comprehensive Vocational Education Task Force of Tennessee provided data for this component (Appendix M). The information enabled the program planner to determine space and equipment needs by class size according to vocational education program. The following categories were included:

Building Trades
Metal Trades
Automotive
Agricultural
Electricity
Home Economics
Office Occupations
Distributive Education
Health
Cosmetology
Graphic Arts
Drafting
Watchmaking and Repair
Shoe Repair
Optical Technician
Industrial Chemistry
Ecology
Plastics
Dry Cleaning

Rules, Regulations and Certification

Data for this component (Appendix N) were compiled from Rules, Regulations, and Minimum Standards for Vocational Education for the State of Tennessee. Guidelines for establishing vocational programs were available in this component and included the following:

General Requirements for All Programs
Agriculture Education
Distributive Education
Health Occupations Education
Home Economics Occupational Education
Office Occupations Education
Technical, Trade and Industrial Education
General Cooperative Vocational Education

Information included a description of the program of instruction; course content; duties and responsibilities, qualifications, and certification requirements for instructional personnel; and scheduling.

Individual and Composite Data Packs

Hard copy was prepared for the individual counties in the target site and grouped for one planning and development district (Appendix O). The data were similar to those in the computerized system and included educational, population, and employment characteristics that would be helpful to program planners. Hard copy was a motivational force for workshop participants who were enthusiastic about carrying it back to their school systems.

TEST OF THE MODEL

On October 20, 1975, invitations to the two-day workshop were sent to the 40 administrators involved in the project (Appendix P). Telephone calls were made to those who did not respond to the letters. Twenty-five administrators participated in the test of the model, with approximately one-half of the group attending on November 11 and the other half on November 12. Thirteen of the 18 counties in the three development and planning districts were represented.

The participants were introduced to the model through a 20-minute talk and a 21-page guidebook describing the various components. Ample time was provided for observing the mini-computer in operation, accessing components, studying printouts, and discussion. At the end of each day's session, workshop participants evaluated the model.

Evaluation of Student File

Twenty-two administrators evaluated the computer-based student file. The evaluation instrument employed a five-point scale (five indicates the highest amount of use and one the lowest amount of use). As shown in Table 5, plans for training after high school, grade level, type of student, and intention to work in the county of residence were considered high in importance (4.0 or above). Marital status and race were ranked low in importance (less than 3.0) by respondents (Appendix Q).

Table 5

Importance of Computer-Based Student Information According to 22 Administrators

Student File	Mean*	Rank
Plans for Training during High School (Area Voc. School, Tech. Inst., etc.)	4.7	1
Grade Level	4.4	2
Plans for Training after High School (Area Voc. School, Tech. Inst., etc.)	4.4	2
Type of Student (Reg., Disad., Handicapped)	4.2	3
Do You Plan to Work in County	4.0	4
Birthdate	3.7	5
Prior Vocational Training	3.7	5
Club Membership (FHA, FFA, TOEC, VICA, etc)	3.6	6
Sex	3.6	6
Date Entered Program	3.5	7
Veteran	3.3	8
How Long Have Parents Lived in County	3.2	9
Marital Status	2.5	10
Race	2.3	11

*Based on 5-point scale where 5 = highest amount of use and 1 - lowest amount of use.

Evaluation of Personnel File

The 22 respondents considered years employed in industry, degree held, program level, type of program, job title, years employed in education, and whether employed full or part time as being of high importance (4.0 or above). Table 6 indicates that race was considered lowest in importance (mean of 2.1) (Appendix R).

Table 6

Importance of Computer-Based Personnel Information According to 22 Administrators

Personnel File	Mean*	Rank
Years Employed in Industry	4.3	1
Degree (Associate, BS, BS + 30, MS, etc.)	4.2	2
Program Level (Presecondary, Secondary, Post Secondary, Adult)	4.2	2
Type of Program (Regular, Coop, Coop G, Ind. Arts, Prevocational, etc.)	4.2	2
Job Title (Teacher, Guidance, Local Director, Supervisor, State Staff, etc.)	4.1	3
Years Employed in Education	4.1	3
Full or Part Time	4.0	4
Year Certificate Expires	3.9	5
Quarter Hours College Work (Incomplete Bachelor's)	3.9	5
Time Distribution (%) (Teaching, Administration, etc.)	3.8	6
Employment Status (10, 11, 12 mos.)	3.7	7
Birthdate	3.6	8
Sex	3.3	9
Last Date Enrolled in School	3.3	9
Race	2.1	10

*Based on 5-point scale where 5 = highest amount of use and 1 = lowest amount of use.

Evaluation of Occupational Demand File

All of the information in the Occupational Demand File was considered of high importance by the 22 participants with size of the 1970 labor force receiving the lowest mean of 3.7. The percentage of occupational demand according to category (1976-1980) was rated of greatest importance as shown in Table 7 (Appendix S).

Table 7

Importance of Computer-Based Occupational Demand Information According to 22 Administrators

Occupational Demand File	Mean*	Rank
Percentage of Occupational Demand According to Category 1976-1980	4.9	1
New Labor Force 1976-1980	4.7	2
Occupational Demand by Rank in Importance 1976-1980	4.6	3
Estimates of Combined Separation and Change (new hires) 1976-1980	4.5	4
Present Salary Range of Occ.	4.5	4
Projected Salary Range of Occ.	4.5	4
Estimates of Annual Change (workers to be hired or terminated) 1976-1980	4.4	5
Size of Labor Force in 1975 for Specific Occupational Categories	4.3	6
Occupational Demand by Consecutive Rank in Importance for 1977	4.3	6
Estimates of Annual Separation (retirements, deaths) 1976-1980	4.2	7
Size of Labor Force in 1970 for Specific Occupational Categories	3.7	8

*Based on 5-point scale where 5 = highest amount of use and 1 = lowest amount of use.

Evaluation of County Information File

The information in this file was also considered of great importance by the 22 respondents. Employment and Wages by industry was followed in importance by the educational level of persons 16 and over by labor force status, place of work, and annual work force estimates. Selected school characteristics, owner-occupied housing, and agricultural statistics received the lowest mean (3.8) in this information file as shown in Table 8 (Appendix T).

Table 8

Importance of Computer-Based County Information According to 22 Administrators

County Information File	Mean*	Rank
Employment and Wages by Industry	4.5	1
Educational Level - Persons 16 and Over by Labor Force Status	4.4	2
Place of Work	4.4	2
Annual Work Force Estimates	4.4	2
Student Enrollments Grades 1 - 12	4.3	3
Educational Level - Persons 25 and Over by Years of School Completed	4.3	3
Population with Labor Force and Unemployment Rate	4.3	3
Experienced Unemployed	4.3	3
Placement - Employed Males and Females by Occupation; Persons 14 - 15 by Weeks Worked	4.3	3
Personal Income by Major Sources and Earnings by Broad, Industrial Sector	4.1	4
Educational Level - Males and Females by Years of School Completed	4.0	5
Selected Population Characteristics	4.0	5
Population Growth for Last Decade	4.0	5
Net Migration for Last Decade	4.0	5
Labor Force by Occupational Type Urban and Rural; Male and Female	4.0	5

Table 8
-cont'd-

Importance of Computer-Based County Information According to 22 Administrators

County Information File	Mean*	Rank
Total Housing Units	3.9	6
Selected School Characteristics	3.8	7
Owner Occupied Housing	3.8	7
Agricultural Statistics	3.8	7

*Based on 5-point scale where 5 = highest amount of use and 1 = lowest amount of use.

Evaluation of Regional Information System

Table 9 shows that 22 administrators considered occupational demand first in importance in a Regional Information System with selected data by county ranking second. Program evaluation by students and teachers, projecting costs for vocational programs, and career education received a mean of 4.5 on the five-point scale, indicating that respondents viewed them as extremely important. Table 9 depicts the means and rank in importance resulting from evaluation of the regional information system (Appendix U).

Table 9

Importance of Computer-Based Regional Information System According to 22 Administrators

Type of Information	Mean*	Rank
Occupational Demand	4.8	1
Selected Data by County	4.7	2
Projecting Costs for Vocational Programs	4.5	3
Program Evaluation by Students	4.5	3
Program Evaluation by Teachers	4.5	3
Career Education	4.5	3
Student	4.4	4
Sources of Occupational Training	4.3	5
Personnel	4.0	6

*Based on 5-point scale where 5 = highest amount of use and 1 = lowest amount of use.

Conclusions of Evaluation

1. Plans for training, (during and after high school), were considered to be of high importance by administrators. Apparently, this type of information was viewed as having high use for program planning purposes.

2. Although administrators considered race as information of low importance, the United States Office of Education requires this type of information from state departments of education. This fact was probably not known or considered by a number of workshop participants.

3. Experience in industry was ranked first in importance by respondents, indicating that administrators probably viewed this variable as critical when reviewing personnel for placement or advancement purposes. Apparently, industrial experience is awarded high value when the qualifications of personnel are analyzed. In comparison, administrators ranked educational experience third, thereby indicating that educational experience is not valued so highly when the qualifications of personnel are reviewed.

4. Workshop participants considered the percentage of occupational demand by category (1976 to 1980) of highest importance. Apparently, this type of information was viewed as vital for effective program planning. However, the 1970 labor force (by occupational category) ranked lowest in importance, possibly because it was considered outdated information. However, a picture of the labor force as it appeared five years ago provides greater insight about possible or likely changes that may occur in occupations. The 1970 labor force variable had a mean of 3.7, thereby indicating that it was still accorded high value in spite of its rank (8).

5. Administrators placed high program planning value on information concerning employment and wages by industry. Information concerning the educational level of individuals by labor force status was valued more highly than information relating only to individuals' educational level. Since the workplace and annual work force estimates were also viewed as high in importance, it appeared that administrators are primarily concerned with what is happening now in the world of work and with what is likely to happen in the foreseeable future. Population characteristics; migration rates; labor force figures by urban, rural, male, and female categories; and housing statistics were not considered so important in program planning.

6. All of the computer-based components received means of 4.0 or higher, indicating that the information presented in the Regional Information System was considered of high importance for program planning. With occupational demand ranking first in importance and selected data by county second, it appeared that information concerning the regional and county work force were priorities for planning vocational programs.

SPACE, HARDWARE AND SOFTWARE REQUIREMENTS

After developing and testing the system, guidelines were developed for space, hardware and software required at the Central Processing Center (CPC), (state level). These included the following:

1. Office space, 9 feet by 12 feet, for director;
2. Office space, 9 feet by 12 feet, for associate director;
3. Work space, 12 feet by 15 feet, for two technical assistants; and
4. Space, 12 feet by 15 feet, for the mini-computer system.

Hardware for establishing a regional information system at the Central Processing Center included the following:

1. Central Processing Unit (CPU) at least 20K of user memory;
2. Cathode Ray Tube (CRT) keyboard;
3. Dual flexible disk drive with approximately 250K bytes per disk;
4. 9 channel - 800 bytes per inch magnetic tape (IBM compatible);
5. 300 cards-per-minute card reader;
6. 5M disk drive; and
7. Printer producing 132 characters per line and 180 - 200 characters per second.

The cost of this equipment ranged from $35,000 to $40,000.

In establishing hardware for a local school system (LEA), requirements included a Central Processing Unit with at least 20K of user memory, a CRT keyboard, dual flexible disk drive with approximately 250K bytes per disk, and a printer producing 132 characters per line and a minimum of 110 characters per second. Cost of this equipment was approximately $20,000.

At the development district level (DD), a 5M disk drive and card reader would be needed in addition to the equipment specified for the LEA. An interface, costing approximately $2,000, would be required to transmit information between the LEA, DD, or CPC. The total system would provide capability for the collection, maintenance, and transfer of program planning data within a region.

COMPOSITION OF STAFF

In developing the regional information system, it was found that a director was needed to supervise and coordinate activities. Qualifications for this position included the ability to plan vocational programs, interact with many kinds of personnel, identify sources of relevant information, administer a needs assessment survey, analyze data, and document the project.

An associate was required with the ability to collect data, select relevant information, and organize it in a usable manner for processing. In addition to this staff, a person experienced in programming and systems analysis computer technology was needed as well as a technical assistant to process the data.

EVALUATION CRITERIA

Periodic assessment and evaluation of the system are essential for maintaining a viable regional information system. An evaluation instrument is needed that contains questions related to the amount of information presented, quality of the information (quality, relevance, usability), and the time required for access. An instrument of this type should be administered periodically to the users in order to insure the system's effectiveness. Feedback is vital to making revisions and additions that improve the system.

Updating the information in the system must be carried out in a routine manner with a time schedule indicating when various components are in need of revision. Without updating, the information system would rapidly become obsolete. Reasonable guidelines for updating would include the addition of new information within a month after it becomes available and revision of each component every three months.

TIME AND COST-SHARING GUIDELINES

Financing a regional information system would vary, depending upon the number of participants and funds available. Generally, each school system would provide its own equipment, the counties in the development district would pool resources to establish the system at the development district level, and the Central Processing Unit would probably be funded from federal and/or state sources.

Transportability of the system proved to be no problem; the entire system was transported in a station wagon for approximately 1,200 miles without incident. It would be feasible to move a regional information system from school to school if funds were not available to provide computer services at individual locations. One person could maintain the system by traveling from school to school on a periodic basis, thereby providing equal time for all users.

GUIDELINES FOR A USER'S MANUAL

A user's manual for accessing the system was prepared for workshop participants and included the following:

a. Table of Contents listing the computer-based programs and non-computer-based supplemental hard copy in the system;

b. Brief overview to provide an understanding of a Regional Information System;

c. Operating instructions for accessing the system;

d. Description of each component along with a listing of the information presented therein;

e. Sample questions which could be answered by accessing the various components.

An evaluation instrument was included as part of the manual; users were requested to complete and return the questionnaire after completing the workshop activities. Participants were asked to indicate the degree of use which would be made of each item of information in the various components. (Appendix V).

RECOMMENDATIONS

The following suggestions are offered for developing a Regional Information System similar to the model presented in this study:

1. The participants in a Regional Information System should be located in adjacent planning and development districts having common boundary lines over which residents move to locate training and employment opportunities.

2. Objectives and goals should be cooperatively developed by the program planners involved in developing and maintaining the Regional Information System.

3. Before a Regional Information System is developed, a needs assessment should be conducted to determine the kinds of information which are considered useful by program planners in the particular region involved.

4. After identifying the kinds of information needed, sources must be sought for collecting the information desired by program planners.

5. When the information sources are identified and the data collected, it is essential that the information be carefully selected and organized in a format which will be most effective for utilization by program planners.

6. Computer hardware and software should be selected only after analyzing system needs, equipment available, and cost-effectiveness of various types. At the outset, equipment may be obtained through a leasing arrangement. After system requirements are fully determined, the essential equipment may be purchased with ensuing plans made for future expansion.

7. A training program must be developed for the users so that data from the system may be utilized adequately by program planners. The in-service program should be conducted on a periodic basis to determine where additional assistance is needed by users and to inform new users about accessing the system.

8. An evaluation instrument should be carefully planned with revisions made as needed. This instrument should be administered to the users at periodic intervals to determine the system's degree of effectiveness. Revisions and additions to the system should be made on the basis of the information collected from the users.

9. A periodic updating process must be conducted to keep the Regional Information System current. Review of existing data should be carried out on a three-month or quarterly basis to insure that the system remains effective.

10. A long-range plan should be developed which will provide for changes to be made in the Regional Information System as the needs of users changes.

OVERVIEW OF THE MODEL

The model Regional Information System for Vocational-Technical Education described here encompassed the following procedures:

1. Selection of adjacent planning and development districts where residents cross common boundary lines to find employment and training opportunities, thereby making cooperative program planning feasible.
2. Selection of staff for development and maintenance of the system.
3. Selection of hardware and software for effective development of the system.
4. Selection of facilities for system operation and administration.
5. Assessment of program planners' needs to determine the kinds of information desired by administrators of vocational education programs.
6. Collection of the best data available from appropriate sources, including the following:
   a. Local education agencies
   b. Regional education agencies
   c. State departments of education
   d. State departments of vocational-technical education
   e. Institutions of higher education
   f. Educational cooperatives
   g. Employment Security offices at all levels
   h. Employment Security job banks
   i. Comprehensive Employment and Training Act offices
   j. Economic and Community Development agencies at all levels
   k. Office of Economic Opportunity
   l. Department of Labor agencies at all levels
   m. Labor unions
   n. Vocational Advisory Councils at all levels

o. Chambers of Commerce

p. Bureau of the Census

q. Libraries, at all levels

r. Employers (business and industry)

s. Manpower agencies at all levels

t. Private placement agencies

u. School placement agencies

v. State management information systems

w. State research coordinating units

x. Other agencies and institutions identified as appropriate sources

7. Development of system components based upon the needs assessment.

8. Development and administration of a training program and manual for users.

9. Development and administration of an evaluation instrument to users.

10. Revision to the system based upon information collected from the users.

11. Development of evaluation instruments with periodic administration to users for purposes of revision, updating, additions, and deletions to the system.

12. Development of a long-range plan to meet the changing needs of users.

The model Regional Information System was transportable, thereby making the development of such a system economically feasible for local education systems. By sharing the cost of initial system development, school systems can implement a Regional Information System which offers the opportunity for sharing program planning information at nominal cost. As school systems become financially able, terminals can be purchased for installation at individual schools.

A network of information evolved from the model system (Figure 1), tying the Central Processing Unit, Development Districts, and Local Education Agencies together. Such an information system should be planned to meet the specific needs of the program planners in the region.

Student and teacher data served as the base for the system described here. The state management information system offered the best source of these data.

DEVELOPMENT OF A REGIONAL INFORMATION SYSTEM ENCOMPASSING A
CENTRAL PROCESSING UNIT (CPU),
DEVELOPMENT DISTRICTS (DD'S),
AND
LOCAL EDUCATION AGENCIES (LEA'S)

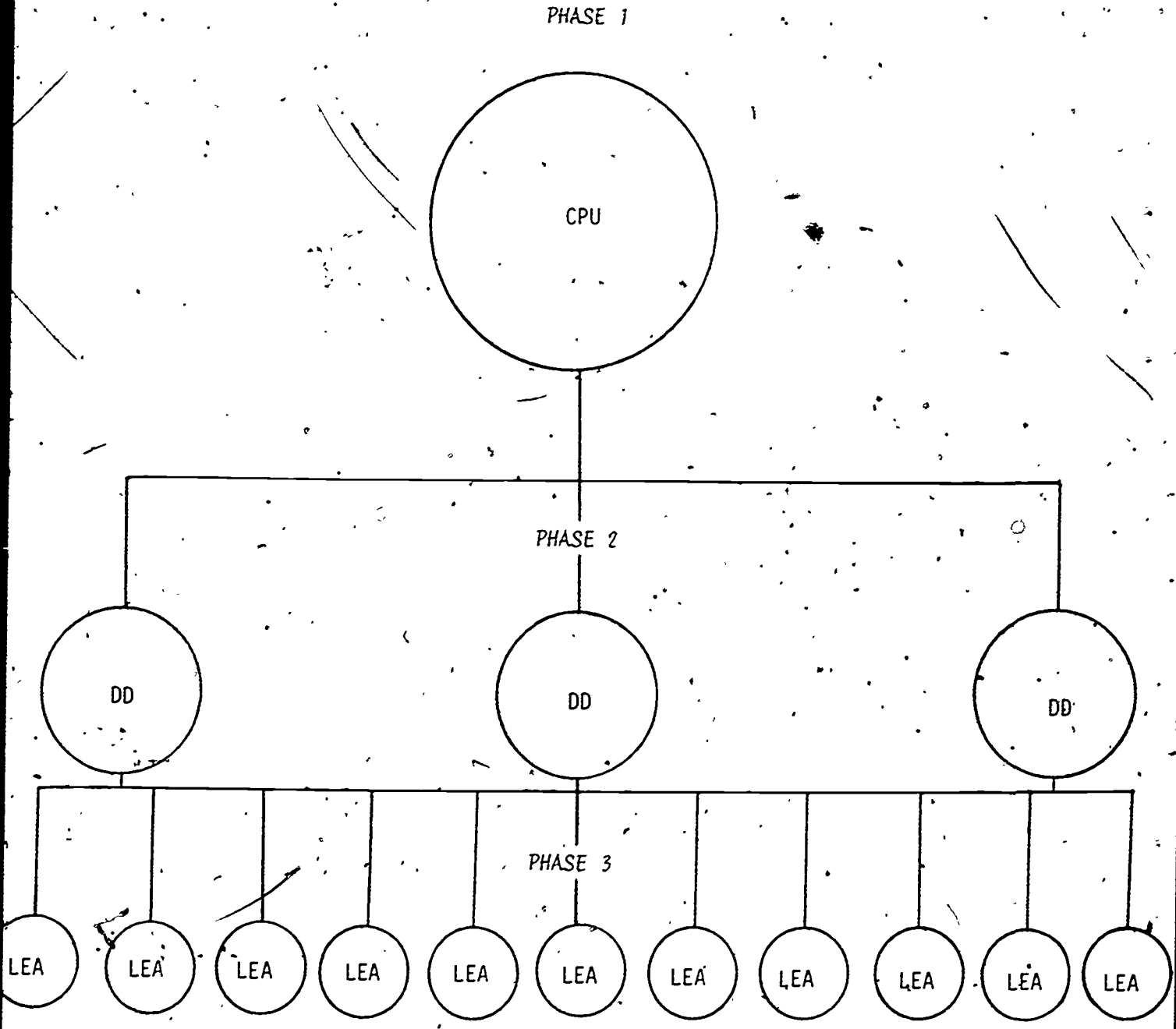

Figure 1

However, the information required careful analysis to determine the specific types of data needed to make the regional information system effective. Quality of data rather than quantity was a priority consideration.

After the student and teacher data base was developed to serve as the manpower supply component of the system, manpower demand information was sought from the appropriate agencies listed in Item 6, page 35. Additional components were developed according to the needs of the program planners who participated in the needs assessment. The model system had 11 components with supplemental non-computer-based hard copy.

An in-service program was developed and administered to the program planners involved in the project. After evaluation of the model by the users, various revisions were made to effect a better data base. A major concept underlying the system was the need to revise and update the data on a continual basis according to the feedback from users.

The model system was originally envisioned as containing only manpower supply and demand information. However, the needs assessment indicated that program planners need other kinds of information in addition to manpower supply and demand to develop effective vocational education programs.

SUMMARY

The evaluation of the model system by the 22 users indicated that the Regional Information System offered great potential as a planning tool for vocational-technical education. Numerous requests from the users and other educators indicated that this type of system is a high-priority need for vocational education planners.

Because of time constraints, it was not possible to deal with the problems encountered in tracking migration of trained manpower across various geographic and political boundaries. Experience gained from the administration of this project indicated that considerable research and development efforts need to be expended in furthering the establishment of regional information systems similar to the one developed here. Definitive guidelines and sources of manpower information are urgently needed at the local, state, and regional levels.

Finally, instruction for using the information found in a Regional Information System is essential if program planners are to benefit. It is hoped that the development of this model will provide an information base for other educators who wish to improve the development and implementation of vocational-technical education programs through utilization of a Regional Information System.

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