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AUTHOR Welch, James A., Ed.; Jackson, Linda M., Ed.
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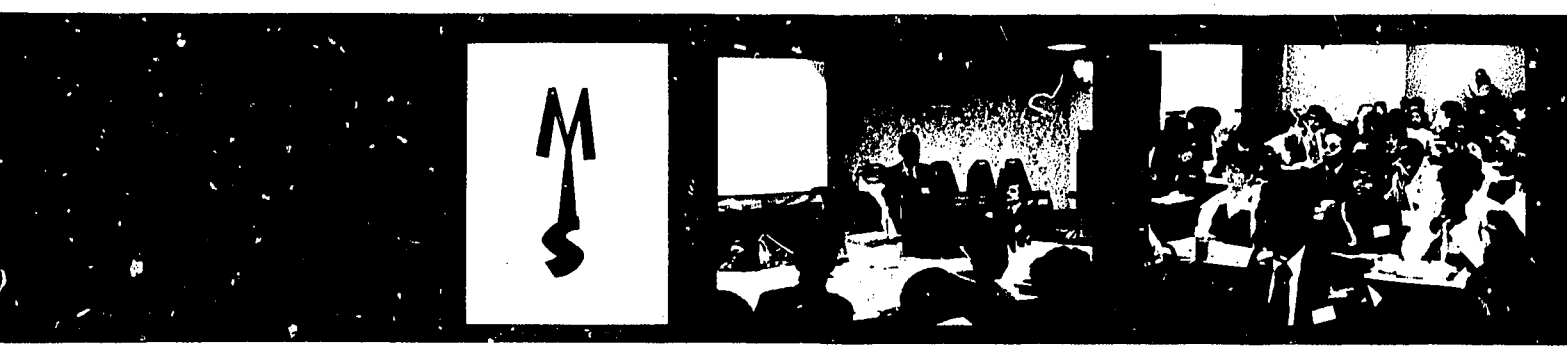
ABSTRACT

This report is a consolidation of the knowledge and skills imparted during the 1973-74 Information Management Training Institute sponsored by Tennessee State University, Meharry Medical College, and the Institute for Services to Education, Inc. Section one of the report includes the proceedings from the sessions conducted on data collection, manipulation, storage, and reporting. Section two includes the human relations component's proceedings and Section three contains the sessions on remote access and QUERY. Each section contains an evaluation based on the participants' responses to questionnaires developed by the individual sections' consultants. This document was published with the assistance of the Technical Assistance Consortium to Improve College Services (TACTICS). (MJM)

REPORT ON THE INFORMATION MANAGEMENT TRAINING INSTITUTE



SUMMER 1973 ■ VOLUME I

Institute for Services to Education, Inc.
Management Information Systems Directorate

INSTITUTE FOR SERVICES TO EDUCATION, INC.

President:
Elias Blake, Jr.

Vice President:
Frederick Humphries

The Institute for Services to Education (ISE) was incorporated as a non-profit organization in 1965 and subsequently received a basic grant from the Carnegie Corporation of New York. The organization is founded on the principle that education today requires a fresh examination of what is worth teaching and how to teach it. ISE is a catalyst for change. Under grants from government agencies and private foundations, ISE undertakes a variety of educational tasks—working cooperatively with other educational institutions. It does not just produce educational materials or techniques that are innovative; it develops, in cooperation with teachers and administrators, procedures for effective installation of successful materials and techniques in the field of education.

TACTICS (Technical Assistance Consortium to Improve College Services)

Executive Director:
Van S. Allen

Assistant Director
Mahlon Griffith

TACTICS is a program which provides technical assistance to the Black colleges and universities to enable them to develop whatever expertise they need to be more effective in achieving their goals. The TACTICS efforts have as their primary goals:

- To create a pool of deployable manpower using the most highly trained personnel in these colleges as well as in the nation, to deal with specific institutional problems identified by the colleges themselves
- To assist the colleges in their efforts to strengthen academic programs by helping them design academic and administrative support systems
- To establish a closer interface between federal programs and the institutions
- To ensure that the colleges become knowledgeable about federal funding programs as well as non-government programs from which they can benefit

(The Management Information Systems Directorate is funded under the TACTICS program (Title III-Higher Education Act) and operates under the aegis of the Institute for Services to Education, Inc.)

MANAGEMENT INFORMATION SYSTEMS STAFF

Director:
James A. Welch

Systems Analyst:
Sondra O. Ferguson

Administrative Assistant:
Judy Bailey

Research Assistant:
Linda M. Jackson

Data Clerk:
Kevin M. Thomas

REPORT ON THE

INFORMATION MANAGEMENT TRAINING INSTITUTE

SUMMER 1973

VOLUME I - PROCEEDINGS

Sponsored by
Tennessee State University and Meharry Medical College
Nashville, Tennessee
Institute for Services to Education, Inc.
Washington, D.C.

June 10-22, 1973

Edited by
James A. Welch
Linda M. Jackson
Management Information Systems Directorate
Institute For Services To Education, Inc.
2001 S. Street, N.W., Washington, D.C.

December 1973

"The ultimate validity of information management is the outcome of policy derived from sound reasoning based on actual facts. It is conceivable that a sufficient amount of data on a large number of schools in the Black Higher Education Community could be used to set a clear precedence for its continued growth as well as make a terrific impact on the human and social aspects of innovative education."

James A. Welch

—MIS—

ACKNOWLEDGMENTS

The idea of an Information Management Training Institute was conceived by and developed under the guidance of the Management Information Systems Directorate of the Institute for Services to Education, Inc., in conjunction with TACTICS. MIS gives special thanks to the discussion leaders of this year's Institute, who in addition to leading the sessions, also contributed to the development of the lecture materials included herein. They are as follows:

Harriet Faulkner
Consultant
Black Affairs Center, Inc.
New York, N.Y.

Sondra Ferguson
Systems Analyst
MIS Staff
Washington, D.C.

Frederick A. Hill, Jr.
Coordinator of Management and Professional Development
Black Affairs Center, Inc.
New York, New York

Basil Jackson
Director of Operations
Optimum Computer Systems, Inc.
Washington, D.C.

Beverly Sharp
Consultant
Management Information Systems
Institute for Services to Education, Inc.
Washington, D.C.

Clifton Smith
Board of Directors
Black Affairs Center, Inc.
New York, New York

Jack White
Vice President
Optimum Computer Systems, Inc.
Washington, D.C.

Mirian Young
Consultant
Black Affairs Center, Inc.
New York, New York

An Institute cannot be conducted without the participants, therefore we wish to extend our appreciation to those persons, representing TACTICS institutions who participated in the Institute.

Thanks also go to Clarence Alexander, Arthur Danner, Sadie Gasaway and the general staff of Tennessee State University for their assistance in the financial, room and refreshment arrangements for the Institute. Additionally, thanks go to George Braun and John Scott of the Meharry Medical College Computer Center for their assistance in the planning of the Remote Data Access sessions of the Institute.

A special thanks, as is always the case, to the MIS Staff; Judy Bailey, Sondra Ferguson, Kevin Thomas and Linda Jackson, who as usual, worked patiently and indefatigably during the development and implementation stages of the Institute.

J.A.W.

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PARTICIPANTS

Week I

Artis Davenport, Southern University-N.O.

Richard L. Fields, N.C. A&T State University

Rufus Gilmore, III, Miles College

Raymond Harcum, Coppin State College

Agnes Hassell, Virginia State College

Walter Howard, Miles College

Jimmy R. Jenkins, Elizabeth City State University

Elizabeth Jiles, St. Augustines College

Leroy King, Virginia Union University

Leon Knott, Shaw College at Detroit

Mary McKinney, Jarvis Christian College

Jean E. Nelson, Philander Smith College

Burnetta D. Pearson, Lane College

Julius D. Penn, Grambling College

Fanye R. Porter, Philander Smith College

C. L. Ratcliff, Mississippi Industrial College

Quincy Robertson, Paine College

Imogene Robinson, Bowie State College

Roger E. Savain, Bowie State College

Elizabeth M. Scobell, West Virginia State College

George Tutt, Miles College

Claude Tyus, Bishop College

Lawrence W. Webb, Knoxville College

Week II

Bobby E. Aldrich, Livingstone College

John Baker, Alabama State University

Edward E. Bost, Livingstone College

B. Vivian Burghardt, Bowie State College

Leonard Burke, Alabama State University

Jacquelyn Byers, Savannah State College

Thomas Byers, Savannah State College

Theodore Debro, Rust College

Roscoe L. Dunlap, Albany State College

Dave W. Friedrichs, Shaw College at Detroit

Ronald E. Harrigan, College of the Virgin Islands

Claire E. Hibbert, United Negro College Fund

Lawrence C. Jacobs, Oakwood College

John A. James, Mississippi Valley State College

Mildred B. Kennedy, Miles College

Elvie L. Kirby, Albany State College

Paul Lampley, Rust College

Syrene D. Mitchell, Southern University-N.O.

Donald L. Mullett, Lincoln University (PA)

William Murray, Miles College

Jerry Nunnally, Dillard University

Mary H. Platt, Johnson C. Smith University

C. L. Reynolds, Dillard University

PARTICIPANTS (Continued)

Melvin Riggs, N. C. Central University

Donald R. Sutton, Tougaloo College

Cleon Thompson, Shaw University

Matt R. Ward, Tuskegee Institute

Wayne Watson, Shaw University

Joseph L. White, Winston-Salem

L. C. Wood, Paul Quinn College

INSTITUTIONS REPRESENTED

Alabama
- Alabama State University
- Miles College
- Oakwood College
- Tuskegee Institute

Arkansas
- Philander Smith College

Georgia
- Albany State College
- Paine College
- Savannah State College

Louisiana
- Dillard University
- Grambling College
- Southern University at New Orleans

Maryland
- Bowie State College
- Coppin State College

Michigan
- Shaw College at Detroit

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- Mississippi Industrial College
- Mississippi Valley State College
- Rust College
- Tougaloo College

New York
- United Negro College Fund

North Carolina
- Elizabeth City State University
- Johnson C. Smith University
- Livingstone College
- N.C. A&T State University
- N.C. Central University
- Saint Augustine's College
- Shaw University
- Winston-Salem State University

Pennsylvania
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Tennessee
- Knoxville College
- Lane College

Texas
- Bishop College
- Jarvis Christian College
- Paul Quinn College

Virgin Islands
- College of the Virgin Islands

Virginia
- Virginia State College
- Virginia Union University

West Virginia
- West Virginia State College

PREFACE

The Management Information Systems Program of the Institute for Services to Education, Inc., is designed to improve the information handling (management) procedures in developing institutions. This program is under a larger project, acronymically referred to as TACTICS (Technical Assistance Consortium to Improve College Services).

The 1973-74 Information Management Training Institute, funded under an EPDA V-E grant from the U.S. Office of Education, represents the second institute jointly sponsored by Tennessee State University, Meharry Medical College (Nashville, Tennessee) and the Institute for Services to Education, Inc. (Washington, D.C.) The summer portion of the institute was held in Nashville, Tennessee from June 10-22, 1973. Some of the sessions were conducted on the campus of Tennessee State University and others were conducted at the Sheraton-Nashville Hotel. The second year's institute, as the first, was organized to provide technical knowledge and skills to the TACTICS college and university administrators in the various information management areas of data collection, manipulation, storage and reporting. The 1973-74 program, however, went a step further in that it included a human relations component that was basically designed to explore the relationships of the human resource problems involved in information management, planning and decision-making processes. In addition, the session on the use of teletype-terminals for remote access to data stored and manipulated via automated procedures, was expanded to allow the participants more time to make use of the terminals to solve the data manipulation and management problems associated with and assigned to them at the beginning of the institute.

This report (Volume I) is a consolidation of the knowledge and skills imparted during the institute and is divided into three main sections. Section I includes the proceedings from the sessions conducted on data collection, manipulation, storage and reporting; Section II includes the human relations component's proceedings; and Section III contains the sessions on remote access and QUERY. Each section contains an evaluation as well, based on the participants' responses to questionnaires developed by the individual sections' consultants.

Volume II is a compilation of the team presentations given on the Thursday afternoon of each week's workshop.

INSTITUTE FORMAT

The Summer Institute was divided into two, 1-week (5-day) sessions. Except for the first day's orientation session, each morning was centered around an information management topic such as data collection, manipulation, storage and reporting. During the first day's orientation session, the participants were given an overview of the workshop and its purpose and were asked to fill out a questionnaire setting forth their expectations of the institute, and some "real" problems they were experiencing at their respective institutions.

They were requested to relate the information imparted during the workshop to these particular problems, as they proceeded through the week, and Friday would be used to give each participant a chance to line up some affirmative goals to work on when returning to their individual campuses.

Some of the expectations, objectives or things the participants wanted to accomplish, as enumerated in the orientation session of the first day, were as follows.

WEEK I

- Establishment of a data bank
- To determine the feasibility of using computers
- Better understanding of the role of a computer in management
- Securing data for internal and external use
- To learn how to collect data for prospective donors, foundations, etc.
- How to set up a centralized data management system
- Explore methods of coding that are uniform and consistent
- Determine ways to improve the flow of data

- How to better serve the colleges' information distribution needs while being understaffed, and how to maximize the use of limited resources
- What to do with information once you get it
- Effective ways to validate accuracy of data collected

WEEK II

- Specification and analysis of basic program objectives in each department
- Establishment of methods and analytical techniques
- Analysis of output in terms of the objectives
- Defining techniques for effective information flow and data collection
- Exploring ways of gathering and recording data
- Ways to utilize meaningful data e.g., development of long-range plans
- Developing a realistic systems approach for individual institutions
- How to implement an MIS on campus
- Discussion of management by objectives
- How to increase the accessibility of computers
- Discussion of management by objectives
- Improvement of institutional-wide communication

Also distributed in the orientation session was a group of simulated (model) problems which were to be solved by teams of participants based on the resources available at the institute.

Unlike the 1972-73 Institute, the participants were asked to group themselves in teams of 4-5 persons, rather than being assigned to a particular team (by the MIS staff) on the basis of administrative areas. It was suggested that when there were two or more persons from the same school, that they become part of the same team so as to facilitate MIS follow-up activities when they returned to their respective institutions. These teams were to select a problem from the four given (see General Appendix), and prepare a "solution" to present to the total group on Thursday afternoon.

The mornings following the orientation session were conducted by consultants from the Optimum Computer Systems, Inc. These sessions, built around simulated problems given to the participants during the orientation, dealt in-depth with the solving of management and decision-making problems by the effective utilization and handling of information and data necessary to solve those problems. The afternoon sessions (Monday-Wednesday) were divided into two parts, the first half of the afternoons was conducted by the Black Affairs Center, Inc. and was the human relations component of the workshop, mentioned previously. The objectives of these sessions were:

- To promote a positive problem-solving climate where cooperation and teamwork, rather than competition and conflict, form the bases of interaction.
- To further develop participants' abilities to plan and institutionalize change efforts that are more in keeping with current and anticipated needs than with "past practices".

The second half of those afternoons provided instruction in the use of remote access computer equipment and the QUERY computer software system, an MIS-developed package for manipulating, storing and retrieving data on the TACTICS colleges and universities. This session was designed by MIS to be an unstructured "hands-on" session which would allow participants, from those having no knowledge of teletype-terminals and computers to those experienced in the field, to work at their own pace using appropriate text materials provided and the two discussion leaders as resource persons.

Thursday afternoon was set aside for the teams to present their reports based on the particular problem they chose and Friday morning was the wrap-up session conducted by the Black Affairs Center and the Director of the Management Information Systems. This session provided a forum for participants to surface any other concerns or questions as well as to offer plans they had on how they could extend their learning experiences in a concerted effort on their individual campuses. Based on the questionnaire, submitted in the orientation session, the participants and discussion leaders pulled together the knowledge gained in the sessions and applied it to those problems cited at the beginning of

the week. Participants were asked to make verbal commitments to solving these problems and/or utilizing the skills gained when they returned to their campuses. Mention was made that two in-service meetings would be held to deal with progress made in this area, and that teams formulated on the campuses would be selected to present their experiences at these in-service meetings.

FOLLOW-UP ACTIVITIES

Based on those verbal commitments, the MIS Directorate followed up the activities of the workshop participants with a questionnaire soliciting what, if anything, they were doing on their campuses since they had left the workshops. They were asked to state their goals and objectives and list reasons why they could or could not attain them. On the basis of these returns, the MIS staff would be visiting those campuses, providing any assistance requested, and lining up teams to make presentations at the In-service session to be held in October 1973 and February 1974.

ATTENDANCE

The attendance at the Summer institute was not as large as expected, based on pre-registration applications. Out of 101 applications submitted to the MIS office, only 53 persons actually registered for one of the two sections (weeks) of the institute. Because of this fact, the smaller groups proved more useful in creating an atmosphere where more individualized instruction could be given, and more participant involvement resulted. The 53 participants attending the institute represented 36 different colleges/universities; one organization working on behalf of the schools and 14 different states and one territory of the U.S.

The following pages include the materials and daily activities of the three sections of the institute.

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Section I

TECHNIQUES OF INFORMATION MANAGEMENT

Part A

PROCEEDINGS

Prepared by
Optimum Computer Systems, Inc.
Washington, D.C.

Optimum Computer Systems, Incorporated—a minority owned and managed company—is a professional management consulting, software developing, and educationally—oriented firm, specializing in the application of computer science to the solution of application problems.

INTRODUCTION

The portion of the Summer Institute conducted by Optimum Computer Systems, Inc. had as its main objectives the provision of insights into the activities or steps necessary in the management problem-solving process. Further, the sessions were designed to look at how an information system supports that process.

The method employed to achieve these objectives was the use of a structured "case study" problem. Through the use of this case problem, we attempted to examine:

- What is an information system
- What are the key components and activities involved
- The purpose of an information system
- How does an organization, such as those represented, go about developing an information system

A secondary objective was to provide the participants with the necessary skills to analyze and develop, with appropriate documentation, their solution to a selected problem (taken from those distributed by the MIS/TACTICS staff).

INFORMATION SYSTEM CONCEPT

If your organizational strategy is to be effectively implemented, there must be organizational arrangements to provide members with the information they will need to perform their tasks and relate their work to that of others. Information flows inward from the environment to all organizational levels; within the college it should move both down and up.

In view of the bulk of information moving upward, it must be reduced to manageable forms as it nears the top. This condensation can be accomplished *only by* having data synthesized at lower levels, so that part of what moves upward is interpretation rather than fact. To achieve synthesis without introducing distortion or bias or serious omission is a formidable problem to which administrators must remain alert. Well handled, the information system brings to the attention of those who have authority to act, not the vast mass of routine data processed by the total system, but the significant red-flag items that warn of outcomes contrary to expectations. A well-designed information system is thus the key to "Management by Exception." This in turn is one key to the prevailing problem of the overburdened administrator.

In the gathering and transmitting of information, accounting and control departments play a major task. One obstacle to effective performance is devotion to specialty and procedure for its own sake. That is greater concern for the forms than to the overall purpose. The federal government, the State Boards of Higher Education, Foundations, etc., all with requirements which must be met, impose on the ways in which information is collected, and analyzed. However, none of this prevents the generation and distribution within an organization of the kind of information administrators find most useful.

It is important to note that the generation of data is not an end in itself. Its function should be to permit individuals who necessarily perform only one of the many tasks required by the college's mission to know what they need to know in order to perform their functions in balance with all others, and to gain that overview of total operations which will inform and guide the decisions they have discretion to make. Designing the flow of information is just as important as choosing a principle of sub-division in outlining your organizational structure. Information is the starting point in trying to determine how the organization should be changed. It is the way to monitor the continuing adequacy of strategy and to warn when change is necessary.

OBJECTIVE SETTING, PROBLEM SOLVING, AND DECISION MAKING

The material which follows reviews the nature of problem solving. In passing, it should be noted that there are any number of problem-solving processes, all growing out of the scientific method. These formulae are not uniform, rather there are some critical ingredients which seem to be present in all of them. The critical ingredients involve:

- Stating the problem and then relating it to objectives
- Finding some way of developing and arraying alternatives and making systematic judgments about them
- Some way of testing hypotheses or assumptions (sometimes considered under the heading of selecting an alternative)

Therefore, the discussion of planning and problem solving which follows is not intended to be *the* way of doing it, rather it provides a basis for discussion of some of the critical components that must exist in any effective process of objective setting, problem solving and decision making.

At the heart of the new management sciences is a series of mathematical and statistical techniques which basically have emerged from the scientific method. Many of these techniques are highly sophisticated, using new methods of quantitative decision making, linear programming and other esoteric processes. However, for the operating administrator who may never become an expert in statistical and mathematical planning and decision making, there is at least a need for a common framework for communicating more effectively with specialists in the technical aspects of management. This framework should also have utility for the administrator to apply his day-to-day problem-solving and planning efforts.

In the material which follows, we shall examine the key management activities which are tied in closely to rational problem-solving efforts. However, to consider problem solving without linking it to other elements of the total planning process is inappropriate, so the discussion begins with a brief review of critical elements of planning.

KEY PARTS OF THE PLANNING PROCESS

There are a number of ways of analyzing the total planning process. For our purpose, we can dissect it into four parts: objective setting, problem solving, decision making, and programming.

Objective Setting refers to the determination of purpose, direction, or overall goals.

Problem Solving is that sequence of events of activities in which one begins specifying obstacles to achievement and begins collecting data, organizing the data, identifying and ordering alternatives, etc.

Decision Making occurs when particular alternatives or strategies are chosen from among those identified.

Programming is the working through of the plan, alternative or strategy which has been selected. As such, it involves the systematic development and specification of action steps, check points, measurements, standards and review procedures.

Obviously in practice, these four parts of the planning process flow into one another and often do not appear as discrete steps. However, in trying to understand what takes place in planning, it is helpful to make some clear distinctions among these parts.

OBJECTIVES AND PROBLEMS

Need to Distinguish Between Objectives and Problems

The effectiveness of managerial decisions and programs is limited by the way in which one deals with the earlier steps of stating objectives and stating problems. Recognizing the difference between statements of objectives versus statements of problems is crucial. Many management decisions are ineffectual because the process starts with "the problem" which, when ultimately solved, does not contribute to the achievement of the objective.

To clarify and illustrate this point, consider a typical problem-solving orientation which can be found in a management situation: "How can we reduce costs by 10%?" With this question, the organization proceeds to solve this problem by setting up a variety of requirements, curtailing programs and services, establishing sanctions, etc. As a result, the organization perhaps is successful in reducing costs by 10% but in the process it may lose students, create faculty unrest, increase turnover, weaken its public image, etc. The main point in this rather simple illustration is that the objective was not determined; instead, management moved in on a problem without ever relating its successful solution as a contribution to over-all organizational purpose.

Such behavior leads to the apparently paradoxical situation found in some organizations where the organization is suffering or failing because people or units within the organization are doing their jobs too well. That is, they are allocating resources, time and energy to solving problems extremely well but, unfortunately, not contributing to overall purpose and, in some cases, actually distracting from it. Thus, we have the record-keeping or financial group doing its job so well that the records are maintained in an almost perfect fashion but, in the process of maintaining such records, restrictions are introduced which block departments from using them; as a result, the contribution of the record-keeping function to the obtainment of organizational goals is substantially reduced.

Definition of Objectives

An objective, in management terms, is often described as a broad statement of purpose, although the term has come to mean any statement which reflects where one wants to be at sometime in the future. Statements such as, "We want to have the best information available on our graduates," is a statement of objective; it is where this individual or organization would like to be at some future time. The statement, "We would like to be the best school in our specialty field," is similarly a statement of objective.

As one moves downward in the organization hierarchy, "more limited" statements of objectives can be heard. For example, "I would like to have the most efficient department in the college," is also an objective, a statement of where one would like to be. Even the statement, at a much lower level of concern, "I would like to hire Mr. X," is a statement of objective; a statement of a situation that the speaker would like to have existing at some future point. Clearly, then, objectives can be set at almost any level of concern. The fact is that for almost any objective one can conceive of, there is a higher order objective; similarly for every objective stated, there is a lower order statement which sheds light on how that objective might be achieved.

Definition of Problems

Once the administrator has determined the objective at whatever level he feels is significant, and hopefully, once he has tested it against organizational realities and its possible contribution to overall purpose, he then begins to identify problems. Problems can be defined as the obstacles, conditions and phenomena which stand in the way of achieving the objective. In simple terms, problems represent those conditions which discriminate between where one is and where one wants to be.

So, one critical base from which to look at the planning process and from which to judge any specific plan revolves around the manner in which objectives are defined, the way in which objectives are related to specific problems and the extent to which the definition of objectives and problem solving reflect appropriate concern for both purpose and risk.

PROBLEM SOLVING AND DECISION MAKING

The "model" outlined below is presented in a "step" fashion or sequence. That is, various components or problem solving and decision making are ordered or arranged along a time continuum. However, it should be noted that at any point on this time continuum, it may be necessary to "go back" to an earlier step. For example, after an administrator has stated the problem and moved on to gathering data, he may uncover some information or facts which require him to restate or redefine the problem.

Basic Steps or Stages

Step 1: Pressure on Individual. A person begins to work on solving a problem when he senses something is not as he wants it to be. Earlier, we defined problems as conditions, facts, etc. which were obstacles to getting where one wanted to be--obstacles to achieving a desired goal. As a person feels, senses, or becomes aware of the fact that something is not as it should be or as he wants it to be, he has begun the problem solving process. Without this "pressure" to have things different than they are, there would be little or no need for changing things, overcoming obstacles and hence solving problems.

Step 2: Statement of Problem (or Problem Identification). Once the individual or organization feels the pressure, senses that something is not as it should be, the next stage is the determination of what is wrong. Here we have the attempt to identify the problem or obstacle. This searching for and identification of obstacles or problems may be considered as part of the process by which the administrator arrives at the statement of the problem.

One of the interesting points here is that the pressure as originally sensed or felt may not lead directly to the proper statement of the problem. Returning to one of our earlier examples, a President may feel that too much money is being spent by his school and thus may be tempted to state the problem in terms of reducing costs. As he begins to move in on the problem solving process, he may begin to see, and hence state, the problem quite differently, i.e., how to reduce waste, how to improve effectiveness or utility. This change in focus is often the result of clarifying objectives.

Step 3: Collecting and Organizing Data. Having identified and stated the problem, consideration must then be given to collecting and organizing data *relevant* to the problem. Facts and information must be obtained and organized in some fashion. Here the administrator should take into account a series of issues:

- Within the limits of available resources (time, money, manpower) what amount of data must he have to act? Since the data which can be collected is almost endless, when does he determine he has enough and when is he reaching the point of diminishing return?

- Similarly, since the facts or data gathered should be those which will be most useful in the problem solving, how does he identify which areas to explore? That is, which data are relevant to the problem and to overall objectives?

- How does he order the data? Every administrator has faced situations in which he has been "swamped by data" and recognizes the need to order them so that he can begin to see relationships. For instance, how is recruiting affected by advertising or what do faculty costs mean in terms of meeting future manpower needs? It is only as discrete pieces of data are examined in terms of their

potential interrelatedness, that the administrator can begin to see cause and effect relationships. Similarly, it is only when this ordering takes place and relationships examined that new and vital data needs are uncovered.

Step 4: Determining Alternatives and Strategies. In the next stage or step in the process, various alternatives for dealing with the problem (strategies for overcoming the obstacles) must be determined. This step involves specifying the alternatives, and testing or analyzing the consequences of each. Another way of stating this is that the administrator searches for possible solutions, and weighs the advantages and disadvantages of each in terms of whatever criteria he is using.

A key point here is criteria. In order to weigh the relative merits of alternatives, there should be some agreed upon criteria. If, for example, an organization wishes to construct a new central office building and has a number of architectural design proposals submitted, it may be difficult to determine which is best unless specific criteria have been established. Should they select the one which allows for the lowest construction cost per square foot, or the one which offers maximum flexibility for future expansion, or the one which is most esthetically pleasing (judge by means of a panel of "experts," that the President likes, take a community poll, etc.?)

In any case, regardless of the specific situation, the determination of criteria is a necessary ingredient in weighing alternatives. This leads into the next step of the process which is often referred to as selecting alternatives or decision making.

Step 5: Selecting an Alternative. Closely related to the process of searching for solutions and weighing advantages and disadvantages is the final process of selecting an alternative or strategy. In much of the literature regarding problem solving and decision making, this is often referred to as the point at which problem solving ends and decision making takes over. Thus, once data has been collected, weighed, and criteria established then the judgmental process begins and the administrator is engaged in decision making. From earlier references, it should be clear that in many ways decision making goes on throughout the total planning and problem solving process. That is, every step in the process involves small decisions: i.e., What kind of data should we select? What are our objectives? How do we define alternatives and strategies? etc. Accumulation of these small decisions facilitates the final decision--the final choice of a strategy which in the best judgment of the decision maker will produce optimum advantage or the best possible payout.

Clearly as the decision making effort closes, one then moves into specific operational decisions, action plans or the implementation phase. This will not be covered in detail since it moves beyond the basic planning process. In passing, however, it should be noted that any plan which does not build in standards and controls builds in a great many possibilities for failure. Thus, although in the technical sense, the problem solving process ends when an alternative has been chosen, in a fuller managerial sense the part of the process which will produce a payout has just begun.

Therefore, the time and energy devoted to establishing controls, measurements and feed-back systems is at least of equal importance with any other phase of the total planning process. (Finally, as previously indicated, the programming process essentially takes over as one moves from having made a decision into some kind of action plan.)

Step 6: Follow Up. Again, although the planning process in a formalistic sense ends when a decision is made, clearly in an operational sense planning and doing cannot be separated. Therefore, part of the process of planning involves the determination of a follow-up procedure. As previously indicated this may include a variety of controls, feed-back systems and measurements all designed to evaluate the effectiveness of decisions that have been made and the actions taken to carry them out. It is only in this way that the administrator can be sure that the course of action that he has settled upon are truly overcoming the obstacles or problems he faces in attempting to move toward the specific organizational objective for which the plan was devised.

Factors Influencing Problem Solving and Decision Making

The outline above is, in effect, an attempt at systematically or logically ordering a process which in practice does not always follow a neat pattern. One example of the variations which occur was cited: the collection of data (step 3) can result in a need to go back and restate the problem (step 2).

In many management situations, a repeated recycling of steps is required. Problem solving and decision making is not always a straight path from felt pressure to follow-up or evaluation of results. Nevertheless, an understanding of the various elements or steps is useful as both a guide to direction of effort and as a sort of checklist of what can be done to maximize effectiveness. (Note: The "recycling" nature of problem solving and decision making applies as well to setting objectives.) Contrary to the assumption often made that objectives tend to remain fixed once they are set, the fact is that objectives as well as problems can be reformulated as the administrator moves through the objective setting, problem solving, decision making and program-

ming sequence. One cause for such reformulation of objectives might be the discovery during data collection, that the organization does not have adequate resources for reaching the objective as originally stated. Still another possibility would be the realization that one objective (recruit more students) contradicts a second objective (reduce overall financial aid expenditures).

There are many factors and forces which influence how successful an administrator or organization will be in this process. For instance, the amount of data available or readily obtained (within resource limitations), the administrator's ability to and attitude towards ordering the data and establishing relationships, the organization's or administrator's willingness and capacity to program and implement decisions, all play a vital role.

One of the major thrusts of management has been aimed at improving the effectiveness of the planning, problem solving and decision making processes by developing techniques, procedures and devices for upgrading the capacity to adequately gather and store data, relate problems and programs to overall objectives and weigh, evaluate and test the consequences of various alternatives.

In addition, considerable attention has been given to looking at how the individual administrator's approach or style increase or decrease his effectiveness in dealing with both the total planning process and the various components of it (such as stating problems, collecting data, etc.).

SEMINAR CASE STUDY PROBLEM

In order to illustrate the points previously made, the following "case study" was used to provide the participants with a practical exercise. This particular case was chosen because it closely parallels many of the problems experienced by the participants.

The President recently attended a conference called "Managing Change." This conference had as one of its major components a Workshop entitled *Higher Education and the World of Work*. The major focus of this workshop was an examination of the current and future role of Higher Education in responding to the challenges of the next decade.

Peoples College has always considered itself an innovative institution. The main reason the President attended the conference was his continuing interest in pioneering in the adoption and implementation of a more relevant institution–that is, moving from the old monolithic, "directed" educational program into a multiform, responsive one.

One of the key points made during the conference that stuck in the President's mind was, "spending for National and Regional objectives produces jobs." When he returned from the conference, he began to examine these objectives in the light of what his school was offering students. Since he felt that his institution, and institutions like his, were producing the major share of Black leadership talent, he was greatly concerned at the *gap* between the National objectives and the offerings of his school.

One of his first acts, after reflecting on this problem, was to appoint a planning group, to analyze this problem and develop a course of action. *Your team represents this planning group.* The President has decided that your tasks are to be accomplished in three phases.

- Review existing objectives, and determine where and how they can be modified to ensure that the college is assisting the development of minority leadership in areas where they are sparsely represented.
- Further you are to determine and list the types of data that will be needed and who and where it should come from.
- Identify data to analyze the problem, the rationale for use, and your approach for collecting it.
- Develop a simple flow chart depicting the action steps needed to accomplish your assigned task.
- Describe the type of data collection instrument(s) that you will need for this task and appropriate rationale.

Note: The actual "Case Study" is not included herein, due to the need for brevity in this report. However, the case study that was utilized was originally developed & used in a National Association of College & University Business Officers (NACNBO) Planning and Budgeting Workshop. Slight modifications were made in order to make it more applicable to the MIS Training Institute.

The previous page and those that follow explain the basic problem involved and the methodology utilized in solving college/university management problems in general and therefore were felt to be sufficient without the actual "case study" problem.

GENERAL INFORMATION FOR SEMINAR CASE PROBLEM

Any information or data can be useful in solving a problem or problems only when it is:

- Valid and reliable
- Relevant to the problem
- Grouped and organized in a meaningful format
- Interpreted and presented in an appropriate manner
- Used correctly in conjunction with appropriate analytic tools and methodology

To illustrate the point, two sets of "information" are provided: Set A relates to the national goals for the 1970's and Set B relates to the serious imbalance in minority representation in the workforce. Your task is to analyze the relevance and usefulness of this information in terms of the Case Problem stated earlier. Select the information items that are relevant and useful in developing your approach for addressing the case problem. Make a determination of any additional information items that your team thinks needs to be added. Prepare a report for the President summarizing the following:

- Information items to be considered in approaching the problem
- Your reasons and explanations for selecting those items
- Your plan for the use of those items in approaching the problems

Set A. National Goals for the Seventies

- Provide mass-transit for urban areas
- Making rural areas more accessible
- Revitalizing blighted areas
- Clean-up water and air
- Pioneering and developing new energy sources
- Reducing welfare dependence
- Eliminating race/sex discrimination
- Providing comprehensive health care to citizens
- Insuring proper education
- "A job for everyone who can work"
- "A generation of peace"
- Eliminating poverty and hunger
- Decentralizing government
- Revitalizing institutions
- All volunteer army
- Nuclear disarmament
- Peaceful uses of nuclear energy and space
- Regional economic cooperation and development
- Economic and social parity among nations
- Accelerating development process in developing countries

Set B. Minority Workforce Imbalances

44% of all household workers were minority vs. 15% whites; .05% of upper political and government jobs held by minorities vs. 99.95% by whites; less than 1% of engineers are non-white and less than 2% are scientists; 85% of minority government workers fall below GS-7 vs. 30% of whites below GS-7; less than 5% of the state and national legislators were non-whites; 87% of minority workers in industry earn between 10 and 50% below national median income. Over past 25 years there has been a relative decline in minority college enrollment; 66% of minority males are engaged in semi-skilled or non-skilled occupations as opposed to 15% for white males. Minority business activity accounted for less than 1% of the gross national product over last 5 years. In 80 major public universities, minority enrollment was less than 3.9% at the undergraduate level and 1.7% at the graduate level; minority high school graduates fell on the average 25% below the median grade level in the college entrance examination; minority unemployment has remained more than double the white unemployment persistently. Only two of the minority schools have technical schools such as engineering and architecture that have been approved by appropriate industry organizations; there has been a decrease in college endowments; availability of financial resources to educational institutions has not kept pace with increasing operating costs; shifting of funds from traditional educational institutions to private institutions such as General Motors Training Institute, etc.

ANALYSIS CONSIDERATIONS AND METHODOLOGY

Practically all investigative studies, evaluations, and reports do require an intelligent use of analysis techniques. This particular section is designed to facilitate these tasks by providing an outline of preliminary approaches and methodology that can be employed in performing various types of analyses on both the data collected periodically and the data accumulated over a number of periods. Specifically, it deals with the following topics: checking of data to ensure reliability, data bank development, and short-term and long-term analysis approaches. Each one of the above topics is dealt with in greater detail in the following sections.

CHECKING OF DATA TO ENSURE RELIABILITY

Collection of data is not an end in itself. Great skill and experience in presenting, analyzing, and interpreting data are wasted when applied to material collected in such a way that its contents are incomplete, invalid or inconsistent. The decisions made by management using the analysis results are as good as the data used in analysis. This observation indicates the need for putting extensive efforts in designing and field testing of the data collection instruments, and the accompanying instructions for filling out required information accurately.

The accuracy of data will primarily depend on the following factors:

- Care with which records are kept and updated
- Level of details incorporated in the records
- Thoroughness with which data collection forms and filling instructions are understood and followed
- Care exercised in filling out requested forms
- Checking forms to ensure completeness, accuracy and consistency of the data submitted

DATA BANK DEVELOPMENT

No meaningful or conclusive long-term analysis can be performed on data unless it is accumulated over a number of time periods. The accumulation of data provides an additional time-dimension to the information available to management. In other words, storage of periodic information serves the following specific purposes:

- It provides a reliable data base to facilitate meaningful short-term and long-term analysis.
- It serves as an important source of information for management decision-making and reporting requirements.
- It can be used in developing the tools for control and monitoring.

Two basic types of analyses, namely the short-term and the long-term, can be performed on the data collected periodically and the data accumulated over a number of periods. The type of analysis approach used depends on the time-frame considered and the data base used in the analysis. In the short-term approach, the analysis is primarily confined to preparation and presentation of the relevant data for a particular period in tabular form, convenient for the reporting requirements set by the needs of top management and department officers. Totals, averages and percentages are computed for certain selected data items which can present relevant information in summary form. Apart from their use in the preparation of the periodic summary tables, the data collected is intended to be stored in a data bank so that the long-term analysis can be facilitated.

A meaningful long-term analysis of the data can be performed only when the data is collected and stored for a sufficiently large number of reporting periods. This is one of the primary reasons for the development of a data bank which can provide necessary information and thus facilitate long-term analysis in the future. The data bank will provide chronological data or time series for a number of data items. A time-series indicates numerical values concerning a particular phenomenon at various specified times. The data bank can have a number of time series depending on the number of phenomena for which the information is to be stored.

Primary attention in this section will be focused on outlining the types of analysis tools that can be utilized in performing the analysis on the data. However, any full-scale analysis attempt in the future must concern itself with the overall process of analysis which consists of the following interacting and overlapping steps:

- Definition of management requirements in light of management objectives, nature of information available and the types of operational and policy decisions to be made by management at various levels.

- Identification of relevant data elements that can be used as program inputs and outputs for performance measurement and program evaluation, and are subject to qualification.
- Design of forms to collect and accumulate selected data elements for a number of periods.
- Establishment of appropriate criteria for performance measurements and effectiveness evaluation in light of management requirements and available information.
- Development of analytic methodology which will include both the types of analyses desired and the techniques that can be put to effective use in analyzing the data.

Each of the above analysis steps are outlined in general terms in the following sections.

MANAGEMENT REQUIREMENTS FOR ANALYSIS

The nature of requirements will vary to a certain degree between different levels of management and is primarily dependent on the organizational objectives. The president's office being the focal point of institutional efforts, will be primarily concerned not only with the attainment of overall goals but also the effectiveness with which the programs are carried out. The analysis performed can aid the president and other managers in evaluating different programs, determining the most effective overall program direction, facilitating management decision-making processes and preparing groundwork for policy formulation.

The other functional offices and departments will be concerned with the performance evaluation and monitoring of the programs carried on within their own jurisdiction.

IDENTIFICATION OF DATA ELEMENTS AS PROGRAM INPUTS AND OUTPUTS

This step would involve identification of certain data elements that can be clearly distinguished as either resource inputs to the program or outputs (benefits) resulting from program operation. These elements should lend themselves to quantification to facilitate program performance measurement and effectiveness evaluation.

A few of the program inputs are listed below:

- Total budget and resource allocation
- Types and frequency of services offered
- Staff composition in terms of relevant experience, skills and training
- The dollar amount spent in each department and per student

A few of the program outputs are listed below:

- Nature and frequency of services rendered
- Number of students served in different educational disciplines
- Number of students completing the study program
- Number of students who obtained employment and the type of employment
- Impact of the school on the Black community

Some of the data elements could be considered both as a program input and a program output depending on the separation criteria used. Hence, development of appropriate separation criteria will be of crucial importance for the measurement process to be successful.

PERFORMANCE MEASUREMENT AND EVALUATION CRITERIA

This step would involve the establishment of an appropriate set of criteria for program evaluation. It comprises the measurement of program performance for a given combination and relative mix of inputs, and the evaluation of effectiveness with which the individual inputs are utilized and are contributing to the results obtained from program operation. The established criteria could be used to measure both the individual program performance and the comparative program performance.

ANALYTIC TOOLS AND METHODOLOGY

This step would involve selection and use of appropriate analytical techniques that can be used in generating relevant information for the following purposes:

- To make sound operational decisions
- To provide direction to on-going projects
- To improve programs and their management

- To formulate policies and provide guidelines for future programs
- To achieve fiscal control and monitoring
- To evaluate program effectiveness

The analysis of the data can be performed in a number of different ways depending on the type of data to be analyzed, specific objectives of analysis and the techniques employed. Some of the analysis tools and approaches are outlined for illustrative purposes: statistical tabulation, graphical presentation, ratio analysis, time-series analysis, and correlation analysis.

STATISTICAL TABULATION

The statistical tabulation is primarily concerned with the preparation and presentation of certain relevant data for a particular period or periods in a tabular form which is convenient for reporting and easy to comprehend. A statistical table usually consists of a number of horizontal rows and vertical columns of numerical data with appropriate identifying and explanatory information. The purpose of a statistical table is to present a large body of information in a concise, meaningful, and summarized form.

GRAPHICAL PRESENTATION

A "graph" (sometimes called a "chart" or a "figure") is a visual presentation of the statistical data. It is a recognized fact that the number of people who will absorb statistical facts is enlarged by presenting these data in graphic form. Moreover, many people who recoil from any set of figures find a visual form of presentation easy to comprehend. In addition, a chart sometimes makes it possible to give a degree of emphasis to certain facts that cannot be attained in any other way. The outstanding effectiveness of a chart for presenting a limited amount of data makes it a most useful statistical tool. Certain limitations should be noted, however. In the first place, charts cannot show so many sets of facts as may be shown in a statistical tabulation. In the second place, although exact values can be given in a table, only the approximate values can be shown by a chart. Thus charts are useful for giving a quick picture of a general situation, but not of details. In the third place, charts require a certain amount of time to construct, since each one is an original drawing. These limitations, however, are offset by their added effectiveness if wisely used as a tool. Curve or line diagrams and bar charts are two of the most widely used forms of graphic presentation.

The graphs can be plotted for actual data, average data, totals, ratios or percentages depending on the analysis objectives and uses. The time period could be a reporting period such as a month, a year or any other period depending on the uses of graphical presentation. The forms developed for statistical tabulation will provide most of the data required for plotting appropriate graphs suggested above.

The graphic presentation can provide an overview of short-term and long-term variations and trends in each area of interest or concern.

RATIO ANALYSIS

It was pointed out in earlier parts of this section that derived figures such as totals, averages, percentages* and ratios are useful to assist in summarizing and comparing data. Ratios are computed in order to expedite comparisons. The comparisons are facilitated as the figures are reduced by using a common base. A ratio is found by dividing the figure, which is being compared to the base, by the base. The ratios could be plotted against the time period to discern their movements and trends over a number of periods.

TIME-SERIES ANALYSIS

In addition to the statistical tabulation, graphical presentation, and ratio analysis there are other special statistical methods that are used in the analysis of time-series data. The various methods outlined in preceding sections undertook merely to present the series, not to analyze them. A time-series is composed of the following four important components:

- Secular trend
- Periodic or seasonal fluctuations
- Cyclical fluctuations
- Irregular fluctuations

Secular trends and periodic (seasonal) fluctuations are the ones in which top management will be primarily interested. The information gained from such analysis could be effectively utilized in planning resources for future activities.

A secular trend is the underlying principle of growth or decline in the time-series. The trend could be either linear or non-linear. A trend could be fitted to the time-series by fitting a straight line by inspection of the data plotted

graphically or by using the least-squared method to fit a polynomial equation describing the series. The trend analysis could be helpful in predicting the basic movement of time-series in the future. This knowledge can be used by management to prepare budgets and in planning future facilities and the volume of services. The determination of trend also will help determine the seasonal fluctuations in the series.

A periodic fluctuation is one which recurs, with some degree of regularity, within a definite period. One of the periodic movements of general interest may be seasonal variations. A number of statistical methods, available in standard statistical textbooks, can be used in developing a seasonal index which could be used to "iron out" seasonal fluctuations from the data which will help determine the secular trend by reducing the magnitude of intra-year variations. Once the seasonal index is computed, it can be used in planning the level of program staff and in preparing reliable budgets based on projected level of activity. Staff training and other management development programs can be initiated in slack activity periods, thus utilizing available resources more decisively and efficiently.

CORRELATION ANALYSIS

The purpose of "correlation" is to measure the degree of association between or among variables. The level of effort required in performing correlation analysis could be excessive if it is done manually.

However, use of computers can be very helpful in investigating the relationships between or among variables once the problem is correctly formulated. The correct use of this sophisticated technique can throw informative light on a number of different areas. Correct use of this technique in selected areas can provide management with useful information in terms of "cause-effect" relationships.

Part B

EVALUATION

EVALUATION

The objectives of this section of the MIS Summer Institute were to give the participants some insights into the activities or steps necessary in management problem solving and how an information system supports this process. The sessions were designed so as to achieve this objective in a manner that would minimize lectures and maximize participant participation. This was accomplished through the use of a structured "case study" problem.

During the sessions, we were to examine what an information system is; its key components and activities; its purpose and how an organization goes about developing such a system.

A secondary objective was to provide the participants with the necessary skills to analyze and develop, with appropriate documentation, the solution to the selected MIS/TACTICS model problems.

The participants quickly understood that they were going to be responsible for most of their learning, and they eagerly moved in on the task.

Many of the participants recognized that the issues in the case study were exactly like some real problems they were experiencing. Knowing this seemed to spark them into more enthusiastic participation.

The case problem required them to work in teams, which seemed to elicit a spirit of competitiveness between teams. Therefore, the presentations developed by them were much more carefully prepared for presentation.

Participation by all team members was high, and the subsequent critiques contributed greatly to increased internalization of the skills involved.

The participants were asked at the end of this section to evaluate it in three categories. The categories were the trainer, the content, and the process.

The Trainer

- 99% of the participants felt that the staff for this section was very well prepared, and that the presentations were adequate for their needs.
- They also felt the staff provided effective guidance for the discussions, and did not allow any one individual or group to dominate the proceedings.
- They felt that the objectives of each session were clearly identified, and the staff did a good job of facilitating and resolving any conflicts.
- They were particularly pleased that the staff did not take sides with any group, and the flexibility demonstrated by the leader.
- They felt that the staff was most comfortable in conducting the sessions, which was an indication of being prepared.

The Content

- Practically all of the participants indicated that the material presented was relevant to their needs, and presented in an interesting manner.
- While some felt that there was too much to absorb, most felt it was just right.
- 98% felt that the techniques used to present the material were effectively employed, and that they left with an adequate understanding of the material presented.

The Process

- 99% felt that the sessions were conducted smoothly and efficiently, and were about the right length.
- They felt that their interest was maintained throughout.
- Some did feel that more time should have been given to this section because of the large amount of material covered.
- Some participants also indicated that it would have helped them if they had had the material in advance of coming to the institute.

CONCLUSIONS

Because of the newness of many of the concepts presented, many participants needed much more time to absorb and operationalize them. Obviously, 3 days is hardly sufficient to address the individual needs for implementation of these concepts at individual institutions.

It appears that some regionalization and pairing concepts should be explored. This would allow more opportunities to focus the skills in a wider range of institutions while adding to the possibility of role expansion of these institutions. Such an arrangement could begin the process of various institutions serving each other's management development needs in a more efficient and economical fashion.

Part C

APPENDICES

Appendix I-A

PARTICIPANTS' EVALUATION OF THE OPTIMUM COMPUTER SYSTEMS, INC. SESSIONS

Please evaluate the training event in the following three categories:

Date: _____

A. THE TRAINER

1. Did the trainer appear to be adequately prepared for the sessions?
   yes _____ no _____ undecided _____
   Comments: _____

2. Was the trainer's presentation adequate?
   yes _____ no _____ undecided _____
   Comments: _____

3. Did the trainer guide the discussions effectively?
   yes _____ no _____ undecided _____
   Comments: _____

4. Did the trainer at any time permit anyone or any group of individuals to dominate the proceedings?
   yes _____ no _____ undecided _____
   Comments: _____

5. Did the trainer identify the objectives for each session?
   yes _____ no _____ undecided _____
   Comments: _____

6. Did the trainer facilitate the resolving of any conflicts within the group?
   yes _____ no _____ undecided _____
   Comments: _____

7. Did the trainer "take sides" at any time?
   yes _____ no _____ undecided _____
   Comments: _____

8. Did the trainer appear to be reasonably "comfortable" in conducting the sessions?
   yes _____ no _____ undecided _____
   Comments: _____

9. Was the trainer flexible in his role as the leader of the group?
   yes _____ no _____ undecided _____
   Comments: _____

B. THE CONTENT

1. Was the material presented relevant to your particular needs?
   yes _____ no _____ undecided _____
   Comments: _____

2. Was the material presented in an interesting manner?
   yes _____ no _____ undecided _____
   Comments: _____

3. Was there too much___ too little ___ or just the right amount ___ of material presented?
   Comments: _____

4. Were the techniques used to present the material effectively employed?
   yes _____ no _____ undecided _____
   Comments: _____

5. Do you feel that you have an adequate understanding of the material that was presented?
   yes _____ no _____ undecided _____
   Comments: _____

C. THE PROCESS

1. Were the sessions conducted in a smooth and efficient manner?
   yes _____ no _____ undecided _____
   Comments _____

Appendix I-A (Continued)

C. **THE PROCESS (Continued)**

2. Were the sessions too long ____ too short ____ or just right? ____

   Comments: _____

3. Was the program (sessions) too long ____ too short ____ or just right? ____

   Comments: _____

4. Did the sessions hold your interest?
   yes _____ no _____ undecided _____

   Comments: _____

5. Do you have any suggestions for the improvement of the training program?
   yes _____ no _____ undecided _____

   Comments: _____

6. Was there anything about the sessions that you are dissatisfied with?
   yes _____ no _____

   If yes, please comment: _____

   _____

   _____

Section II

HUMAN RELATIONS COMPONENT

Part A

PROCEEDINGS

Prepared by
Frederick A. Hill, Jr.
Black Affairs Center, Inc.
New York City, New York

The Black Affairs Center for Individual Development and Social Change, Incorporated, is a nonprofit institution. It seeks to adapt the use of behavioral science technology to meet the often neglected and overlooked needs of the Black community.

The Black Affairs Center concentrates its energies and resources on the accumulation of knowledge about man, his institutions and his cultural systems, and the development of innovative approaches to lessening tension between Blacks and whites.

INTRODUCTION

Preparations for the Summer Institute were underway even before the close of the February (1973) Management Information System's In-Service Session. The human relations component of the institute was to be expanded in response to participant recommendations. A series of preliminary telephone conversations preceded an initial planning meeting in March involving representatives of MIS and the Black Affairs Center, Inc. (BAC).

During the months of April and May other planning meetings were convened. These were held in Washington, D.C., in Bloomington, Ind. and in New York City. By the middle of May the format for the Summer Institute had been finalized.

This report summarizes the activities for which the team of consultants from the BAC were directly responsible.

WEEK OF JUNE 10TH-15TH

Sunday, June 10th

On Sunday, June 10th representatives of the BAC consultant team met with the coordinator of the Summer Institute to review the week's activities, to exchange copies of materials prepared for distribution and to re-affirm the human relations objectives of the institute which were:

- To promote a positive problem solving climate where cooperation and teamwork rather than competition and conflict forms the bases of interaction.
- To further develop participants' abilities to plan and institutionalize change efforts that are more in keeping with current and anticipated needs than with "past practices."

Monday, June 11th

9:00 - 12:00

- Planned institutional change model
- Community climate building, resource identification, sharing expectations
- Contract building (matching workshop objectives with participant expectations)

The BAC consultant staff was introduced following the welcome and opening remarks. They continued to establish the tone for the workshop. Participants were reminded that they were expected to apply what they learned at the institute when they returned to their institutions. They were also informed of some factors which, in the past, have interfered with back-home transfer of learning. One factor mentioned was the typical day-by-day emergencies back home which cause people to set aside and eventually fail to implement their plans for development. Another was related to the workshop format itself. Too often in the past, transfer was not an integral part of the workshop design. Final comments related to participant attitudes, which sometimes conflict with the broader learning objectives.

Participants were assured that the Summer Institute, though temporary, was not an isolated event. With the aid of an illustrative model they were shown how it was part of a planned change thrust (see Appendix II-A). It was surmised that not every participant had a clear image of his role in the change process. Consequently, a procedure was initiated to clarify participant expectations and to pair them with the design of the institute. Starting first as individuals, then pairs and quartets, participants were guided through a series of community building exercises. They introduced themselves, sharing among other things their personal resources and their learning expectations.

At the conclusion of this activity phase, participants' expectations were posted. Then, representatives from the three cooperating agencies–MIS, BAC, OCS–addressed themselves to the issues posted. As the session closed the participants seemed confident that their needs would be met. The entire morning's experience helped to establish a sense of community.

1:00 - 3:00/3:00 - 5:00

- Definitions–interdependency, cooperation, competition, conflict and crisis
- Paradigm of human interdependency states
- Small group interaction–skill practice (analysis of social systems)

Pre-workshop participation registration was larger than the actual enrollment. Nevertheless, to maximize the possibility for individualized attention participants were grouped into two sections (A & B) as originally planned. The A section attended the BAC workshop between 1:00 and 3:00 while the B section was introduced to the MIS Query System. At 3:00 the groupings were reversed. Section A went to Query and Section B to the BAC workshop.

The start-up for both sections of the BAC workshop was similar. An overview was presented of the week's activities. Then participants were given definitions for the terms "interdependence" and its composite forms "cooperation", "comp-

etition", "conflict", and "crisis". A paradigm was introduced which explained how the four states of interdependence interrelated. The conditions which promote a cooperative relationship were outlined.

- Awareness of the total problem situation
- Awareness of how one can personally contribute to the problem solution
- Awareness of how one can help others make a *maximum* contribution to the problem solution.

Next participants were involved in a situational exercise designed to help them better understand the dynamics of human interactions. The exercises differed from one section to the other.

Section A participants were asked to form pairs and to select one of their members to engage in a role play. When the action ensued the other participants observed what occurred among the "actors." At times, when the action was stopped, the pairs consulted on how best to allocate a shortage of material resources which was the source of conflict among a supervisor and his subordinates.

The problem was eventually solved to the "actors" satisfaction. However, they found that the solution placed them in difficulty with upper management. Unmindful of institution-wide ramifications they had tackled the problem as if it were a local issue and, in doing so, violated rules governing the management of such disputes.

This exercise illustrated how short-ranged approaches to problem solving tend to be counterproductive within the context of the broader community. Discussions of this point raised such issues as how or should one attempt to alter institutional rules and procedures to conform with changing values.

Section B participants were exposed to a different learning experience. They were organized into competing teams. Each team was given an identical set of problems to solve. Each set had fewer problems than there were team members. The team that solved the most number of problems in the shortest length of time was financially rewarded. The instructions were that each team member had to select a problem from several passed to him or her. He or she, in turn, passed the remaining problems to the next person in line and so on. The last person had to receive a problem—"the buck stopped there." Each problem solver worked alone and in silence.

During the discussion which followed the participants recognized that for highly complex problem solving the team approach was preferable to traditional administrative arrangements. The latter tended to promote unnecessary competition, reduced overall effectiveness and encouraged the under-utilization of human resources. For highly segmented work forces achievement was related more to position in the chain of command than to skills, knowledges, experiences, etc.

A concommitant learning emerged as the winning team tried to decide how the money should be divided equitably. Opinions differed. Since not every member had solved his or her problem, the issue was whether and to what extent an individual's contributions should be recognized and rewarded. A compromise settlement was obtained.

7:00 - 9:00

- Lecturette models of consultant
- Skill practice in consultation (analysis of back home human relations problems)

Participants were not divided into A and B sections during the evening consultation session. The session was formally structured so that participants could better acquaint themselves with one another and with the consultation process. A lecturette was delivered which outlined five types of consultant behavior. During the discussion period which followed issues surfaced related to the capacity of historically Black colleges and universities to make full use of available consultant services. Some of the related difficulties were: lack of knowledge about the role of outside consultants; lack of knowledge about the availability of different consultants; and an apparent reluctance to go beyond campus boundaries in search of aid and assistance. Next, the concept of an internal or peer consultant was introduced.

Participants were given a handout (see Appendix II-B) and asked to consider a problem they had relating to others in their back home institutions; one that hampered their ability to function effectively. Each person wrote a description of the problem situation. Then the group was divided into several three-man teams. Each team member was assigned a specific role. Some were consultees (persons with the problem), some were consultants. Others were non-participant observers who watched the interaction between consultants and consultees.

Each role group was briefed separately. The observers were instructed to notice whether or not consultants assumed one or more of the consultant styles introduced at the beginning of the session. Near the close of the evening the participants talked about the experience. They questioned whether a good or bad consultant role *per se* existed. One of the conclusions drawn was that an appropriate role for a consultant was one that accommodated itself to the demands of the situation and the particular preferences of the consultee.

Tuesday, June 12th
3:00 - 5:00

- Opinionnaire feedback
- Review and analysis of The Moynihan Memorandum
- Skill practice exercise (Force Field Analysis)
- Summary–Implications for the 1970's

The practice of conducting split sessions with the A and B sections was discontinued.

The focus of this session moved beyond the boundaries of the institution and leveled its attention on external environmental factors which influence the course of human interaction.

Data from an opinionnaire administered the previous morning were fed back to participants. Some of the participants who held opposing views, verbally confronted one another. However, things subsided when it became apparent that their differences were more a function of their frames of reference and accessibility to pertinent data. (See Appendix II-C for Opinionnaire.) It was recognized that opinions are as much an expression of values as they are of facts. Next participants were encouraged to indicate to what extent they valued persons who over the years influenced and directed the course of the nation.

Among the names considered was that of Patrick Moynihan, one time advisor to President Nixon. Some participants responded positively to him, others negatively. The majority, however, were indifferent to the name. Participants were given an opportunity to read a copy of a memorandum Moynihan had written to President Nixon regarding the status of Negroes in the United States. This new source of data affected some noticeable changes in the attitudinal profile of the group. (See Appendix II-D.)

Participants met in their teams, discussed the memorandum and identified its goal. Their conclusions varied.

To take the spotlight off Black people.

To communicate the hopelessness of spending money on Black people.

To influence the President's actions regarding administrative policies towards Black people.

To substantiate the stereotyped image of Black people in America.

To provide background information on Black people for political purposes.

Next participants were introduced to a planned change diagnostic tool Force Field Analysis Model (see Appendix II-E). They were then asked to review a prepared analysis of the Moynihan Memorandum which utilized this approach, and identify current actions which seemed causally related to the ideas Moynihan expressed. Their findings (supported by newspaper clippings) suggested that Moynihan directly, or indirectly, influenced the administration's domestic policies which affect the Black community.

Wednesday, June 13th
3:00 - 5:00

- Human relations exchange
- Skill practice–application of resource exchange model to back home social system
- Lecturette–The problem solving process

The lists of expectations generated on Monday were reexamined. Participants were satisfied with the extent to which their expectations were being met. However, they could not conclude with any degree of certainty whether other members of the institute felt as they did. To aid them in this process a resource exchange analysis model was introduced. Participants were invited to use the institute for developing skills in the application of the model.

A matrix was constructed which depicted the kinds of resources that were exchanged among the human components of the institute and its environment. The matrix indicated that some components of the institute–participants, consultants, MIS coordinator, support staff, etc.–were giving more than they were receiving. A resource exchange imbalance of this sort might be cause for alarm under different circumstances. However, the "inequities" in the context of the institute were in keeping with the expectations of those involved.

Next participants developed a resource exchange matrix for the units in which they worked back home. Some had difficulty with this assignment. Their knowledge of the kinds of resources and the role functions and expected behaviors of the human components in their systems were incomplete. It was suspected that this state of affairs was attributable to the fact that historically Black colleges and universities currently are in a state of transition.

A lecturette on change and the problem solving process followed. A handout was also distributed which outlined in part some of the blocks that are typically encountered at each stage and some techniques which can be employed to overcome barriers to progress (see Appendix II-F).

Thursday, June 14th
4:00 - 5:00

- Review and summary
- Action planning around back home problems

Due to time constraints Thursday's session was abbreviated. The hour was used, nevertheless, to review the concepts and techniques which had been introduced during the week. Particular emphasis was placed on the consultation process and the application of the Force Field Analysis Model to back home problem situations.

One participant, who found the consultation session Monday evening extremely helpful, volunteered to be the recipient of a total group consultation. As a result of this experience, she was able to redefine her problem area and establish change objectives which had greater potential for minimizing the problem.

Friday, June 15th
9:00 - 12:00

- Hollow squares exercise
- Feedback
- Plans for follow-up

Participants busied themselves during the week acquiring the necessary skills and knowledges to enable them to function more effectively back home. It was time to give them an opportunity to test reality and perhaps better anticipate the kinds of follow through support their institutions needed in the months to come.

Participants engaged in a simulation exercise called the Hollow Squares. They were divided into three role groups consisting of planners, operators and observers. The operators were led to a separate room and asked to wait for further instructions. However, if after 20 minutes no one came to instruct them they were to return to the general assembly room. Meanwhile, the planners charge was to instruct the operators on how to assemble a hollow square. The observers were asked to watch and record the kinds of interactions that occurred among and between planners and operators.

At the end of the allotted time the activity of the planners was called to a halt. The operators were brought in and seated at their work stations. The planners gave the operators their instructions. However, when the operators were turned loose they were more confused than enlightened. (For a copy of the exercise see Appendix item II-G.)

During the discussions which followed, a number of interesting observations were shared. For one, the planners had become so engrossed in competing among themselves for the status of "the" instructor that they failed to adequately consider the thoughts, feelings and level of readiness of those for whom their instructions were intended. On the other hand, the operators spent much of their waiting time and energy feeling threatened by and suspicious of almost everyone. They were better prepared to thwart than to support attempts to give them guidance.

The hollow square exercise refocused attention on the issue of transference and the utilization of knowledge back home. Participants saw themselves as planners and the people back home as operators.

While the human relations evaluation questionnaire (Appendix II-H) was being collected, participants took the opportunity to reflect on the week's experience in preparation for the concluding phase of the Institute--MIS support and follow-up.

WEEK OF JUNE 18TH - 22ND

Monday, June 18th
9:00 - 12:00

- Planned institutional change model
- Team building, resource identification, sharing expectations, resource negotiation
- Contract building (matching workshop objectives with participant expectations)

The second week of the institute was modified slightly in order to strengthen the program overall. The welcome and opening remarks included mention of the responsibilities of the three cooperating agencies in relation to the objectives of the institute. A written statement summarizing what had been said was distributed to each participant.

The BAC consultant team introduced themselves. Again, they illustrated how the institute was one of several events in a sequence of planned change efforts (Appendix II-A).

The community building phase of the morning differed from that of the previous week. Participants were invited to take part in grouping themselves into teams pursuant to the purposes of the institute. Criteria for forming teams were distributed. Participants clustered into six role groups, then fanned out merging into five multi-discipline teams. Each team selected a representative to meet with the staff of the institute to assess themselves and negotiate a more equitable distribution of human resources. As it turned out, no re-groupings were necessary.

The rest of the morning was spent exploring team resources, identifying expectations and matching these expectations with the format of the institute.

3:00 - 5:00

- Definitions–interdependency, cooperation, competition, conflict and crisis
- Paradigm of human interdependency states
- Exercise–small group problem solving
- Lecture–comparison of System "X" and "Y"

Participant actual attendance again was below anticipated enrollment. However, a procedure had been instituted which made it easy to void the notion of split sessions.

The orientation and situational exercise employed followed the format used Monday, June 11th (see page 16). There was one exception however. The resulting discussions were enlivened by a lecture contrasting the structure of traditional (system X) and emergent (system Y) organization models.

Participants were informed that traditional organizations–system X–were governed by rules such as:

- People should be organized first before work can proceed.
- People should relate indirectly via abstractions, i.e., organizational charts.
- Everything should have a place and there should be a place for everything and everybody.

In system X characteristically all authority is in the hand of top management who delegate tasks and responsibilities. Money and a status hierarchy are the primary elements of motivation. Labor is divided and people communicate by the exchange of products or symbols, i.e., written memos.

A system Y type of organization responds to such rules as:

- Work commences after goals and emerging interactions are identified.
- Structure should be an outgrowth of task requirements and people.
- Relationships between people should be determined by events, not abstractions.

Characteristically, authority is determined by a network of relationships. Further, in system Y roles, tasks and responsibilities are not fixed; one's "place" is a function of one's human interaction skills.

During the discussion the point was made that both systems afford their inhabitants certain advantages. Participants were advised that during the week they would have opportunities to experiment and determine which combination of system X and system Y characteristics would produce the best results on their campus.

7:00 - 9:00

- Lecturette–models of consultant

A lecture on the consultation process and varying styles of consultation was presented. The discussion which followed again centered around back-home needs. The resources that TACTICS provided historically Black institutions were reviewed in response to some of the voiced concerns. Then members of the MIS staff helped participants focus on ways that a collective effort might affect improvements in the existing delivery of service.

Tuesday, June 19th

3:00 - 5:00

- Review and analysis of Moynihan Memorandum
- Lecture (Force Field Analysis)

- Skill practice exercise (Force Field Analysis)
- Summary–implications for Black Colleges

Participants were introduced to the Force Field Analysis Model as a tool for planned change. Then the concepts were applied to a "real-life" situation, one familiar to the participants.

A member of the institute, it was alleged, smoked cigars excessively. The quantity was said to be five packs a day. The object was to reduce the level of consumption to one pack. The model that was developed is replicated below.

The change strategy adopted in this instance (see Appendix II-E for a more detailed discussion of the approach) was twofold in nature: to weaken the strength of one of the hindering forces, and to change the direction of a hindering force.

First, the availability of cigars was reduced by borrowing. Second, close associates began to harass the smoker each time he lit a cigar. The ultimate effect was to reduce the intake of cigars.

Having had an opportunity to practice and develop some facility in the use of Force Field Analysis participants were given copies of the Moynihan Memorandum. They were urged, as a team, to identify the goal of the report and list the helping and hindering forces. The teams produced a variety of interpretations of Moynihan's change objectives and related helping and hindering forces.

After some discussion participants were given an opportunity to pinpoint those forces–either helping and/or hindering–that seemed to have a critical effect on their institutions and the units in which they worked. As a part of this exercise, and in preparation for Wednesday's session, they were asked to:

Briefly describe the *situation* that exists back home indicating how the force(s) you've identified impinge on your work unit.

Briefly describe the desired situation if change were to come.

Indicate why the discrepancy between the *actual* and the *desired* situation concerns you (reasons for concern).

State the problem clearly–a problem statement should contain a description of what specific goal(s) would be achieved were the problem situation changed or improved.

Before the session closed participants were given copies of the analysis of the Moynihan Memorandum (see Appendix II-E.)

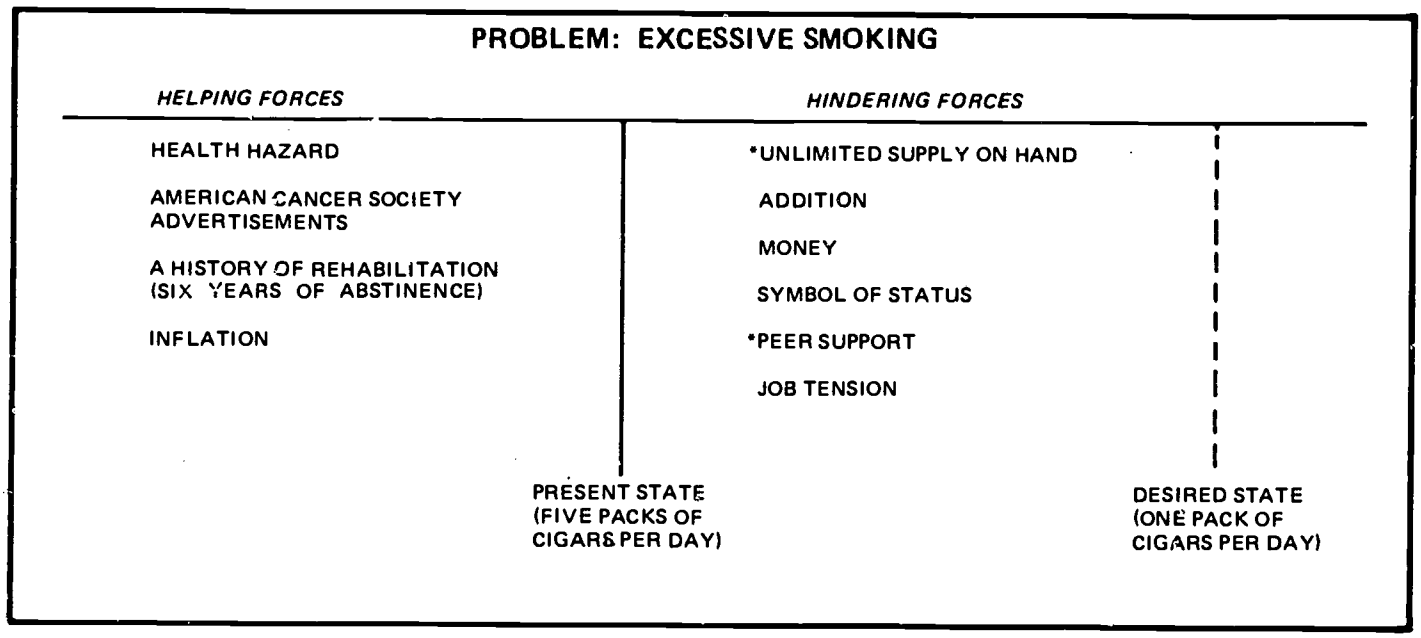


Figure II-1. Force Field Analysis Model

Wednesday, June 20th
3:00 - 5:00

- Lecturette–The Problem Solving Process
- Skill practice in consultation (analysis of back home human relations problems)

A brief review of the week's activities occurred at the start of Wednesday's session as part of a lecture on the group problem solving process. Participants then formed self-selected consultation trios in order to work on the tasks that were assigned near the close of the previous day.

Each person assumed a role of the consultee, the consultant and the non-participant observer to the consultation process. During the bulk of the afternoon the consultation trios worked independently, occasionally receiving help from members of the BAC consultation team.

Near the end of the session the trios were asked to share their work with one another. A pause was taken halfway through this activity in order to give feedback and help clarify some of the problem statements. One or two participants objected to this form of critical analysis. They felt they were being held up to ridicule. It was explained that the reason for the intervention was not to embarrass anyone but to extend help as needed without undue emphasis. Other participants felt the approach was a good one and asked that the procedure continue. However, time had run out.

Later, those who had voiced opposition admitted they had not given the task their all. "But," they said, "had we known we would be asked to give a report, we would have done a better job."

Thursday, June 21st
3:00 - 5:00

- *Exchange theory (the analysis of human resource inter-*change)
- Action planning around back home problems
- Assessment of progress

The workshop scheduled for Thursday afternoon was postponed until Friday morning. In its stead was substituted a presentation covering the origin of TACTICS, its organizational structure and its functions, particularly that of MIS.

There was general agreement that the full effectiveness of MIS was hampered in part by the lack of accurate, reliable data on the colleges being served. Suggestions were offered for improving the system of data gathering, storage and dissemination.

Friday, June 22nd
9:00 - 11:00

- Review and summary
- Feedback
- Plans for follow-up

A number of participants had arranged to depart before the close of the institute. Consequently, the human relations evaluation instrument (Appendix II-H) was administered before the formal opening of the session.

The paradigm of human interdependence was reviewed together with the structural characteristics of both systems Y and X. Participants were reminded that both types of organizations tended to induce competition and conflict. Change strategies that were additive in nature tended to aggravate conditions of stress and heighten resistance to change, particularly when they failed to correct inequities. However, change strategies that redirected forces had a greater chance for success, provided inequities could be shown to be correctable. In comparison, system Y with its capacity for accommodating itself to structural modifications was more amenable to this type of approach.

Next participants were introduced to the human resource exchange analysis model and a demonstration of its applicability. Again, the institute was used as the laboratory for analysis. Later examples were given which showed how the model could be used to collect, manipulate, store, and report evidence of inequities in other systems as well.

Part B

EVALUATION

EVALUATION

PARTICIPANTS' REACTIONS AND EVALUATION (WEEK I)

Participants' ratings of the human relations learning experiences were quite favorable. The majority were impressed with the skill and the amount of preparation of the consultants. The things they liked most were the variety of topics covered; the opportunity to look at old problems in new ways; Monday afternoon's small group interaction exercises; action planning centered around back-home problems; and the skill practice exercises, particularly the ones on the consultation process.

On the other hand, the things they liked least were the fact that rapport between them and the team of consultants did not develop early in the week; insufficient emphasis on the problems of Black colleges; and, more than anything else, the time frame in which the workshops were scheduled.

In recommending improvements, participants' most frequent suggestions were for a shorter work day, more occasions for informal interaction, a clearer explanation of the relationship between the human relations component and the total program of the institute, and the use of more role play situations related to higher education.

Participants' comments regarding follow-up were less specific. Generally, they indicated a need for assistance in engaging the cooperation of colleagues back home.

PARTICIPANTS' REACTIONS AND EVALUATION (WEEK II)

The overwhelming majority of the participants were satisfied with the extent of their learnings. In fact 50% of them rated the human relations experiences above average. The activities which drew the most praise were the various skill practice sessions and the lectures on human interdependence, systems Y and X, problem soiving and force field analysis.

There was no apparent trend to the ratings of activities which contributed least to participants' learnings. However, a couple of participants indicated that at times instructions could have been clearer. The bulk of the remaining complaints were about: the length of the sessions; the scheduling of the workshops from 3:00 - 5:00; the physical surroundings; the lack of sufficient time. (One participant felt pressured to complete the tasks. However, a few others felt things progressed too slowly and the topics were too elementary.)

In general, the suggestions for improvement focused on the issue of time were to hold sessions earlier in the day, to shorten presentations, to provide more time, and to include less material.

An assessment was made of the teams' capacities to function on tasks and at the interpersonal level. Twenty-one of the 26 respondents (81%) felt their team performed at its peak on tasks. The same rating was reported for a similar percentage on the dimension of interpersonal relationships.

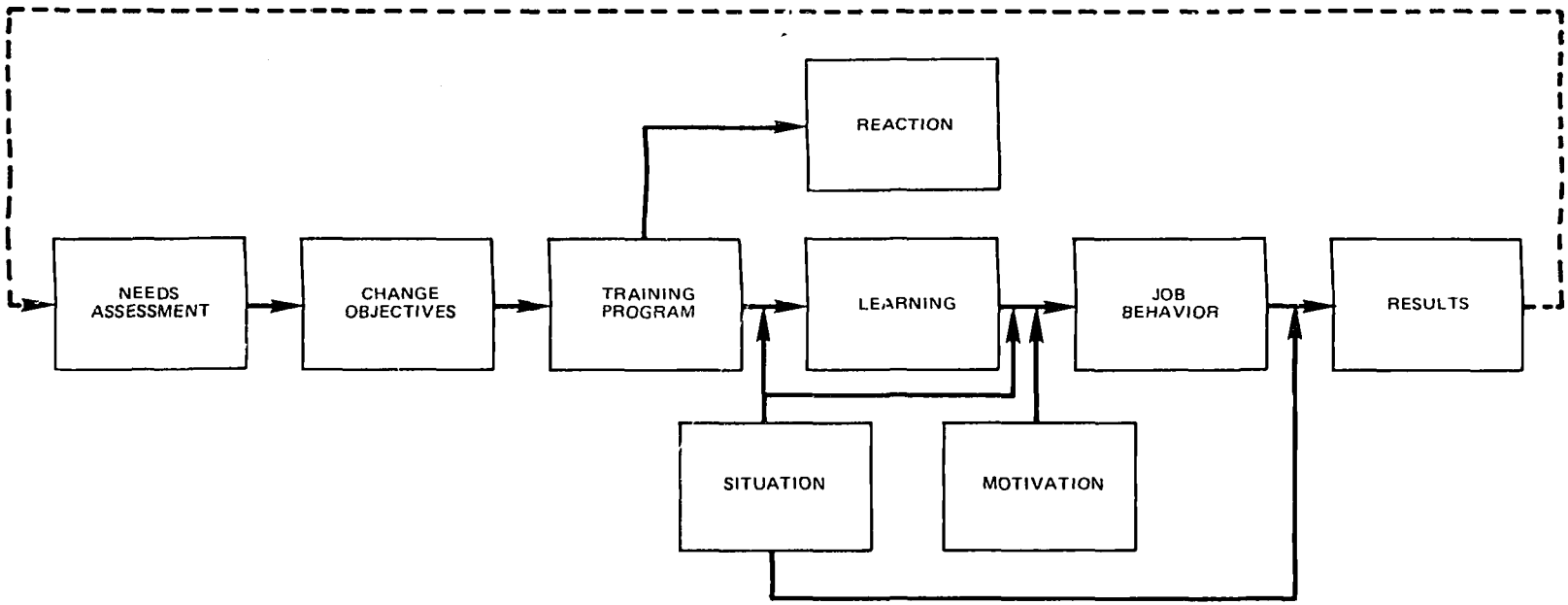
On the question of follow-up, those who responded indicated a need for assistance in general, and particularly as they try to apply the force field analysis and problem solving techniques to their back-home situations.

Part C

APPENDICES

Appendix II-A.

INSTITUTING CHANGE



Appendix II-B

PROBLEM ANALYSIS QUESTIONNAIRE

In this questionnaire you are asked to consider in detail a human relations problem with which you are confronted in your work.

Would you take a few minutes now to think about some specific work situation which meets the following criteria:

- A problem situation in which *you* are directly involved.
- A problem situation that involves your relationship with some other person or persons.
- A problem situation with which you are dissatisfied and in which you would like to initiate some change.
- A problem situation that is important to you.
- A problem situation which is presently unresolved.

The following are examples of some typical problem situations:

- Apparent "negative attitude" in co-workers.
- A persistent conflict between departments.
- A staff specialist's services are being resisted or inadequately used.
- A subordinate is unable to convince a superior that certain policy changes are needed.
- Members of a team are more interested in competing with one another than in working collaboratively.

In order that this questionnaire be of maximum value we suggest that you select the most critical problem situation confronting you in your current job.

After you have considered a problem situation, please answer the questions below.

1. Briefly describe the situation that exists indicating: Who or what is involved, who is affected, in what ways you are part of the situation, etc.

Appendix II-B (Continued)

PROBLEM ANALYSIS QUESTIONNAIRE

2. Describe the desired situation.

3. Why does this discrepancy concern you (reason for concern)?

4. Problem Statement—A problem statement should contain a clear description of what *specific goal(s)* would need to be attained in order for the problem situation to be changed or improved.

Appendix II-B (Continued)

PROBLEM ANALYSIS QUESTIONNAIRE

FORCE FIELD ANALYSIS: A WORKSHEET

List the present helping and hindering forces affecting the above problem. List as many as you can, not worrying at this point about how important each one is.

Helping Forces	Hindering Forces

Appendix II-B (Continued)

PROBLEM ANALYSIS QUESTIONNAIRE

Carefully review the list of helping and hindering forces on the preceeding pages. Then, from each set, choose three and write them in the left-hand column below.

Opposite each force, write a specific action step that can be strengthened, weaken, or re-direct the force. If there are forces which can be eliminated, indicate how this might be accomplished.

Forces	Action Steps

FINAL PLANNING STAGES

AFTER AN ACTION ALTERNATIVE HAS BEEN DECIDED UPON, A *FLOW CHART* WITH THE FOLLOWING ITEMS SHOULD BE DEVELOPED:

[THE FLOW CHART SHOULD BE SPREAD OUT ACROSS AT LEAST TWO OR THREE PAGES.]

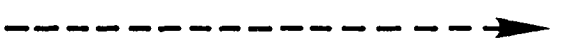
FLOW CHART

TASK	PERSONNEL NEEDS [WHO?]	COSTS	MATERIALS NEEDED	WHEN TASK STARTS	WHEN TASK COMPLETED	COORDINATION LINES OF RESPONSIBILITY	COMMUNICATION PUBLICITY	EVALUATION FOLLOW-UP

TIME LINE

TRANSPOSE THE INFORMATION ON THE FLOW CHART TO A TIME LINE, INDICATING WHICH THINGS ARE TO BE DONE WHEN AND BY WHOM:

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPT. OCT. NOV. DECEMBER

PLANNING 

PHASE I

PHASE II

MAIN EVENTS

EVALUATION

Appendix II-C

OPINIONNAIRE

We are interested in what you feel about some important social and personal issues. The best answer to each statement below is your personal opinion.

1. Job Title(s) _____

2. Office Assignment (Please place a check in the appropriate space below)
   - _____ Admissions
   - _____ Business
   - _____ Computer Center
   - _____ Financial Aid
   - _____ Institutional Development
   - _____ Institutional Research
   - _____ President
   - _____ Recruitment
   - _____ Registrar
   - _____ Other (Please specify)

3. Do you think the gap in education between Blacks and whites is increasing, decreasing, or not changing?
   1. Increasing
   2. Decreasing
   3. No change
   4. Don't know

4. How about the gap in income between Blacks and whites. Do you think that it is increasing, decreasing, or not changing?
   1. Increasing
   2. Decreasing
   3. No change
   4. Don't know

5. Thinking about job opportunities, would you say that they are generally much better for whites than for Blacks, a little better for whites or about the same for both?
   1. Whites much better
   2. Whites a little better
   3. The same for both
   4. Don't know

6. Considering Blacks only, do you think the gap between those who are better off and those who are poorer is increasing, decreasing, or not changing?
   1. Increasing
   2. Decreasing
   3. No change
   4. Don't know

7. All in all compared to 5 years ago, do you think the environment for developing Black institutions is better, worse or about the same?
   1. Better
   2. Worse
   3. The same
   4. Don't know

8. In the next 5 years do you think the environment for developing Black institutions will be better, worse or stay about the same?
   1. Better
   2. Worse
   3. The same
   4. Don't know

9. Compared with the average white institution, do you think yours is better off, worse off or about the same?
   1. Better
   2. Worse
   3. The same
   4. Don't know

10. Compared with the average Black institution, do you think yours is better off, worse off or about the same?
    1. Better
    2. Worse
    3. The same
    4. Don't know

11. Compared with the average Black institution, do you think yours is more capable of adapting to changing conditions, less capable or about the same?
    1. More
    2. Less
    3. About the same
    4. Don't know

Appendix II-C (Continued)

12. Looking at things now compared to the way you viewed things before you took your present position, would you say:

A. The degree of satisfaction you get from your job is more than you expected, less than you expected or about the same?
1. More
2. Less
3. The same
4. Don't know

B. The amount of recognition you receive is more than you expected, less than you expected or about the same?
1. More
2. Less
3. The same
4. Don't know

C. The amount of influence and authority you exert is more than you expected, less than you expected or about the same?
1. More
2. Less
3. The same
4. Don't know

D. The possibility of doing what you like to do is more than you expected, less than you expected or about the same?
1. More
2. Less
3. The same
4. Don't know

E. The amount of time you must devote to "people-to-people" problems is more than you expected, less than you expected or about the same?
1. More
2. Less
3 The same
4. Don't know

F. The degree to which you understand what others expect of you is higher than you expected, lower than you expected or about the same?
1. Higher
2. Lower
3. The same
4. Don't know

If you have any comments or reactions regarding this opinionnaire, we welcome you to record them in the space below.

Appendix II-D

THE NEW YORK TIMES, SUNDAY, MARCH 1, 1970

MOYNIHAN MEMORANDUM ON THE STATUS OF NEGROES

Following is the text of a "Memorandum for the President" by Daniel P. Moynihan, counselor to President Nixon, on the position of Negroes:

As the new year begins it occurs to me that you might find useful a general assessment of the position of Negroes at the end of the first year of your administration, and of the decade in which their position has been the central domestic political issue.

In quantitative terms, which are reliable, the American Negro is making extraordinary progress. In political terms, somewhat less reliable, this would also appear to be true. In each case, however, there would seem to be countercurrents that pose a serious threat to the welfare of the Blacks and the stability of the society, white and Black.

Employment and Income

The 1960's saw the great breakthrough for Blacks. A third (32 percent) of all families of Negro and other races earned $8,000 or more in 1968 compared, in constant dollars, with 15 percent in 1960.

The South is still a problem. Slightly more than half (52 percent) of the Negro population lived in the South in 1969. There, only 19 percent of families of Negro and other races earned over $8,000.

Young Negro families are achieving income parity with young white families. Outside the South, young husband-wife Negro families have 99 percent of the income of whites! For families headed by a male age 25-34, the proportion was 87 percent. Thus, it may be this ancient gap is finally closing.

Income reflects employment, and this changed dramatically in the 1960's. Blacks continued to have twice the unemployment rate of whites, but these were down for both groups. In 1969, the rate for married men of Negro and other races was only 2.5 percent. Teenagers, on the other hand, continued their appalling rates: 24.4 percent in 1969.

Black occupations improved dramatically. The number of professional and technical employees doubled in the period 1960-68. This was two-and-a-half times the increase for whites. In 1969, Negro and other races provided 10 percent of the other-than-college teachers. This is roughly their proportion of the population (11 percent).

Education

In 1968, 19 percent of Negro children 3 and 4 years old were enrolled in school, compared to 15 percent of white children. Forty-five percent of Negroes 18 and 19 years old were in school, almost the equal of the white proportion of 51 percent. Negro college enrollment rose 85 percent between 1964 and 1968, by which time there were 434,000 Negro college students. (The total full-time university population of Great Britain is 200,000.)

Educational achievement should not be exaggerated. Only 16 percent of Negro high school seniors have verbal test scores at or above grade level. But Blacks are staying in school.

Female-Headed Families

This problem does not get better, it gets worse. In 1969, the proportion of husband-wife families of Negro and other races declines once again, this time to 68.7 percent. The illegitimacy ratio rose once again, this time to 29.4 percent of all live births. (The white ratio rose more sharply, but was still only 4.9 percent)

Increasingly, the problem of Negro poverty is the problem of the female-headed family. In 1968, 56 percent of Negro families with income under $3,000 were female-headed. In 1968, for the first time the number of poor Negro children in female-headed families (2,241,000) was greater than the number in male-headed families (1,947,000).

Social Pathology

The incidence of antisocial behavior among young Black males continues to be extraordinarily high. Apart from white racial attitudes, this is the biggest problem Black Americans face, and in part, it helps shape white racial attitudes. Black Americans injure one another. Because Blacks live in the de facto segregated neighborhoods and go to the de facto segregated schools, the socially stable elements of the Black population cannot escape the socially pathological ones. Routinely, their children get caught up in the antisocial patterns of the others.

You are familiar with the problem of crime. Let me draw your attention to another phenomenon, exactly parallel, and originating in exactly the same circumstances: Fire. Unless I mistake the trends, we are heading for a genuinely serious fire problem in American cities. In New York, for example, between 1956 and 1969 the overall fire alarm rate more than tripled, from 69,000 alarms to 240,000. These alarms are concentrated in slums neighborhoods, primarily Black. In 1968, one slum area had an alarm rate per square mile 13 times that of the city as a whole. In another, the number of alarms has on an average increased 44 percent per year for 7 years.

Many of these fires are the result of population density. But a great many are more or less deliberately set. (Thus, on Monday, welfare protectors set two fires in the New York State Capitol.) Fires are in fact a "leading indicator" of social pathology for a neighborhood. They come first. Crime, and the rest follows. The psychiatric interpretation of fire-setting is complex, but it relates to the type of personalities which slums produce. (A point of possible interest: fires in the Black slums peak in July and August. The urban riots of 1964-1968 could be thought of as epidemic conditions of an endemnic situation.)

Social Alienation

With no real evidence, I would nonetheless suggest that a great deal of the crime, the fire-section, the rampant school violence, and other such phenomenon in the Black community have become quasi-politicized. Hatred-revenge-against-whites is not an acceptable excuse for doing what might have been done anyway. This is bad news for any society, especially when it takes forms which the Black Panthers seem to have adopted.

This social alienation among the Black lower classes is matched and probably enhanced, by a virulent form of anti-white eling among portions of the large and prosperous Black middle class. It would be difficult to overestimate the degree to which young well-educated Blacks detect white America.

The Nixon Administration

As you have candidly acknowledged, the relation of the Administration to the Black population is a problem. I think it ought also to be acknowledged that we are a long way from solving it. During the past year, intense efforts have been made by the Administration to develop programs that will be of help to the Blacks. I dare say, as much of more time and attention goes into this effort in this Administration than any in history. But little has come of it. There has been a great deal of political ineptness in some departments, and you have been the loser.

I don't know what you can do about this. Perhaps nothing. But I do have four suggestions.

First: Sometime early in the year, I would gather together the Administration officials who are most involved with these matters and talk out the subject a bit. There really is a need for a more coherent Administration approach to a number of issues. (Which I can list for you, if you like.)

Second: The time may have come when the issue of race could benefit from a period of "benign neglect." The subject has been too much talked about. The forum has been too much taken over to hysterics, paranoids, and boodlers on all sides. We may need a period in which Negro progress continues and racial rhetoric fades.

The Administration can help bring this about by paying close attention to such progress as we are doing—while seeking to avoid situations in which extremists of either race are given opportunities for martyrdom, heroics, histronics, or whatever. Greater attention to Indians, Mexican-Americans, and Puerto Ricans would be useful. A tendency to ignore provocations from groups

such as the Black Panthers might also be useful. (The Panthers were apparently almost defunct until the Chicago police raided their headquarters and transformed them into culture heroes for the white–and Black-middle class. You perhaps did not note the society page of yesterday's *Times* that Mrs. Leonard Bernstein gave a cocktail party on Wednesday to raise money for the Panthers. Mrs. W. Vincent Astor was among the guests. Mrs. Peter Duchin, "the rich blonde wife of the orchestra leaders," was thrilled. "I've never met a Panther," she said. "This is a first for me."

Third: We really ought to be getting on with research on crime. We just don't know enough. It is a year now since the Administration came to office committed to doing something about crime in the streets. But frankly, in that year I don't see that we have advanced either our understanding of the problem, or that of the public at large. (This of course may only reveal my ignorance of what is going on.)

At the risk of indiscretion, may I put it that lawyers are not professionally well-equipped to do much to prevent crime. Lawyers are not managers, and they are not researchers. The logistics of the ecology, the strategy and tactics of reducing the incidence of certain types of behavior in large urban population simply are not things lawyers think about often.

We are never going to "learn" about crime in a laboratory sense. But we almost certainly could profit from limited, carefully done studies. I don't think these will be done unless you express a personal interest.

Fourth: There is a silent Black majority as well as a white one. It is mostly working class, as against lower middle class. It is politically moderate (on issues other than racial equality) and shares most of the concerns of its white counterpart. This group has been ignored by the Government and the media. The more recognition we can give to it, the better off we shall all be. (I would take it for example, that Ambassador Jerome H. Holland is a natural leader of this segment of the Black community. There are others like him.)

Appendix II-E

FORCE FIELD ANALYSIS

Introduction: Any situation can be considered as a dynamic balance of forces working in opposite directions. No change will take place unless an imbalance in these forces is created to upset the equilibrium. A method of planned change based on this theory of opposing forces is called Force Field Analysis. It was developed by the social psychologist, Kurt Lewin.

Forces moving toward change, *helping forces,* are opposed by equal forces against change or *hindering forces.* An analysis of the existing helping and hindering forces will reveal alternative means of creating an imbalance, thus bringing about change. The concept involves identifying the primary goal to be achieved and then listing forces which are assisting in reaching that goal and those which are preventing it.

Planned Change: Kurt Lewin determined that planned change can occur through any of the following:

- Changing the strength of any force
- Changing the direction of any force
- Adding new helping forces
- Withdrawing hindering forces

The Process of Change : One approach to the process of change is to work through the following stages:

- List the present helping and hindering forces
- Identify those helping forces which can be strengthened or new ones which may be added.
- Identify those hindering forces which can be weakened, re-directed, or withdrawn.

Appendix II-E (Continued)

FORCE FIELD ANALYSIS (Continued)

Hindering Forces	Helping Forces[1]
— President's unexpressed personal interest in crime research	— Anti-social behavior (Blacks injuring one another) is biggest problem Blacks face apart from white racism
— Government and media have ignored the silent Black majority	— The socialiy stable Blacks cannot escape the socially pathological
— Dense Black population	— Fire alarms increased threefold between 1956-1969; primarily in Black slum neighborhoods during months of July and August
— Young well-educated Blacks detest white America	— Quasi-politicized hatred against whites is an acceptable excuse for crime, fire and rampart violence
	— Benign neglect of the racial issue
	— Give greater attention to Indians, Mexican-Americans and Puerto Ricans
	— The politically moderate silent Black majority working-class
	— Silent Black majority shares most of the concerns of white counterpart
	— Blacks like Ambassador Jerome H. Holland are natural leaders of silent Black majority

[1] Developed at a Black Affairs Center (BAC) sponsored Black/White Group Dynamics Workshop.

Appendix II-E (Continued)

FORCE FIELD ANALYSIS

Carefully review the list of *helping* or *hindering* forces on the preceding pages. Then, from each set, choose three and write them in the left-hand column below.

Opposite each force, write a specific action step that has strengthened, weakened, or re-directed the force. If there are forces which could be eliminated, indicate how this might be accomplished.

Forces	Action Steps

Appendix II-F

PROBLEM SOLVING GUIDE

Problem-Solving Steps	Critical Member Roles	Blocks	Possible Methods
Problem Definition	Clarification	Ambiguity	Problem Census
Goal Setting	Summarizing	Over-generality	Buzz Group
Problem Diagnosis	Testing	Over-rigorous definition	Helping Trios/Quartets Problem Stating Force Field Analysis
Idea Production	Informing Giving ideas	Too early evaluation Mixing testing with idea forming Status threat Size of group	Brainstorming Buzz Groups
Evaluation of Alternatives	Reality testing Searching resources Clarification Summarizing Harmonizing	Lack of experience Too hasty decision Straw voting Attaching ideas to persons	Discussion Group Staff meeting Helping Trios/Quartets Role playing Reality practice Force Field Analysis
Decision Making Deciding on solution	Summarizing Developing criteria for decision making Testing for consensus	Voting Polarizing Failure to take conditional try Mixing policy and action groups	Consensus getting Voting
Planning how to carry it out	Initiating	Failure to pin down responsibility	Team Planning Committees
Acting	Informing	Lack of involvement Lack of specification of mechanics	Work groups

Appendix II-F (Continued)

ORGANIZATIONAL APPROACHES TO PLANNED CHANGE

There are many forces that put pressure on an organization to change, but in our society three forces are outstanding: (1) technical innovation; (2) competition and the struggle for economic survival; (3) man's growing desire for freedom and self-direction within the organization.

Man's desire to transform his dependence on the organization into beneficial interdependence that will support personal growth is a recognized, growing social force. It is a paradox that in our society man has great political freedom but very little organizational freedom. A cynic described the situation this way: "The ideal is to be an individualist privately and a conformist publicly—if you can pull it off."

There is a growing concern about a society that provides economic affluence at the price of increasing alienation. It is feared that prolonged discontinuance of personal, intimate, trusting experiences may impair or destroy man's distinctively human capacity to understand himself and to understand others. With reduced self-awareness man is seriously handicapped when he attempts to implement change in a human organization

What is an Organization?
Associated with each of the forces for change—technical, economic, and social—there is a concept of organization. These are simple concepts but they are important because they determine what we will try to change and how we will make changes.

The technical concept says that an organization is a collection of specialized tasks and work procedures. Coordinated work-flow results from logically connecting tasks. The purpose of the organization is to make a product. Its theory is the theory of task specialization and methods analysis. It assumes that task assignments will be followed without variance and coordination will automatically ensue. The usual method of change is to divide the work-flow process into new logical steps and then issue rational instructions. This method of change is adequate if: (1) the change is minor, (2) it will not adversely affect attitudes, and (3) you have legitimate authority to issue such instructions.

The survival concept says that an organization is an articulated structure of authority in which formal power is an attribute of one's position in the structure. Furthermore, the formal power of a position is subject to instantaneous revocation by the manager in a higher position. The purpose of the organization is to control behavior so that organizational response is predictable and unified. The usual method of change is forced compliance. This is adequate if: (1) it involves an observable act, (2) negative reactions are unimportant, and (3) the people involved do not need new skills.

The social concept says that an organization is a system of dynamically interdependent human beings who take part in the processes of (1) decision making, (2) communication, (3) norm-setting, and (4) distributing rewards and penalties. The purpose of the organization is collaboration and adaptation to environment. The usual method of change is shared decision making and open communication about goals, methods, norms, and need satisfaction. This method of change is adequate if: (1) the decision is not too complicated, (2) the participants believe their ideas are being used, and (3) the participants are comfortable making decisions.

Planned Change
When we look at change process from the standpoint of the knowledges, sensitivities, and skills required by a change agent, the simple change sequence of unfreezing, movement, and refreezing can be usefully expanded into a more complex set of phases. Eight phases are recognized here.

Phase 1. Diagnosis of the problem of the client system—what is the trouble and what seems to be causing the trouble?

Phase 2. Assessment of the motivation and capacity of the client system to change itself—what are the readinesses and resistances to various possibilities of change within the client system? Is there awareness of the need for change? Is it permissible to look at the central problems? Is there a feeling that change will be rewarding? Is there anxiety about staying in the present position?

Phase 3. Assessment of the motivations and resources of the change agent—why does the change agent want to help the client, and what are the practical, ethical, psychological, sociological, and other limits of his ability to give help to a particular client system;

Phase 4. Establishing and maintaining a working relationship with the client system—how to get a mutually acceptable and commonly understood picture of the responsibilities of the change agent and of the client in the client's efforts to solve its (or his) own problem?

Phase 5. Choosing the appropriate role—shall the change agent mediate or counsel? Demonstrate or encourage? Represent some wider reality to the client system or support the client in its or his peculiar view of reality?

Phase 6. Selecting appropriate change objectives and targets—of all the possibilities of change, which are most important and within the power of the client to accomplish and what is, all things considered, the best first step to take in an experimental attempt to change?

Phase 7. Provide support and encouragement for changed behavior—what are the rewards for new responses? Provide opportunities to practice new responses. Remove rewards for old responses. Is the change consistent with organization standards?

Phase 8. Termination (or new continuity) of helping relationship—when and how does the change agent pull out and leave the client on his own?

These are phases, not chronological steps or stages, of a helping process. Phases 1, 2, and 3, for example, may come up again and again for reconsideration during a process of consultation, supervision or training. And so with all the others, except perhaps Phase , the termination of the relationship.

Response to Change Depends on the Meaning of Change

Change is unsettling because we must give up some behavior we are skilled in and acquire new behavior in which we lack skill. Uncertainty and ambiguity stimulate us to search for meaning in the situation and then to react in terms of the meaning we construct. If, on the basis of the constructed meaning, we believe we will be worse off after the change, we will resist the change.

Conclusions

It is important to:

- Build group norms and organization norms that support the change. An organization-wide change requires the involvement and support of top managers. In existing formal organizations what they say and do is a powerful standard that influences the behavior of other managers.

- Expect hostile, apathetic, and dependent reactions. These are symptomatic of the threatening and ambiguous meanings attributed to change.

- Expect failures in the early stages of change. Minimize penalties for failure. Provide rewards for change and opportunities to practice the new forms of behavior.

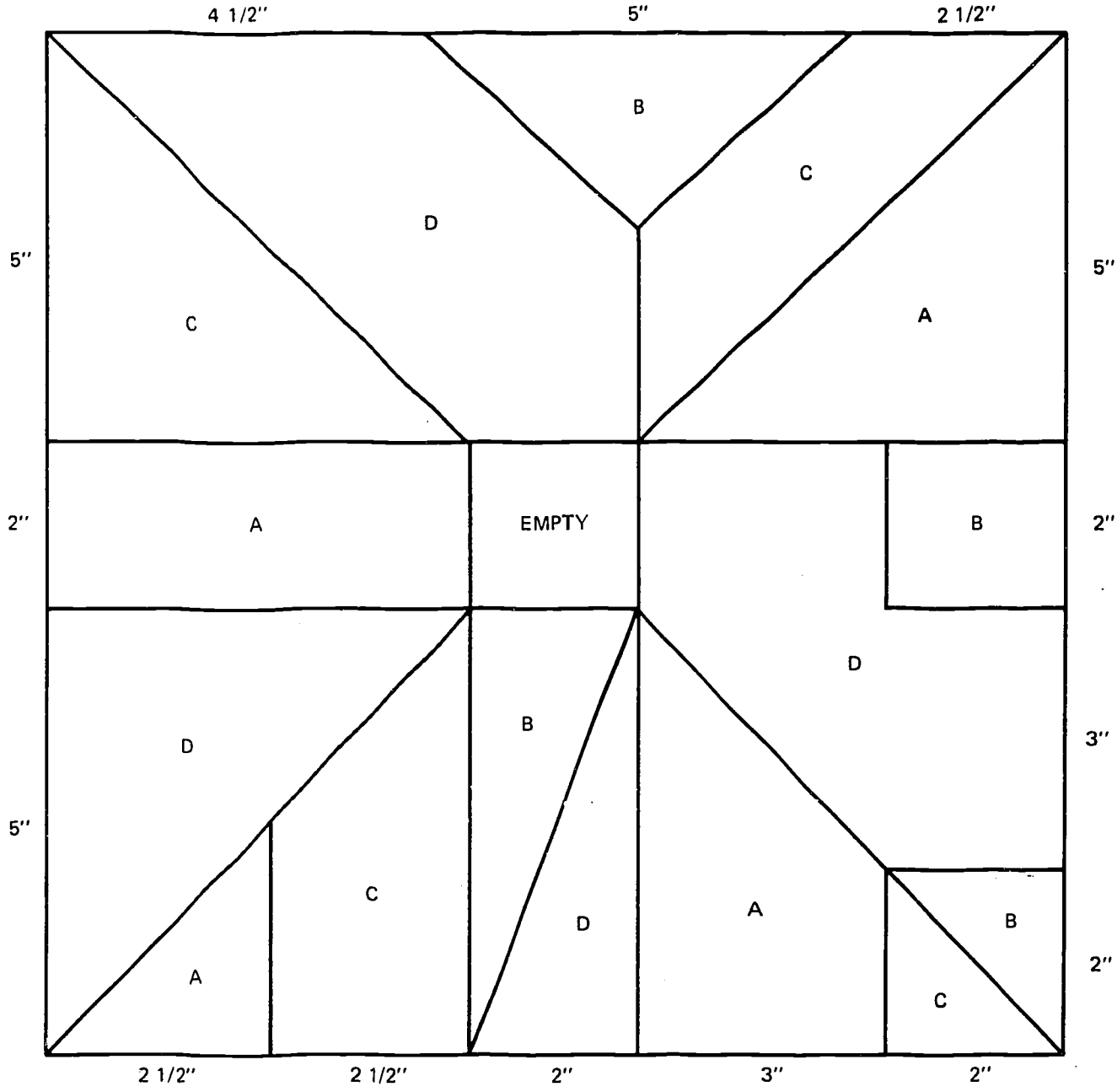
References:

Benne, Kenneth; Bennis, Warren; and Chin, Robert (eds.) *The Planning of Change.* New York: Holt, Rinehart & Winston, 1961.

Lippitt, Ronald; Watson, Jeanne; and Westley, Bruce. *Dynamics of Planned Change.* New York: Harcourt, Brace and Co., 1958.

Appendix II-G

HOLLOW SQUARE KEY



Appendix II-G (Continued)

HOLLOW SQUARE PLANNING TEAM BRIEFING SHEET

Each of you will be given a packet containing four cardboard pieces which, when properly assembled with the other pieces held by members of your team, will make a hollow square design.

Your Task
During a period of 25 minutes you are to do the following:

- Plan how the 16 pieces distributed among you should be assembled to make the design.
- Instruct your OPERATING TEAM on how to implement your plan (you may begin instructing your OPERATING TEAM at any time during the planning period—but no later than 5 minutes before they are to begin the assembling process.)

General Rules
- You must keep all pieces you have in front of you at all times.
- You may not touch or trade pieces with other members of your team during the planning or instructing phase.
- You may not show the KEY at any time
- You may not assemble the entire square at any time (this is to be left to your operating team).
- You are not to mark on any of the pieces.
- Members of your operating team must also observe the above rules.
- When time is called for your team to begin assembling the pieces you may give no further instructions, but you are to observe the operation.

Appendix II-G (Continued)

HOLLOW SQUARE OBSERVING TEAM BRIEFING SHEET

You will be observing a situation in which a planning team decides how to solve a problem and gives instructions to an operating team for implementation. The problem consists of assembling 16 pieces of cardboard into the form of a hollow square. The planning team is supplied with the general layout of the pieces. This team is not to assemble the parts itself, but is to instruct the operating team on how to assemble the parts in a minimum amount of time. You will be silent observers throughout the process.

SUGGESTIONS:

- Each member of the observing team should watch the general pattern of communication but give special attention to one member of the planning team (during the planning phase) and one member of the operating team (during the assembling period.)

- During the planning period watch for the following behaviors:
  - Is there balanced participation among planning team members.
  - What kinds of behavior block or facilitate the process?
  - How does the planning team divide its time between planning and instructing? (How early does it invite the operating team to come in?)

- During the instructing period watch for the following behaviors:
  - Which member of the planning team gives the instructions? How was this decided?
  - What strategy was employed in orienting the operating team to the task?
  - What assumptions made by the planning team are not communicated to the operating team?
  - How effective were the instructions?
  - Did the operating team appear to feel free to ask questions of the planners.

- During the assembly period, watch for the following behaviors:
  - What evidence do the operating team members illustrate that instructions were clearly understood or misunderstood?
  - What non-verbal reactions did planning team members exhibit as they watched their plans being implemented or distorted?

HOLLOW SQUARE OPERATING TEAM BRIEFING SHEET

- You have responsibility for carrying out a task according to instructions given by your planning team. Your planning team may call you in for instructions at any time. If they do not summon you, you are to report to them anyway at .

- Your task is scheduled to begin 25 minutes from now. After that, no further instructions will be permitted.

- You are to finish the assigned task as rapidly as possible.

- During the period when you are waiting for a call from you planning team, it is suggested that you discuss and make notes on the following questions:
  - What feelings and concerns do you experience while waiting for instructions about the unknown task?
  - How can the group of you (operators) organize as a team?

- The notes recorded on the above will be helpful during the discussion following the completion of the task.

Appendix II-H

HUMAN RELATIONS COMPONENT
Workshop Evaluation Form
June 10th-15th

NAME _____

INSTITUTION _____

TITLE _____

MAILING ADDRESS _____

The following is a list of training events that took place during the human relations component of the workshop. Please use this list as reference material for completing the attached evaluation form.

TRAINING EVENTS

Monday, 9 a.m.-12 noon	**Introductory Session** a. Planned institutional change model b. Community climate building Resource identification Sharing expectations c. Contract building (matching workshop objectives with participant expectations)
Monday, 1 p.m.-3 p.m./3 p.m.-5 p.m.	**Orientation Session** a. Definitions–Interdependency, cooperation, competition, conflict and crisis b. Paridigm of human interdependency states c. Small group interaction–skill practice (analysis of social systems)
Monday, 7 p.m.-9 p.m.	**Consultation Session** a. Lecturette models of consultant b. Skill practice in consultation (analysis of back home human relations problems)
Tuesday, 3 p.m.-5 p.m.	a. Opinionnaire Feedback b. Review and analysis of The Moynihan Memorandum c. Skill practive exercise (Force Field Analysis) d. Summary–Implications for the 1970's

Appendix II-H (Continued)

Wednesday, 3 p.m.-5 p.m.	a. Exchange Theory (The analysis of human resource interchange)
	b. Skill Practice--application of resource exchange model to back home social system
	c. Lecturette—The Problem Solving Process
Thursday, 3 p.m.-5 p.m.	a. Action Planning around back home problems
Friday, 3 p.m.-5 p.m.	a. Review and Summary
	b. Feedback
	c. Plans for follow-up

1. Name three things you liked most about the human relations component of this workshop.

   a. _____

   b. _____

   c. _____

2. Name three things you liked least about the human relations component of this workshop.

   a. _____

   b. _____

   c. _____

3. What recommendations can you make to the planners of the human relations component about how the component might be improved.

   _____

   _____

   _____

   _____

   _____

Appendix II-H (Continued)

4. In terms of your learning needs in the area of human relations how do you rate your learning experiences during this workshop.

1	2	3	4	5
Needs Satisfied				Needs Not Satisfied

5. Are there some learning needs that will require follow-up back home? (Please state)

Appendix II-H (Continued)

HUMAN RELATIONS COMPONENT
Workshop Evaluation Form
June 18th-22nd

NAME _____

INSTITUTION _____

TITLE _____

MAILING ADDRESS _____

The following is a list of training events that took place during the human relations component of the workshop. Please use this list as reference material for completing the attached evaluation form.

TRAINING EVENTS

Monday, 9 a.m.-12 noon	**Introductory Session** a. Planned institutional change model b. Team building Resource identification Sharing expectations Resource negotiation c. Contract building (matching workshop objectives with participant expectations)
Monday, 1 p.m.-3 p.m./3 p.m.-5 p.m.	**Orientation Session** a. Definitions—Interdependency, cooperation, competition, conflict and crisis b. Paridigm of human interdependency states c. Exercise—Small group problem solving d. Lecture—Comparison of system "X" and "Y"
Monday, 7 p.m.-9 p.m.	**Consultation Session** a. Lecturette models of consultant
Tuesday, 3 p.m.-5 p.m.	a. Review and analysis of The Moynihan Memorandum b. Lecture (Force Field Analysis) c. Skill practice exercise (Force Field Analysis) d. Summary—Implications for Black Colleges

Appendix II-H (Continued)

Wednesday, 3 p.m.-5 p.m.	a. Lecturette—The Problem Solving Process
	b. Skill practice in consultation (analysis of back home human relations problems)
Thursday, 3 p.m.-5 p.m.	a. Exchange Theory (The analysis of human resource interchange)
	b. Action Planning around back home problems
	c. Assessment of progress
Friday, 9 a.m.-11 a.m.	a. Review and Summary
	b. Feedback
	c. Plans for follow-up

1. Name three things you liked most about the human relations component of this workshop.

   a. _____

   b. _____

   c. _____

2. Name three things you liked least about the human relations component of this workshop.

   a. _____

   b. _____

   c. _____

3. What recommendations can you make to the planners of the human relations component about how the component might be improved.

   _____

   _____

   _____

   _____

   _____

Appendix II-H (Continued)

4. In terms of your learning needs in the area of human relations, how do you rate your learning experiences during this workshop?

1	2	3	4	5
Needs Satisfied				Needs Not Satisfied

5. In terms of your experience on your team, how would you describe the members functioning:

   a. Around tasks

1	2	3	4	5
Unsatisfactory		So So		Satisfactory

   b. Around interpersonal relationships

1	2	3	4	5
Unsatisfactory		So So		Satisfactory

6. Are there some learning needs that will require follow-up back home? (Please state)

_____

_____

_____

_____

_____

Section III

REMOTE DATA ACCESS AND QUERY

Part A

PROCEEDINGS

Prepared by
Beverley Sharp, Consultant
Sondra Ferguson, Staff
Management Information Systems Directorate
Institute for Services to Education, Inc.
Washington, D.C.

The QUERY system is an interactive computing system designed for the small college user and provides a generalized data base maintenance capability. That is, computer programs resident in QUERY provide a user the capability of updating and displaying specified groupings of data stored as part of a computerized data base via teletype.

QUERY is a software system (i.e., a collection of programs and data files) which provide an on-line computing services capability to teletype terminal users. This system was devised by the Management Information Systems Directorate.

INTRODUCTION TO QUERY WORKSHOP

The automated retrieval system (QUERY) was provided as a source of data for the participants involved in solving a particular problem. The problems were designed to cover any aspect of information management and represented realistic situations which demanded the application of various MIS techniques to management decision and policy making.

The QUERY System represented a major source in the data collection phase of the problem solving process. In order to use QUERY or any data source efficiently, the user must ask certain questions:

- What kinds of data are necessary to answer questions the problem may suppose?
- Who can provide the data?
- Is the data needed historical or current?
- Does the problem demand future projections or proof based on actual facts?

The process of evaluating the data collected, in light of the problem, generates the need for statistical analysis and report formulation which draws attention to certain questions:

- Do you need additional information?
- Can you draw direct conclusions?
- Is the data best represented graphically, in a table, or in narrative form?

The QUERY workshop sessions provided for this data interpretation phase of the problem solving process by making available the common statistical routines, accessible, via teletype terminal, on the Meharry computer system. The BASIC computer language was also presented and described as a vehicle for the participants to design his own handling routine.

This problem solving process should give a clear indication of how data is transformed into information which can build a sound case for a valid decision, and point out to each administrator a need for an active, up-to-date information collecting and analyzing procedure (manual or automatic) effectively operating at their institution.

FORMAT OF SESSIONS

The QUERY portion of the workshop was scheduled in three 2-hour sessions on successive afternoons. The first session was used to introduce the participants to the computer systems at their disposal, so that during the second and third sessions, they could use these tools in the solution of their team problems. The first hour of session one was devoted to a presentation focusing principally on the QUERY system. As is clearly reflected in the detailed account which follows, the presentation took the form of an informal discussion rather than a lecture. Thus, the participants immediately began to take part in this working session. Following this presentation, each participant worked a minimum of two sample problems. Each problem was unique and participants were asked to submit their teletype printout along with their results. (See Appendix III-A.) The problems were checked and returned to the participants by the next session, along with constructive notes where needed. This insured that all participants gained first-hand experience using QUERY to retrieve data and utilized at least one of the arithmetic or statistical programs resident in the training materials. These same skills were put to practical use when applied to the team problems during the two remaining sessions. *Two to four technically knowledgeable consultants were on hand to assist the participants at all times.* Essential materials, such as catalogs, lists, instructions, sample computer runs, etc., were provided in the QUERY portion of the spiral notebook given to the participants as they registered.

PRESENTATION

Introduction

Purpose

The purpose of this afternoon is to acquaint you with the equipment you see in this room and the computer software you will be using. The software apparatus, which you cannot see, is connected to this equipment via telephone lines. You will be using the equipment and software as tools to aid in solving your team's problem(s).

Physical Layout

The machines that resemble typewriters are teletypes. Each teletype is connected over a telephone line to an electronic computer at another location. In other words, they are being used as remote terminals in an on-line computer system. Therefore, we will sometimes refer to the teletypes as terminals. Four of them are linked to a PDP-10 computer at the Social Science Computation Center of the Brookings Institution in Washington, D.C.. The other 16 terminals are connected to a SIGMA 7 computer at the Meharry Computer Center here in Nashville. (See Figure III-1).

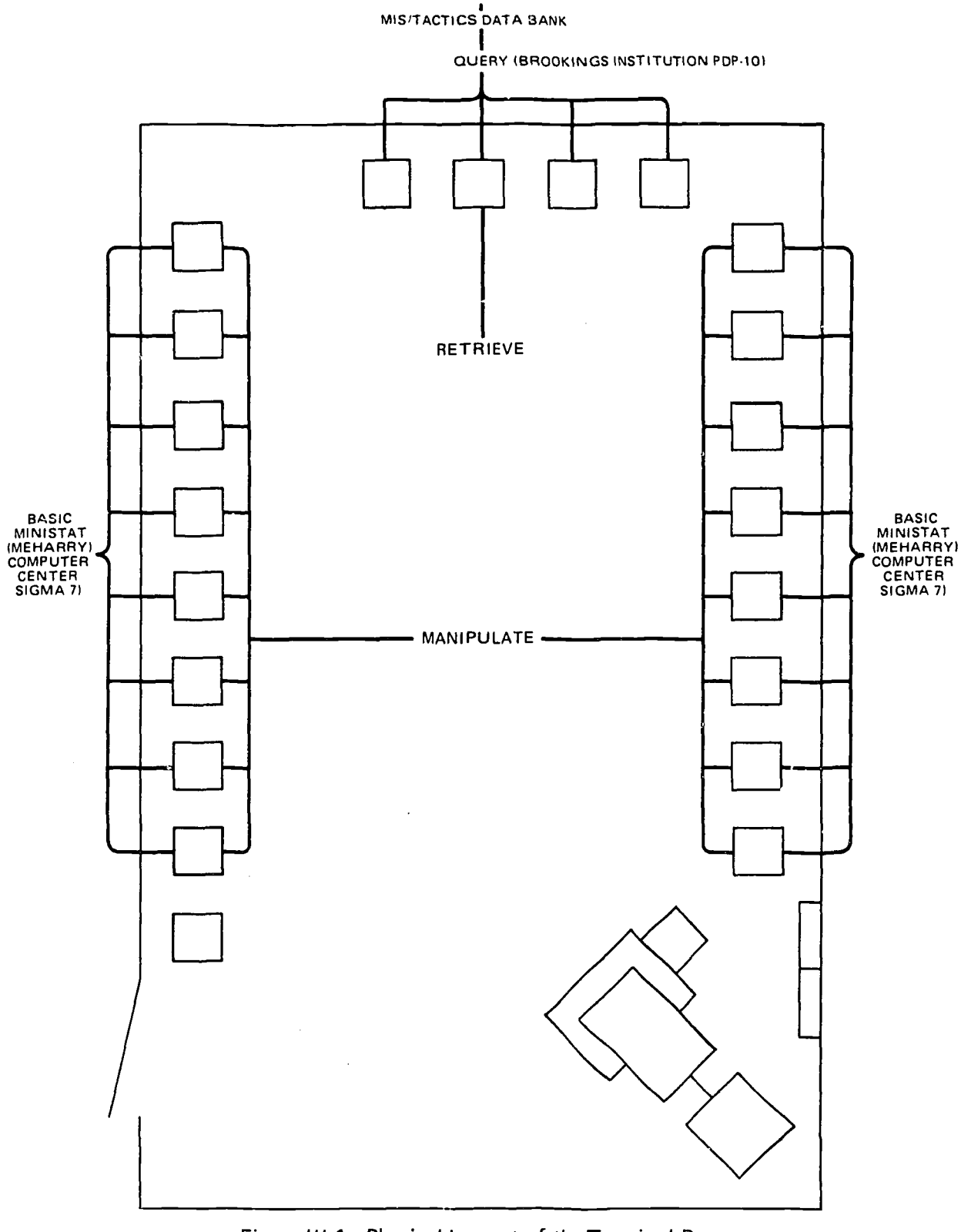


Figure III-1. Physical Layout of the Terminal Room

Available Functions

Many of you perhaps are thinking, "Well, that's nice but what can I do with these contraptions?". In the context of this workshop, they will provide you with two distinct functions. With them you can *retrieve* data on any of the TACTICS colleges—and on your college if you choose to—and then *manipulate* that data. You will be able to retrieve data stored on the computer in Washington using the system named QUERY. With the system at Meharry, you can manipulate data in three ways:

- You can use the teletype as a desk calculator
- You can perform basic statistical operations using a set of programs called MINISTAT
- You can write programs in the BASIC language for more complicated analyses

We will explore each of these facilities in more detail, but first we'll describe the teletype and show you how to use it.

DESCRIPTION OF THE TERMINAL AND ITS OPERATION

We recognize that this may all be new to most of you, but we ask those of you who are familiar with on-line terminals to be patient with use for a few minutes. The similarities between a teletype and a typewriter are obvious. The teletype has essentially the same keyboard as a regular typewriter. (In fact, it can be used as such.) We will use it as a send/receive device, i.e., to send messages to the computer and to receive messages sent by the computer. (See Figure III-2) To use the teletype in this fashion turn the OFF-LINE-LOCAL switch, the button on the right front, to LINE as in on-line.

In general, a message is sent from the teletype to the computer only after the carriage is returned. This is done by pressing the RETURN key, designated by the symbol <CR>. Therefore, *every line must be terminated with* <CR>. After the computer has received your message, it may respond with another message to you. When the computer system is ready for you to send another message, it signals to you with a special character e.g., * , . , ! , > , etc. in the left margin.

Unlike most regular typewriters, an on-line terminal has a built-in mechanism for correcting fresh typographical errors. This is accomplished with the RUBOUT key. With the SIGMA 7 system, you must first press the K while holding down the CTRL (control) and SHIFT keys, and then press RUBOUT. Each time you press RUBOUT, you will eliminate

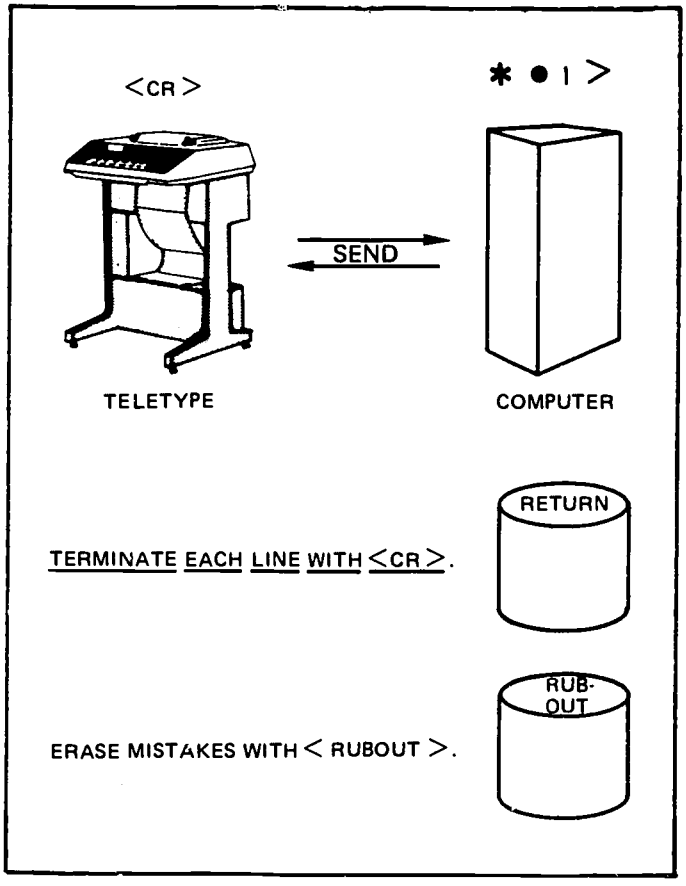


Figure III-2. Teletype Used as a Send/Receive Device

the last typed character from your message. Therefore, in order to erase the last three characters you typed, you must press RUBOUT three times. This can only be done before you press RETURN, thus allowing the message to be sent without mistakes. Now you know enough about the teletype to move to a discussion of the software.

WHAT IS QUERY?

Purposes and Capabilities

Let's talk about the QUERY system. (See Figure III-3.) QUERY is a tool developed for in-house use by the MIS/TACTICS staff. We have stored in a computer a large body of information on the 113 participating TACTICS colleges and universities. The MIS staff must respond to a large number of requests for current information from individual institutions, from other TACTICS components, and from organizations such as the United Negro College Fund (UNCF), the Office for the Advancement of Public Negro Colleges (OAPNC), etc. With QUERY, we can quickly retrieve the latest available data on the TACTICS institutions.

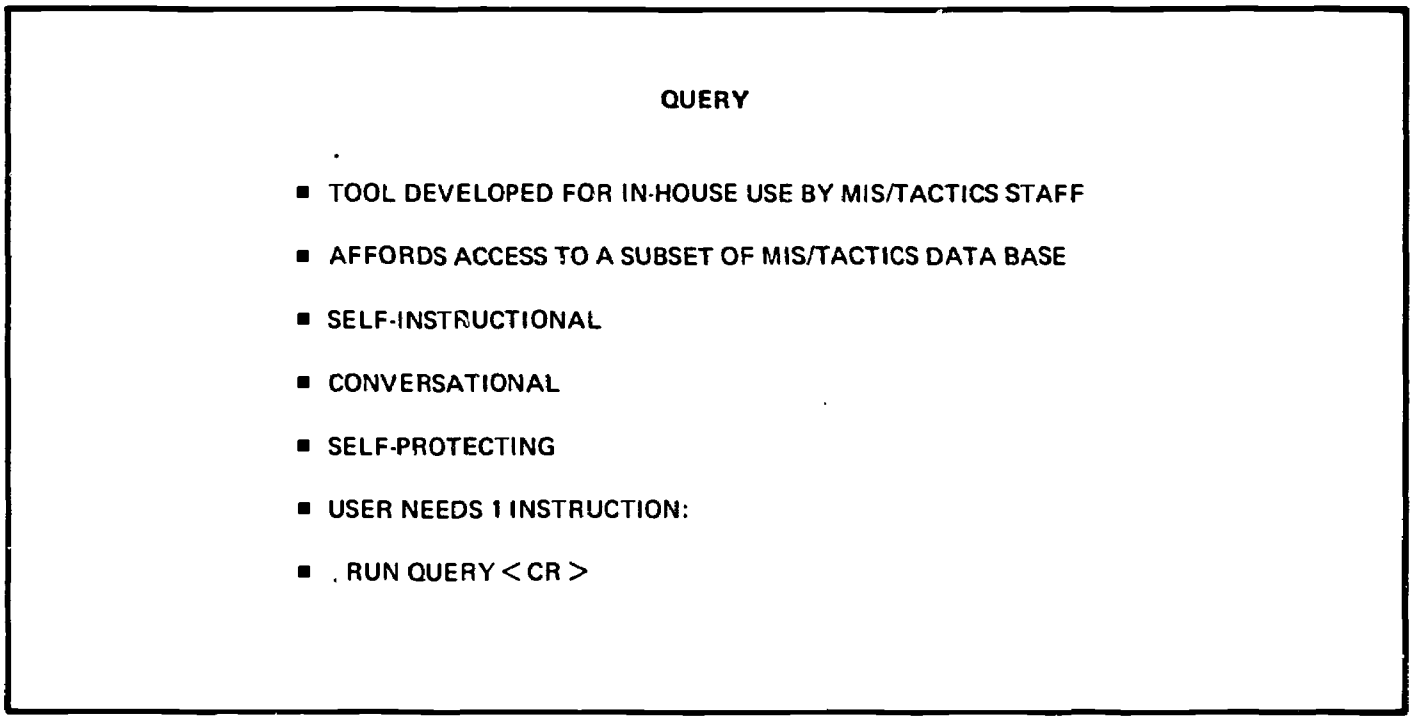


Figure III-3. Characteristics of QUERY

We can also use QUERY to quickly update the data files with the most current, accurate data available. While you are using QUERY, you will have access to a subset of that large data base, just as if you were in the MIS office in Washington, D.C.

We have built a set of files extracted from the comprehensive MIS/TACTICS data bank, especially for your use during this institute. We tried to compile the information you would likely need to solve your team problems. One hundred fifteen items have been grouped into eight categories: fall enrollment, admissions, student finances, faculty, degrees granted, library, physical facilities, and institutional finances. This is certainly not all the information you will need and many of these items are missing for some schools for some years. Therefore, you should not regard QUERY as your sole resource. The library facilities of the Tennessee State University, and Fisk University are also available to you for the research preparation necessary for the development of solutions to team problems.

Characteristics

QUERY is very easy to use. Four characteristics in particular help to make this the case. First, QUERY is completely self-instructional. QUERY will guide you through its entire operation. The system will prompt you with a specific selection or question whenever it requires a response from you. If your response is improper, QUERY will type out an error message including an explanation of the required response options. You can elicit the same explanation directly by typing a question mark, ?, as your response. Therefore, you need not memorize an elaborate set of instructions or commands. You can rely on QUERY to lead you each step of the way.

Secondly, QUERY is completely conversational. The dialog between you and the system is basically in English. This is a strong contrast to the cryptic coding schemes you may have encountered in other computer systems.

Thirdly, QUERY is self-protecting. In order to maintain the integrity of the data files, the system insists on a confirmation from you before proceeding with any operation that results in an alteration in the data files. This means that you have the immediate opportunity to avoid storing an inaccurate value due to a typographical error. Therefore, it is nearly impossible to damage the data files inadvertently.

Perhaps the most important single feature which makes QUERY easy to use is the fact that you need only one instruction in order to execute the program. That instruction is: .RUN QUERY <CR>

How to Use QUERY

The best way to learn about QUERY is to use the system. We shall, therefore, go through a sample run of QUERY with you. Let's see what happens when we type .RUN QUERY <CR> . QUERY greets you with a message and then asks if you want to see the special symbols, thusly:

```
.RUN QUERY <CR>


TACTICS QUERY SYSTEM AT YOUR SERVICE
YOU NOW HAVE ACCESS TO SPECIAL FILES FOR
THE 1973 MIS/TACTICS SUMMER WORKSHOP
COVERING 1972-73, 1971-72, 1970-71,
1969-70, 1968-69, 1967-68, AND 1966-67.

SPECIAL SYMBOLS?
```

How do you suppose you should answer? Part of learning about QUERY will involve your answering in an unlikely manner just to see what will happen. So when you are using QUERY, try out whatever comes to mind. But for now we'll provide you an answer, Y for yes.

```
SPECIAL SYMBOLS?  Y
QUERY WILL ACCEPT THE FOLLOWING SPECIAL
SYMBOLS IN RESPONSE TO REQUESTS FOR
INFORMATION:

  SYMBOL                INTERPRETATION

    >      JUMP TO 'NEXT STEP:'

    <      ABORT PRESENT LINE;  RETURN TO
           LAST BRANCH

    ?      EXPLAIN DETAILS OF INFORMATION
           REQUIRED

    ''     DITTO--2 SINGLE QUOTES (SHIFT 7)
           LEAVE PRESENT VALUE UNCHANGED
           (USED ONLY WHEN PERFORMING A
           CHANGE)

NEXT STEP:
```

When you have finished an operation and wish to go on to something else, the forward arrow, > , will take you back to the main decision node of the system, NEXT STEP: . If you decide that you have chosen the wrong path and wish to back track, you can use the back arrow, < , to back up one decision node. Use the question mark, ? , whenever you do not understand what QUERY is asking for. The ditto requires no further explanation.

Having dispensed with its introduction, QUERY goes on to the business at hand and asks what you wish to do next with the system. By now, some of you should guess that the proper response is "?" because you don't know what the real answers are.

```
NEXT STEP:  ?
POSSIBLE STEPS ARE:
   / TYPE
     WRITE (ON DISK FILE)  (do not use)
     DEFINE (NEW ELEMENT)
     BUILD (REPORT)
   / UPDATE
     DELETE (ELEMENT)
   / STOP
```

We have placed check marks by the TYPE, UPDATE, and STOP operations, because these are the functions you will be using. TYPE causes information to be typed out on your terminal and is the operation you will use most often. WRITE causes the same information to be written on a disk file. That information can thereafter be printed very quickly on a high-speed printer. We use this procedure for high volume output. Both the disk files and the printer are in Washington, D.C. and, therefore, are of no use to you. It cost dearly to store data on these disks, so please do not use WRITE. The UPDATE operation is the mechanism for maintaining the data files by adding new records and correcting inaccuracies. Some of you may have occassion to use this portion of the system. STOP is the way out when you have finished your operations.

Since you will be using TYPE most often, let's see it in our sample.

```
NEXT STEP:  TYPE

ELEMENTS OR CATALOG?  ?

ENTER:

  'ELE'  FOR DATA ELEMENTS, OR
  'CAT'  FOR CATALOG.
```

With TYPE we can examine the QUERY catalogs which function like a card catalog in a library. They are guides to the contents of the QUERY files. They are the SCHOOL catalog, the ELEMENT catalog, and the STATE catalog. We will not go over with you the dialog or output produced when you request a catalog printout. For your convenience, we have provided each of you with a copy of each catalog. (See Appendix III-C, F & G) Feel free to explore this part of the system as you wish.

Mainly, you will use QUERY to retrieve specific items of information called ELEMENTS for particular colleges, so let's answer QUERY with "ELE".

```
ELEMENTS OR CATALOG? ELE

SELECTION:  ?

POSSIBLE SELECTION CRITERIA ARE:
  'AFF'  FOR AFFILIATION
  'CLU'  FOR CLUSTER
  'CON'  FOR CONTROL
  'ID'   FOR TACTICS ID CODE(S)
  'STA'  FOR STATE, OR
  'ALL'  FOR ALL SCHOOLS.
```

Schools may be chosen by the criteria listed here. Affiliation refers to membership in OAPNC or UNCF. Clusters are groups of schools with selected common characteristics. For example, public 4-year institutions with similar enrollments form a cluster. These clusters form the bases for many worthwhile comparative analyses. The clusters are listed in your notebooks. (See Appendix III-F.) Control indicates whether a school is, for example, a state institution or a church related institution, and ultimately whether it is controlled by a private or public body. The TACTICS ID CODE is a unique 4-digit number assigned to each institution for identification. State and ALL are self-explanatory.

You might want to look at all the schools in Tennessee. Then the proper response here would be "STA".

```
SELECTION:  STA

STATE:
```

Let's guess that QUERY will take a 3-character response as it has in the past, and enter "TEN".

```
STATE:  TEN
ERROR
ENTER THE 4 CHARACTER ABBREVIATION FOR THE
STATE NAME.  TO CONSULT THE STATE CATALOG
FOR THE PROPER ABBREVIATION ENTER THE
FOLLOWING COMMAND SEQUENCE:

    TYPE
    CAT
    STA
```

"TEN" was incorrect. Well what does it want? Let's consult the STATE catalog.[1] The proper abbreviation is TENN. Let's type that in.

```
STATE:  TENN

ELEMENT(S):  ?

ENTER THE LIST OF NAMES OF THE DATA
ELEMENTS OF INTEREST, AS 'ELEMENT 1,
ELEMENT 2. . . ' OR ENTER 'ALL' TO
LIST ALL ELEMENTS.
```

Let's choose some ELEMENTS from the ELEMENT catalog.[2] Let's select two items from the fall enrollment category, freshman enrollment and total enrollment. Their respective names are ENR/FR and ENR/TOT. What happens when we enter these names?

```
ELEMENT(S):  ENR/FR, ENR/TOT

YEAR:  ?

ENTER YEAR OF FALL SEMESTER OF INTEREST
AS 19XX, E.G. 1970 FOR THE 1970-71
ACADEMIC YEAR; OR ENTER 'LAST' FOR THE
MOST RECENT YEAR.  IF THE ELEMENT(S)
REQUESTED ARE MISSING IN THE CHOSEN YEAR,
QUERY WILL REPORT THE LATEST PRIOR VALUE.
```

Since we are often interested in the most recent available information, let's enter "L" for last.

---

[1] At this point, we all turned to the STATE catalog in the notebook and located the entry for Tennessee. (See Appendix III-G.)

[2] Here, we turned to the ELEMENT catalog. (See Appendix III-C.)

YEAR: L

FISK UNIVERSITY

ELEMENT (YEAR)	VALUE	CLSTR AVG	PRIV AVG	TBI AVG	CONSRT AVG
ENR/FR	504.0	448.0	328.3	632.5	649.4
(1971-72)	N	13	38	58	68
ENR/TOT	1417.0	1291.0	935.7	1871.1	1799.8
(1971-72)	N	14	41	61	71

KNOXVILLE COLLEGE

ELEMENT (YEAR)	VALUE	CLSTR AVG	PRIV AVG	TBI AVG	CONSRT AVG
ENR/FR	294.0	243.0	315.6	631.0	625.8
(1972-73)	N	13	43	65	77
ENR/TOT	927.0	733.3	891.4	1965.4	1856.9
(1972-73)	N	13	44	66	78

LANE COLLEGE

ELEMENT (YEAR)	VALUE	CLSTR AVG	PRIV AVG	TBI AVG	CONSRT AVG
ENR/FR	220.0	243.0	315.6	631.0	625.8
(1972-73)	N	13	43	65	77
ENR/TOT	819.0	733.3	891.4	1965.4	1856.9
(1972-73)	N	13	44	66	78

LE MOYNE-OWEN COLLEGE

ELEMENT (YEAR)	VALUE	CLSTR AVG	PRIV AVG	TBI AVG	CONSRT AVG
ENR/FR	227.0	263.0	328.3	632.5	649.4
(1971-72)	N	12	38	58	68
ENR/TOT	713.0	763.6	935.7	1871.1	1799.8
(1971-72)	N	12	41	61	71

MEHARRY MEDICAL COLLEGE

ELEMENT (YEAR)	VALUE	CLSTR AVG	PRIV AVG	TBI AVG	CONSRT AVG
ENR/FR	10.0	10.0	322.3	593.6	555.8
(1967-68)	N	1	54	82	93
ENR/TOT	531.0	531.0	851.3	1789.0	1687.3
(1970-71)	N	1	55	81	93

MORRISTOWN COLLEGE

ELEMENT (YEAR)	VALUE	CLSTR AVG	PRIV AVG	TBI AVG	CONSRT AVG
ENR/FR	157.0	171.1	322.3	593.6	555.8
(1967-68)	N	6	54	82	93
ENR/TOT	233.0	313.7	851.3	1789.0	1687.3
(1970-71)	N	7	55	81	93

TENNESSEE STATE UNIVERSITY

ELEMENT (YEAR)	VALUE	CLSTR AVG	PUBL AVG	TBI AVG	CONSRT AVG
ENR/FR	1798.0	1778.9	1018.0	631.0	625.8
(1972-73)	N	10	34	65	77
ENR/TOT	4712.0	4982.0	3106.4	1965.4	1856.9
(1972-73)	N	10	34	66	78

```
SELECTION:  >

NEXT STEP:  STOP

EXIT
.
```

The resulting output contains the two elements we requested for all the colleges in Tennessee listed in alphabetical order. Let's examine each column from left to right, labelled respectively "ELEMENT (YEAR)", "VALUE", "CLSTR AVG", "PRIV AVG", "TBI AVG", and "CONSRT AVG". The first column, "ELEMENT (YEAR)", contains the name of the data element sought, for example ENR/FR for freshman enrollment, followed by the date associated with the information in the other five columns. The next column, "VALUE", presents the actual value of the requested data element for the particular school. This example shows the freshman enrollment for Fisk University in the fall of academic 1971-1972 to be 504 students. The total enrollment in the same year was 1417 students.

The remaining four columns contain average values followed by "N", the number of institutions contributing to the average. Averages appear for the cluster (CLSTR), the private or public colleges (PRIV) or (PUBL), the traditionally Black institutions (TBI), and the consortium (CONSRT). These averages often provide useful comparisons. Let's interpret each one in turn.

The schools forming the cluster containing Fisk had an average freshman enrollment of 448 students. Since enrollment is one of the main criteria used for cluster placement, it is not surprising to find this average much closer to Fisk's actual enrollment than any of the other averages. The 13 appearing directly under the 448.0 indicates that the freshman enrollments for 13 colleges were used to calculate this average value. However, an examination of the cluster list reveals that Fisk's cluster (#2.5) contains 18 colleges, not 13.

No, we have not stumbled onto an error, but a very important concept embodied in QUERY. Namely, QUERY distinguishes between real information (including zero values), missing information (unreported data items), and non-applicable data. For example, if a college has not returned its TACTICS survey for the 1972-1973 academic year, all elements for that school will be recorded as missing (MS) in 1972-1973. Items like female enrollment for Morehouse College (an all-male school) or male enrollment for Spelman College (an all-female school) make no sense at all and are recorded as non-applicable data (NA). On the other hand, if a college has female students and also allows students to enroll for part-time study, but does not happen to have any female students enrolled part-time in a given semester, this bit of real information would be recorded as zero (0.0). Missing or non-applicable data are not counted

when QUERY calculates averages. Zeros are counted. Therefore a QUERY average is a measure of the real information available.

Now back to our example. The N for the cluster average means that 13 of the 18 colleges in cluster #2.5 have reported real values (perhaps some zeros) for freshman enrollment in Fall 1971, and the average of these values is 448.0. This also indicates that five schools probably did not report this item. However, a closer look reveals that a freshman enrollment would be meaningless for Atlanta University, a solely graduate institution. We are certain that you can discern the rationale behind each average carrying it's specific and significant N.

The next column shows that the average freshman enrollment for the 38 private schools that reported this item in 1971-1972 was 328.3 students. The following column contains the average freshman enrollment of 632.5 students for the 58 reporting traditionally Black institutions. The traditionally Black institutions are 88 4-year institutions founded to educate Blacks and existing as of 1969. They are listed in your notebook. (See Appendix III-D.) The TBI averages facilitate comparison with much historical data available on these institutions as an aggregate.

The last column holds the average for the consortium. The consortium is TACTICS, comprising 113 institutions. As you can see, 68 of these institutions reported freshman enrollment in Fall 1971-1972 for an average value of 649.4 students. Going down the column, you can see that 71 schools reported total enrollment in 1971-1972. Continuing down the column this N increases to 78 in 1972-1973 (look in the report for Knoxville College) and reaches 93 in 1967-1968 and 1970-1971 (look in the reports for Meharry Medical College and Morristown College).

The reports for the other colleges follow the same pattern as the report for Fisk, so we shall not go over them in detail. However, there are a couple of additional points that we need to bring to your attention. Note that the report for Tennessee State University, a state institution, includes the average values for public colleges. Note also that three institutions, Knoxville College, Lane College, and Tennessee State University have reported on the current academic year 1972-1973. For the other institutions, this information is missing and QUERY has searched in reverse chronology in order to report the latest available data.

After typing the requested elements for all schools in Tennessee, QUERY offers us the opportunity to choose another group of schools by typing SELECTION: We enter the forward arrow, >, to indicate that we are finished typing elements and wish to proceed. QUERY responds by offering us the main menu of operations once more. When we enter STOP, QUERY returns control to the system monitor. This is signaled by the word EXIT followed by a period, . , at the left margin. This completes the run of the QUERY system.

No doubt, the most frequent kind of operation you will perform with QUERY will be looking at elements for a particular school or list of schools identified by their unique TACTICS ID CODEs. Here is a concise sample run of QUERY illustrating how this is done. A copy of this run is included as the first page in the QUERY section of your notebooks. (See Appendix III-E.) You can refer to this page as a guide while you are using QUERY. Note that when QUERY asks for your choice of a criterion for selecting schools by typing NEXT STEP: , you must indicate that you wish to choose schools on the basis of their TACTICS ID CODE by entering "ID". You must then determine the TACTICS ID CODE(s) for the college(s) you are interested in by consulting the alphabetical listing of TACTICS colleges. (See Appendix III-B, TACTICS Institutions) The 4-digit TACTICS ID CODEs are found in the first column of this list. The right columns indicate the years for which fall enrollment data for each institution are available in these data files. This may help you to decide which college(s) you will investigate in your team problem.

We shall discuss briefly why you might use another QUERY function in addition to TYPE. You may recognize that a given value stored in the QUERY data files in incorrect. Say for instance, that the enrollment figures reported by your institution represented preliminary estimates and you have access to the up-to-date accurate figures. You can change these incorrect values using UPDATE. Simply enter UPDATE when QUERY types SELECTION: . Then follow the path laid out by the system. We shall leave that path for your own exploration. You are probably wondering why you should bother to go to all that trouble if you already have the information you need. The reason is that QUERY calculates averages dynamically each time a value is added or changed. Therefore, as long as an incorrect value is stored in QUERY, all of the averages that include that value will also be incorrect. So, if you or your fellow participants intend to use the QUERY averages for comparative purpose, it is essential for you to make the appropriate corrections.

You probably know enough about QUERY now to feel comfortable using the system. Just remember that QUERY will guide you, that you cannot hurt the machine, the system, or the data, and that we are here to assist you—so call out if you find yourself bewildered.

DATA MANIPULATION

Now that we have learned all about retrieving data, let's talk about manipulating those data. You can use the 16 terminals connected to the Meharry SIGMA 7 computer to manipulate data in three ways. We shall *not* describe these facilities in great detail. However, we will consult with you concerning your specific needs and problems as you actually use these subsystems. With BASIC in desk calculator mode, you may perform these five arithmetic operations:

operation	symbol
addition	+
subtraction	-
multiplication	*
division	/
exponentiation	↑ (SHIFT N)

With the MINISTAT programs you can calculate a variety of statistical measures including: mean, standard deviation, chi-square, t ratio, multiple correlations, etc. The BASIC language is a very simple but powerful language for programming instructions to the computer. You can write BASIC programs to perform any other analyses you wish. Your notebook contains instructions for using the terminal as a desk calculator, including some examples, instructions for using MINISTAT, including sample runs of some MINISTAT programs, and a complete manual describing the BASIC programming language. If you want to try writing BASIC programs, speak to any of the monitors present afterwards and we will explain to you the two concepts you must keep in mind in order to handle any programming language.

That is enough talk about things which you must experience to appreciate and understand. After a short recess you will have a chance to try out all these tools with some simple problems. Then, tomorrow you can use these same tools as you work on your real team problems.

Part B

EVALUATION

EVALUATION

The task was to impart to a group of people with diverse backgrounds and expertise, the knowledge, skills, and attitudes they needed to make effective use of some highly sophisticated technical tools. The underlying objectives of this exercise were to expose the participants to the kinds of technical resources available to them, to illustrate the importance of the TACTICS data bank (and the work of the consortium in general), and to suggest ways in which systematic investigations and analyses might be applied to their real working situations. Some direct observations made by the discussion leaders were:

- Initial reactions of the participants as they stepped into the room full of gadgetry for the first time ranged from near boredom to outright fear.
- Most participants quickly realized that this was a working session and many contributed to the presentation by offering observations, questions, and answers.
- By midway the time set aside for working sample problems, all the participants seemed to be relaxed and involved in the activity. Many people were quite enthusiatic. Several people finished early and asked for additional problems.
- During the first week, at least two people tried writing a BASIC program. One of these people had no prior programming experience.
- Several people eagerly retrieved specific information about their own institutions for use in their work.
- Many participants were reluctant to leave when the allotted time had elapsed.

The evaluation forms completed and returned by the participants (see Appendix III-H) show the following results:

- Nearly everyone (98%) found the QUERY system useful.
- People generally were pleased with the presentation. 94% found it helpful; 76% found it clear; 82% found it interesting; 45% found it provocative.
- Almost every participant (98%) had in mind a definite application for a similar facility within his or her institution.
- Many participants' attitudes regarding use of computers and remote terminals improved. Among those with no prior experience involving direct use of computers, 80% left with improved attitudes. Some of these were dramatic changes.
- A large number of participants (51%) want to learn more about statistical analyses of data. Those people who had experience using computers appeared to have more knowledge in this area and were less anxious to learn more.
- Nearly everyone (94%) wants to learn more about QUERY.
- Many people offered additional comments. Most of them dealt with favorable assessments of QUERY's ease of operation, usefulness, and significance. A sizable number of people were impressed with the importance of statistical and comparative analyses. Some people were alarmed by the amount of missing data and commented on the need to impress their peers with the importance of answering TACTICS requests for information. Perhaps the most frequent and telling comment was, in essence, "QUERY should be in all the schools."
- The one negative comment (from several people) was that not enough time was devoted to QUERY.

CONCLUSION TO THE QUERY WORKSHOP SESSIONS

The QUERY workshop sessions provided the participants with a comfortable exposure to computer systems in general and an automated retrieval system in particular which was designed to provide data on their own schools.

The QUERY system itself represented a sophisticated data handling device that is practical enough to adhere to the needs of any institution. The convenient access of data brought a firm conviction, from our participants, of their need for a reporting system that college administrators could deal with on a regular basis.

A powerful catalyst for invoking universal awareness and cooperation toward a management information system on campus could be brought about by distributing to faculty and staff general data reports on their school. These reports are usually available to the President and Dean only, which contributes to a 'poor communication' base which is characteristic of far too many college administrative structures. If we wish to invoke individual initiative. MIS must relate to the campus personnel as a recipient of our data collection and reporting service activities.

The participants who were more familiar with working on computer systems are interested in cultivating an internal data collection and reporting procedure on their campuses. MIS is currently responding to this need by developing a procedural package which includes technical applications for the development of an information management system.

Part C

APPENDICES

Appendix III-A

INTRODUCTORY PROBLEM

NAME _____

INSTITUTION _____

TEAM _____

MIS/TACTICS 1973 SUMMER WORKSHOP
Introductory Problem Set # 10

NOTE: Please write your answers in the spaces provided. Attach your terminal listing to this problem sheet and give them both to the instructor.

1. Find the sophomore enrollment for Florida A&M University in 1967-68.

   (as stored in the MIS/TACTICS Q U E R Y data bank) _____

2. Calcuate the mean and standard deviation of the following values: 1145, 1147, 1142, 1145, 1143, 1148, 1146, 1145, 1142

   Mean _____

   Std Dev _____

Appendix III-B

TACTICS INSTITUTIONS

TACTICS ID CODE	INSTITUTION	CLUSTER	Enrollment Data Available						
			1972-73	1971-72	1970-71	1969-70	1968-69	1967-68	1966-67
1047	ALABAMA A & M COLLEGE	1.4	X		X	X	X	X	X
1074	ALABAMA LUTHERAN ACDMY & COL	2.1	X	X					
1102	ALABAMA STATE UNIVERSITY	1.4	X	X	X	X	X	X	X
1143	ALBANY STATE COLLEGE	1.3	X	X	X	X	X	X	X
1198	ALCORN A & M COLLEGE	1.4	X	X	X	X	X	X	X
1246	ALLEN UNIVERSITY	2.3	X		X	X	X	X	X
1301	ARKANSAS A & M NORMAL COLLEGE	1.4			X	X	X	X	X
1352	ARKANSAS BAPTIST COLLEGE	2.3			X	X	X	X	X
1389	ATLANTA UNIVERSITY	2.5	X	X	X	X	X	X	X
1447	BARBER-SCOTIA COLLEGE	2.3	X	X	X	X	X	X	X
1499	BENEDICT COLLEGE	2.5	X	X	X	X	X	X	X
1553	BENNETT COLLEGE	2.3	X	X	X	X	X	X	X
1598	BETHUNE COOKMAN COLLEGE	2.5	X	X	X	X	X	X	X
1650	BISHOP COLLEGE	2.5	X	X	X	X	X	X	X
1704	BOWIE STATE COLLEGE	1.4	X	X	X	X	X	X	X
1723	BUTLER JR COLLEGE	2.1							
1744	CENTRAL STATE UNIVERSITY	1.4			X	X	X	X	X
1803	CHEYNEY STATE COLLEGE	1.4		X	X	X	X	X	X
1851	CLAFLIN COLLEGE	2.4	X	X	X	X	X	X	X
1897	CLARK COLLEGE	2.5		X	X	X	X	X	X
1923	CLINTON JR COLLEGE	2.1							
1951	COAHOMA COLLEGE	1.1	X	X	X	X	X	X	X
1978	COLLEGE OF THE VIRGIN ISLANDS	1.3	X	X		X	X	X	
2000	COPPIN STATE COLLEGE	1.4	X	X	X	X	X	X	X
2077	DANIEL PAYNE JR COLLEGE	2.1							
2102	DELAWARE STATE COLLEGE	1.3	X	X	X	X	X	X	X
2151	DILLARD UNIVERSITY	2.5	X	X	X	X	X	X	X
2177	D.C. TEACHERS COLLEGE	1.4							
2204	EDWARD WATERS COLLEGE	2.4	X		X			X	X
2235	ELIZABETH CITY STATE UNIVERSITY	1.2	X	X	X	X	X	X	X
2303	FAYETTEVILLE STATE UNIVERSITY	1.3	X	X	X	X	X	X	X
2351	FEDERAL CITY COLLEGE	1.5	X	X	X	X	X		
2403	FISK UNIVERSITY	2.5	X	X	X	X	X	X	X
2447	FLORIDA A & M UNIVERSITY	1.5	X	X	X	X	X	X	X
2502	FLORIDA MEMORIAL COLLEGE	2.4	X	X	X	X	X	X	X
2547	FORT VALLEY STATE COLLEGE	1.3	X		X	X	X	X	X
2603	FRIENDSHIP JR COLLEGE	2.1			X	X	X	X	X
2644	GRAMBLING COLLEGE	1.5	X	X	X	X	X	X	X
2695	HAMPTON INSTITUTE	2.6	X	X	X	X	X	X	X
2747	HOWARD UNIVERSITY	1.6	X	X	X	X	X	X	X
2792	HUSTON-TILLOTSON COLLEGE	2.4	X	X	X	X	X	X	X

Appendix III-B (Continued)

TACTICS INSTITUTIONS

TACTICS ID CODE	INSTITUTION	CLUSTER	Enrollment Data Available						
			1972-73	1971-72	1970-71	1969-70	1968-69	1967-68	1966-67
2825	INTERDENOM. THEOLOGICAL CENTER	2.2	X	X					
2851	JACKSON STATE COLLEGE	1.5	X	X	X	X	X	X	X
2905	JARVIS CHRISTIAN COLLEGE	2.4	X				X	X	X
2953	JOHNSON C. SMITH UNIVERSITY	2.5	X		X	X	X	X	X
3008	KENTUCKY STATE COLLEGE	1.3	X	X	X	X	X	X	X
3053	KITTREL COLLEGE	2.1	X	X	X	X	X	X	X
3100	KNOXVILLE COLLEGE	2.4	X	X	X	X	X	X	X
3148	LANE COLLEGE	2.4	X	X	X	X	X	X	X
3203	LANGSTON UNIVERSITY	1.2	X	X	X	X	X	X	X
3254	LE MOYNE-OWEN COLLEGE	2.4		X	X	X	X	X	X
3306	LINCOLN UNIVERSITY (MO)	1.4	X	X	X	X	X	X	X
3361	LINCOLN UNIVERSITY (PENN)	2.5	X		X	X	X	X	X
3412	LIVINGSTONE COLLEGE	2.4	X	X	X	X	X	X	X
3435	LOMAX-HANNON JR COLLEGE	2.1							
3441	MALCOLM-KING COLLEGE	2.1	X	X					
3447	MARY ALLEN JR COLLEGE	2.1							
3459	MARY HOLMES JR COLLEGE	2.1	X	X	X	X	X	X	X
3507	UNIV OF MARYLAND-EASTERN SHORE	1.2	X	X	X	X	X	X	X
3556	MEHARRY MEDICAL COLLEGE	2.7			X	X	X	X	X
3610	MILES COLLEGE	2.5		X	X	X	X	X	X
2657	MISSISSIPPI INDUSTRIAL COLLEGE	2.3			X	X	X	X	X
3704	MISSISSIPPI VALLEY STATE COLLEGE	1.4	X	X	X	X	X	X	X
3748	MOBILE STATE JR COLLEGE	1.1		X	X	X	X	X	X
3805	MOREHOUSE COLLEGE	2.5	X	X	X	X	X	X	X
3849	MORGAN STATE COLLEGE	1.5	X		X	X	X	X	X
3903	MORRIS BROWN COLLEGE	2.5	X	X	X	X	X	X	X
3946	MORRIS COLLEGE	2.3	X		X	X	X	X	X
4000	MORRISTOWN COLLEGE	2.1			X	X	X	X	X
4042	NATCHEZ JR COLLEGE	2.1			X	X	X	X	X
4095	NORFOLK STATE UNIVERSITY	1.5	X	X	X	X	X	X	X
4150	N.C. A & T STATE UNIVERSITY	1.5	X		X	X	X	X	X
4202	N.C. CENTRAL UNIVERSITY	1.5	X	X	X	X	X	X	X
4257	OAKWOOD COLLEGE	2.4		X	X	X	X	X	X
4309	PAINE COLLEGE	2.4	X	X	X	X	X	X	X
4356	PAUL QUINN COLLEGE	2.3	X	X	X	X	X	X	X
4402	PHILANDER SMITH COLLEGE	2.4			X	X	X	X	X
4467	PRAIRIE VIEW A & M COLLEGE	1.5	X		X	X	X	X	X
4489	PRENTISS NORMAL INDUS INST	2.1		X	X	X	X	X	X
4532	RUST COLLEGE	2.4	X	X	X	X	X	X	X
4578	SAINT AUGUSTINE'S COLLEGE	2.5	X	X	X	X	X	X	X
4625	SAINT PAUL'S COLLEGE	2.3	X	X	X	X	X	X	X

Appendix III-B (Continued)

TACTICS INSTITUTIONS

TACTICS ID CODE	INSTITUTION	CLUSTER	Enrollment Data Available						
			1972-73	1971-72	1970-71	1969-70	1968-69	1967-68	1966-67
4656	SAINTS JR COLLEGE	2.1							
4686	SAVANNAH STATE COLLEGE	1.4			X	X	X	X	X
4740	SELMA UNIVERSITY	2.1	X		X	X	X		
4774	SHAW COLLEGE AT DETROIT	2.4	X						
4800	SHAW UNIVERSITY	2.5	X	X	X	X	X	X	X
4843	SIMMONS UNIVERSITY	2.3							
4849	SHORTER COLLEGE	2.3		X					
4899	S.C. STATE COLLEGE	1.4	X	X	X	X	X	X	X
4948	SOUTHERN UNIVERSITY	1.6	X	X		X	X	X	X
5105	SOUTHWESTERN CHRISTIAN COLLEGE	2.1	X						
5160	SPELMAN COLLEGE	2.5	X	X	X	X	X	X	X
5223	STILLMAN COLLEGE	2.4	X	X	X	X	X	X	X
5272	T. A. LAWSON JR COLLEGE	1.1	X		X	X	X	X	X
5334	TALLADEGA COLLEGE	2.3	X	X	X	X	X	X	X
5386	TENNESSEE STATE UNIVERSITY	1.5	X	X	X	X	X	X	X
5450	TEXAS COLLEGE	2.3	X	X	X	X	X	X	X
5503	TEXAS SOUTHERN UNIVERSITY	1.5	X	X	X	X	X	X	X
5554	TOUGALOO COLLEGE	2.4	X		X	X	X	X	X
5606	TUSKEGEE INSTITUTE	2.6	X	X	X	X	X	X	X
5626	TYLER JR COLLEGE	1.1							
5647	UTICA JR COLLEGE	1.1	X	X	X	X	X	X	X
5703	VIRGINIA SEMINARY AND COLLEGE	2.2			X	X	X	X	X
5749	VIRGINIA STATE COLLEGE	1.5	X	X	X	X	X	X	X
5797	VIRGINIA UNION UNIVERSITY	2.5	X	X	X	X	X	X	X
5848	VOORHEES COLLEGE	2.4	X	X	X	X	X	X	X
5860	WASHINGTON TECHNICAL INSTITUTE	1.1							
5872	WEST VIRGINIA STATE COLLEGE	1.4	X	X					
5896	WILBERFORCE UNIVERSITY	2.5	X	X	X	X	X	X	X
5949	WILEY COLLEGE	2.3	X		X	X	X	X	X
5994	WINSTON-SALEM STATE UNIVERSITY	1.3	X	X	X	X	X	X	X
6050	XAVIER UNIVERSITY	2.5	X	X	X				X

Appendix III-C

ELEMENTS AND CODE NAMES

FALL ENROLLMENT
DATA ELEMENTS

NAME	LABEL
ENR/FR	ENROLL/TOTAL FRESHMAN
ENR/S	ENROLL/TOTAL SOPHOMORE
ENR/J	ENROLL/TOTAL JUNIOR
ENR/SR	ENROLL/TOTAL SENIOR
ENR/G	ENROLL/TOTAL GRADUATE
ENR/PR	ENROLL/TOTAL PROFESSIONAL
ENR/FT	ENROLL/TOTAL FULL-TIME
ENR/PT	ENROLL/TOTAL PART-TIME
ENR/M	ENROLL/TOTAL MALE
ENR/F	ENROLL/TOTAL FEMALE
ENR/B	ENROLL/TOTAL BLACK
ENR/TOT	ENROLL/TOTAL

ADMISSIONS
DATA ELEMENTS

NAME	LABEL
APP/1FR	# APPLIED/1ST-TIME FRES TOTAL
APP/TOT	# APPLIED/TOTAL
ENR/1FR	# ENROLLED/1ST-TIME FRES TOTAL
ENR/1TOT	# ENROLLED/1ST-TIME TOTAL

STUDENT FINANCES
DATA ELEMENTS

NAME	LABEL
CST/T+FI	COST/Q,S TUITN+FEES IN-ST ($)
CST/R+BI	COST/Q,S ROOM+BOARD IN-ST ($)
AID/#TOT	AID/YR # RECEIVING TOTAL
AID/$TOT	AID/YR AMOUNT TOTAL ($)
AID/#AWD	AID/YR # AWARDS GRANTED TOTAL

FACULTY
DATA ELEMENTS

NAME	LABEL
FAC/P	FACULTY/TOTAL PROFESSOR
FAC/PB	FACULTY/PROFESSOR BLACK

ELEMENTS AND CODE NAMES

FACULTY
DATA ELEMENTS (Continued)

NAME	LABEL
FAC/D+PR	FACULTY/TOTAL DOCTORATE+PROF
FAC/D+PRFT	FACULTY/DOCTORATE+PROF F-TIME
FAC/TOT	FACULTY/TOTAL
FAC/B	FACULTY/TOTAL BLACK
FAC/FT	FACULTY/TOTAL FULL-TIME
FAC/BFT	FACULTY/BLACK FULL-TIME
SAL/AVTOT	SALARY/YR TOTAL FACULTY AV ($)

DEGREES GRANTED
DATA ELEMENTS

NAME	LABEL
DEG/AGRICD	DEG-GRT/AGRICULTURE DEPARTMENT
DEG/ANSC	DEG-GRT/ANIMAL SCIENCES
DEG/P+SSC	DEG-GRT/PLANT & SOIL SCIENCE
DEG/ARCHD	DEG-GRT/ARCHITECTURE DEPARTMNT
DEG/ARTD	DEG-GRT/ART DEPARTMENT
DEG/BIOSCD	DEG-GRT/BIOLOGICAL SC DEPT
DEG/BIOL	DEG-GRT/BIOLOGY
DEG/BUSD	DEG-GRT/BUSINESS DEPARTMENT
DEG/BUS	DEG-GRT/BUSINESS-GENERAL
DEG/ACC	DEG-GRT/ACCOUNTING
DEG/BUSAD	DEG-GRT/BUSINESS ADMINISTRATN
DEG/MGMT	DEG-GRT/MANAGEMENT
DEG/MRKT	DEG-GRT/MARKETING
DEG/OFADM	DEG-GRT/OFFICE ADMINISTRATION
DEG/SECSC	DEG-GRT/SECRETARIAL SCIENCE
DEG/COMUD	DEG-GRT/COMMUNICATIONS DEPT
DEG/SPCH	DEG-GRT/SPEECH
DEG/SP+DR	DEG-GRT/SPEECH & DRAMA
DEG/ECOND	DEG-GRT/ECONOMICS DEPARTMENT
DEG/EDUCD	DEG-GRT/EDUCATION DEPARTMENT
DEG/EDUC	DEG-GRT/EDUCATION-GENERAL
DEG/AGRED	DEG-GRT/AGRICULTURAL EDUC
DEG/ARTED	DEG-GRT/ART EDUCATION
DEG-BUSED	DEG-GRT/BUSINESS EDUCATION
DEG/ECED	DEG-GRT/EARLY CHILDHOOD EDUC
DEG/ELEMED	DEG-GRT/ELEMENTARY EDUCATION
DEG/HECED	DEG-GRT/HOME ECONOMICS EDUC
DEG/LANED	DEG-GRT/LANGUAGE EDUCATION
DEG/MUSED	DEG-GRT/MUSIC EDUCATION

ELEMENTS AND CODE NAMES

DEGREES GRANTED
DATA ELEMENTS (Continued)

NAME	LABEL
DEG/SCED	DEG-GRT/SCIENCE EDUCATION
DEG/SECED	DEG-GRT/SECONDARY EDUCATION
DEG/SOSED	DEG-GRT/SOCIAL STUDIES EDUC
DEG/SPED	DEG-GRT/SPECIAL EDUCATION
DEG/ENGNRD	DEG-GRT/ENGINEERING DEPARTMENT
DEG/ENGLD	DEG-GRT/ENGLISH DEPARTMENT
DEG/FORLD	DEG-GRT/FOREIGN LANGUAGES DEPT
DEG/H+PED	DEG-GRT/HEALTH & PHYS EDUC DEPT
DEG/HEALTHD	DEG-GRT/HEALTH PROFESSNS DEPT
DEG/SPATH	DEG-GRT/SPEECH PATHOLOGY
DEG/HISD	DEG-GRT/HISTORY DEPARTMENT
DEG/HOMECD	DEG-GRT/HOME ECONOMICS DEPT
DEG/HOMEC	DEG-GRT/HOME ECONOMICS-GENERAL
DEG/FD+N	DEG-GRT/FOOD & NUTRITION
DEG/HUMD	DEG-GRT/HUMANITIES DEPARTMENT
DEG/LART	DEG-GRT/LIBERAL ARTS
DEG/INDARTD	DEG-GRT/INDUSTRIAL ARTS DEPT
DEG/INDART	DEG-GRT/INDUSTRIAL ARTS
DEG/BLDCN	DEG-GRT/BUILDING CONSTRUCTION
DEG/INDTCH	DEG-GRT/INDUSTRIAL TECHNOLOGY
DEG/LAWD	DEG-GRT/LAW DEPARTMENT
DEG/LIBD	DEG-GRT/LIBRARY SCIENCE DEPT
DEG/MATHD	DEG-GRT/MATHEMATICS DEPARTMENT
DEG/MTYSCD	DEG-GRT/MILITARY SCIENCE DEPT
DEG/MUSICD	DEG-GRT/MUSIC DEPARTMENT
DEG/PHYSCD	DEG-GRT/PHYSICAL SCIENCE DEPT
DEG/CHEM	DEG-GRT/CHEMISTRY
DEG/SCI	DEG-GRT/GENERAL SCIENCE
DEG/PHYS	DEG-GRT/PHYSICS
DEG/PLTSCD	DEG-GRT/POLITICAL SCIENCE DEPT
DEG/PSYCHD	DEG-GRT/PSYCHOLOGY DEPARTMENT
DEG/SOCSCD	DEG-GRT/SOCIAL SCIENCE DEPT
DEG/SOCSC	DEG-GRT/SOCIAL SCIENCE
DEG/AFAS	DEG-GRT/AFRO-AMERICAN STUDIES
DEG/GEOG	DEG-GRT/GEOGRAPHY
DEG/SOCWF	DEG-GRT/SOCIAL WELFARE
DEG/SOC	DEG-GRT/SOCIOLOGY
DEG/ODPT	DEG-GRT/OTHER DEPARTMENTS
DEG/ASSOC	DEG-GRT/ASSOCIATE
DEG/BACH	DEG-GRT/BACHELORS
DEG/MAST	DEG-GRT/MASTERS
DEG/DOCT	DEG-GRT/DOCTORATE

ELEMENTS AND CODE NAMES

DEGREES GRANTED
DATA ELEMENTS (Continued)

NAME	LABEL
DEG/PROF	DEG-GRT/PROFESSIONAL
DEG/TOT	DEG-GRT/TOTAL

LIBRARY
DATA ELEMENTS

NAME	LABEL
LIB/VOL	LIBRARY/VOLUMES
LIB/OH	LIBRARY/OTHER HOLDINGS

PHYSICAL FACILITIES
DATA ELEMENTS

NAME	LABEL
SP/RES	SPACE/RESIDENCE (SQFT)
SP/NRES	SPACE/NON-RESIDENCE (SQFT)

INSTITUTION FINANCES
DATA ELEMENTS

NAME	LABEL
EXP/I+D	EXPEND/FY INSTRUCTN & DEPT ($)
EXP/LIB	EXPEND/FY LIBRARY ($)
EXP/MAINT	EXPEND/FY MAINTENANCE ($)
EXP/OTH	EXPEND/FY OTHER ($)
EXP/TOT	EXPEND/FY TOTAL ($)
INC/TOT	INCOME/FY TOTAL ($)

Appendix III-D

TRADITIONALLY BLACK INSTITUTIONS

TACTICS ID CODE	INSTITUTION	CLUSTER
1047	ALABAMA A & M COLLEGE	1.4
1102	ALABAMA STATE UNIVERSITY	1.4
1143	ALBANY STATE COLLEGE	1.3
1198	ALCORN A & M COLLEGE	1.4
1246	ALLEN UNIVERSITY	2.3
1301	ARKANSAS A & M NORMAL COLLEGE	1.4
1352	ARKANSAS BAPTIST COLLEGE	2.3
1389	ATLANTA UNIVERSITY	2.5
1447	BARBER-SCOTIA COLLEGE	2.3
1499	BENEDICT COLLEGE	2.5
1553	BENNETT COLLEGE	2.3
1598	BETHUNE COOKMAN COLLEGE	2.5
1650	BISHOP COLLEGE	2.5
1704	BOWIE STATE COLLEGE	1.4
1744	CENTRAL STATE UNIVERSITY	1.4
1803	CHEYNEY STATE COLLEGE	1.4
1851	CLAFLIN COLLEGE	2.4
1897	CLARK COLLEGE	2.5
2000	COPPIN STATE COLLEGE	1.4
2102	DELAWARE STATE COLLEGE	1.3
2151	DILLARD UNIVERSITY	2.5
2177	D.C. TEACHERS COLLEGE	1.4
2184	EDWARD WATERS COLLEGE	2.4
2235	ELIZABETH CITY STATE UNIVERSITY	1.2
2303	FAYETTEVILLE STATE UNIVERSITY	1.3
2403	FISK UNIVERSITY	2.5
2447	FLORIDA A & M UNIVERSITY	1.5
2502	FLORIDA MEMORIAL COLLEGE	2.4
2547	FORT VALLEY STATE COLLEGE	1.3
2644	GRAMBLING COLLEGE	1.5
2695	HAMPTON INSTITUTE	2.6
2747	HOWARD UNIVERSITY	1.6
2792	HUSTON-TILLOTSON COLLEGE	2.4
2825	INTERDENOM. THEOLOGICAL CENTER	2.2
2851	JACKSON STATE COLLEGE	1.5
2905	JARVIS CHRISTIAN COLLEGE	2.4
2953	JOHNSON C. SMITH UNIVERSITY	2.5
3008	KENTUCKY STATE COLLEGE	1.3
3100	KNOXVILLE COLLEGE	2.4
3148	LANE COLLEGE	2.4
3203	LANGSTON UNIVERSITY	1.2
3254	LE MOYNE-OWEN COLLEGE	2.4
3306	LINCOLN UNIVERSITY (MO)	1.4
3361	LINCOLN UNIVERSITY (PENN)	2.5

Appendix III-D (Continued)

TRADITIONALLY BLACK INSTITUTIONS

TACTICS ID CODE	INSTITUTION	CLUSTER
3412	LIVINGSTONE COLLEGE	2.4
3507	UNIV OF MARYLAND-EASTERN SHORE	1.2
3556	MEHARRY MEDICAL COLLEGE	2.7
3610	MILES COLLEGE	2.5
3657	MISSISSIPPI INDUSTRIAL COLLEGE	2.3
3704	MISSISSIPPI VALLEY STATE COLL	1.4
3805	MOREHOUSE COLLEGE	2.5
3849	MORGAN STATE COLLEGE	1.5
3903	MORRIS BROWN COLLEGE	2.5
3946	MORRIS COLLEGE	2.3
4095	NORFOLK STATE UNIVERSITY	1.5
4150	N.C. A & T STATE UNIVERSITY	1.5
4202	N.C. CENTRAL UNIVERSITY	1.5
4257	OAKWOOD COLLEGE	2.4
4309	PAINE COLLEGE	2.4
4356	PAUL QUINN COLLEGE	2.3
4402	PHILANDER SMITH COLLEGE	2.4
4467	PRAIRIE VIEW A & M COLLEGE	1.5
4532	RUST COLLEGE	2.4
4578	SAINT AUGUSTINE'S COLLEGE	2.5
4625	SAINT PAUL'S COLLEGE	2.3
4686	SAVANNAH STATE COLLEGE	1.4
4800	SHAW UNIVERSITY	2.5
4843	SIMMONS UNIVERSITY	2.3
4849	SHORTER COLLEGE	2.3
4899	S.C. STATE COLLEGE	1.4
4948	SOUTHERN UNIVERSITY	1.6
5160	SPELMAN COLLEGE	2.5
5223	STILLMAN COLLEGE	2.4
5334	TALLADEGA COLLEGE	2.3
5386	TENNESSEE STATE UNIVERSITY	1.5
5450	TEXAS COLLEGE	2.3
5503	TEXAS SOUTHERN UNIVERSITY	1.5
5554	TOUGALOO COLLEGE	2.4
5606	TUSKEGEE INSTITUTE	2.6
5703	VIRGINIA SEMINARY AND COLLEGE	2.2
5749	VIRGINIA STATE COLLEGE	1.5
5797	VIRGINIA UNION UNIVERSITY	2.5
5848	VOORHEES COLLEGE	2.4
5872	WEST VIRGINIA STATE COLLEGE	1.4
5896	WILBERFORCE UNIVERSITY	2.5
5949	WILEY COLLEGE	2.3
5994	WINSTON-SALEM STATE UNIVERSITY	1.3
6050	XAVIER UNIVERSITY	2.5

Appendix III-E

SAMPLE RUN OF QUERY

```
.RUN QUERY

  TACTICS QUERY SYSTEM AT YOUR SERVICE
  YOU NOW HAVE ACCESS TO SPECIAL FILES FOR
  THE 1973 MIS/TACTICS SUMMER WORKSHOP COVERING
  1972-73, 1971-72, 1970-71, 1969-70, 1968-69,
  1967-68, AND 1966-67.

SPECIAL SYMBOLS? N

NEXT STEP: TYPE

ELEMENTS OR CATALOG? ELE

SELECTION: ID

ID CODE(S): 1598,2603,3008

ELEMENT(S): ENR/TOT,ENR/B

YEAR: L
```

BETHUNE COOKMAN COLLEGE

ELEMENT (YEAR)	VALUE	CLSTR AVG	PRIV AVG	TBI AVG	CONSRT AVG
ENR/TOT	1215.0	1283.6	891.4	1965.4	1856.9
(1972-73)	N	13	44	66	78
ENR/B	1065.0	1219.1	857.7	1570.0	1416.3
(1972-73)	N	13	44	60	71

FRIENDSHIP JR COLLEGE

ELEMENT (YEAR)	VALUE	CLSTR AVG	PRIV AVG	TBI AVG	CONSRT AVG
ENR/TOT	250.0	313.7	851.3	1789.0	1687.3
(1970-71)	N	7	55	81	93
ENR/B	MS	0.0	0.0	0.0	0.0
(1966-67)	N	0	0	0	0

KENTUCKY STATE COLLEGE

ELEMENT (YEAR)	VALUE	CLSTR AVG	PUBL AVG	TBI AVG	CONSRT AVG
ENR/TOT	1961.0	1842.7	3106.4	1965.4	1856.9
(1972-73)	N	7	34	66	78
ENR/B	1264.0	1423.0	2326.7	1570.0	1416.3
(1972-73)	N	5	27	60	71

ID CODE(S): >

NEXT STEP: STOP

EXIT

Appendix III-F

SCHOOLS BY CLUSTER

CLUSTER #1.1

TACTICS ID	NAME	STATE	AFFILIATION
1951	COAHOMA JUNIOR COLLEGE	MISS	
3748	MOBILE STATE JR COLLEGE	ALA	
5272	T. A. LAWSON JR COLLEGE	ALA	
5626	TYLER JR COLLEGE	TEX	
5647	UTICA JR COLLEGE	MISS	
5860	WASHINGTON TECHNICAL INSTITUTE	D.C.	

CLUSTER #1.2

TACTICS ID	NAME	STATE	AFFILIATION
2235	ELIZABETH CITY STATE UNIVERSIT	N.C.	OAPNC
3203	LANGSTON UNIVERSITY	OKLA	OAPNC
3507	UNIV OF MARYLAND-EASTERN SHORE	MD	

CLUSTER #1.3

TACTICS ID	NAME	STATE	AFFILIATION
1143	ALBANY STATE COLLEGE	GA	OAPNC
1978	COLLEGE OF THE VIRGIN ISLANDS	VI	
2102	DELAWARE STATE COLLEGE	DEL	OAPNC
2303	FAYETTEVILLE STATE UNIVERSITY	N.C.	OAPNC
2547	FORT VALLEY STATE COLLEGE	GA	OAPNC
3008	KENTUCKY STATE COLLEGE	KEN	OAPNC
5994	WINSTON-SALEM STATE UNIVERSITY	N.C.	OAPNC

CLUSTER #1.4

TACTICS ID	NAME	STATE	AFFILIATION
1047	ALABAMA A & M COLLEGE	ALA	OAPNC
1102	ALABAMA STATE UNIVERSITY	ALA	OAPNC
1198	ALCORN A & M COLLEGE	MISS	OAPNC
1301	ARKANSAS A & M NORMAL COLLEGE	ARK	OAPNC
1704	BOWIE STATE COLLEGE	MD	OAPNC
1744	CENTRAL STATE UNIVERSITY	OHIO	OAPNC
1803	CHEYNEY STATE COLLEGE	PA	OAPNC
2000	COPPIN STATE COLLEGE	MD	OAPNC
2177	D.C. TEACHERS COLLEGE	D.C.	
3306	LINCOLN UNIVERSITY (MO)	MO	OAPNC
3704	MISSISSIPPI VALLEY STATE COLLEGE	ALAS	OAPNC
4686	SAVANNAH STATE COLLEGE	GA	OAPNC
4899	S.C. STATE COLLEGE	S.C.	OAPNC
5872	WEST VIRGINIA STATE COLLEGE	W.VA	OAPNC

SCHOOLS BY CLUSTER

CLUSTER #1.5

TACTICS ID	NAME	STATE	AFFILIATION
2351	FEDERAL CITY COLLEGE	D.C.	
2447	FLORIDA A & M UNIVERSITY	FLA	OAPNC
2644	GRAMBLING COLLEGE	LA	OAPNC
2851	JACKSON STATE COLLEGE	MISS	OAPNC
3849	MORGAN STATE COLLEGE	MD	OAPNC
4095	NORFOLK STATE UNIVERSITY	VA	OAPNC
4150	N.C. A & T STATE UNIVERSITY	N.C.	OAPNC
4202	N.C. CENTRAL UNIVERSITY	N.C.	OAPNC
4467	PRAIRIE VIEW A & M COLLEGE	TEX	OAPNC
5386	TENNESSEE STATE UNIVERSITY	TENN	OAPNC
5503	TEXAS SOUTHERN UNIVERSITY	TEX	OAPNC
5749	VIRGINIA STATE COLLEGE	VA	OAPNC

CLUSTER #1.6

TACTICS ID	NAME	STATE	AFFILIATION
2747	HOWARD UNIVERSITY	D.C.	
4948	SOUTHERN UNIVERSITY	LA	OAPNC

CLUSTER #2.1

TACTICS ID	NAME	STATE	AFFILIATION
1074	ALABAMA LUTHERAN ACDMY & COL	ALA	
1723	BUTLER JR COLLEGE	TEX	
1923	CLINTON JR COLLEGE	S.C.	
2077	DANIEL PAYNE JR COLLEGE	ALA	
2603	FRIENDSHIP JR COLLEGE	S.C.	
3053	KITTRELL COLLEGE	N.C.	
3435	LOMAX-HANNON JR COLLEGE	ALA	
3441	MALCOLM-KING COLLEGE	N.Y.	
3447	MARY ALLEN JR COLLEGE	TEX	
3459	MARY HOLMES JR COLLEGE	MISS	
4000	MORRISTOWN COLLEGE	TENN	
4042	NATCHEZ JR COLLEGE	MISS	
4489	PRENTISS NORMAL INDUS INST	MISS	
4656	SAINTS JR COLLEGE	MISS	
4740	SELMA UNIVERSITY	ALA	
5105	SOUTHWESTERN CHRISTIAN COLLEGE	TEX	

Appendix III-F (Continued)

SCHOOLS BY CLUSTER

CLUSTER #2.2

TACTICS ID	NAME	STATE	AFFILIATION
2825	INTERDENOM. THELOGICAL CENTER	GA	UNCF
5703	VIRGINIA SEMINARY AND COLLEGE	VA	

CLUSTER 2.3

TACTICS ID	NAME	STATE	AFFILIATION
1246	ALLEN UNIVERSITY	S.C.	
1352	ARKANSAS BAPTIST COLLEGE	ARK	
1447	BARBER-SCOTIA COLLEGE	N.C.	UNCF
1553	BENNETT COLLEGE	N.C.	UNCF
3657	MISSISSIPPI INDUSTRIAL COLLEGE	MISS	
3946	MORRIS COLLEGE	S.C.	
4356	PAUL QUINN COLLEGE	TEX	
4625	SAINT PAUL'S COLLEGE	VA	UNCF
4843	SIMMONS UNIVERSITY	KEN	
4849	SHORTER COLLEGE	ARK	
5334	TALLADEGA COLLEGE	ALA	UNCF
5450	TEXAS COLLEGE	TEX	UNCF
5949	WILEY COLLEGE	TEX	UNCF

CLUSTER #2.4

TACTICS ID	NAME	STATE	AFFILIATION
1851	CLAFLIN COLLEGE	S.C.	UNCF
2204	EDWARD WATERS COLLEGE	FLA	
2502	FLORIDA MEMORIAL COLLEGE	FLA	UNCF
2792	HUSTON-TILLOTSON COLLECE	TEX	UNCF
2905	JARVIS CHRISTIAN COLLEGE	TEX	UNCF
3100	KNOXVILLE COLLEGE	TENN	UNCF
3148	LANE COLLEGE	TENN	UNCF
3254	LE MOYNE-OWEN COLLEGE	TENN	UNCF
3412	LIVINGSTONE COLLEGE	N.C.	UNCF
4257	OAKWOOD COLLEGE	ALA	UNCF
4309	PAINE COLLEGE	GA	UNCF
4402	PHILANDER SMITH COLLEGE	ARK	UNCF
4532	RUST COLLEGE	MISS	UNCF
4774	SHAW COLLEGE AT DETROIT	MICH	
5223	STILLMAN COLLEGE	ALA	UNCF
5554	TOUGALOO COLLEGE	MISS	UNCF
5848	VOORHEES COLLEGE	S.C.	UNCF

Appendix III-F (Continued)

SCHOOLS BY CLUSTER

CLUSTER #2.5

TACTICS ID	NAME	STATE	AFFILIATION
1389	ATLANTA UNIVERSITY	GA	UNCF
1499	BENEDICT COLLEGE	S.C.	UNCF
1598	BETHUNE COOKMAN COLLEGE	FLA	UNCF
1650	BISHOP COLLEGE	TEX	UNCF
1897	CLARK COLLEGE	GA	UNCF
2151	DILLARD UNIVERSITY	LA	UNCF
2403	FISK UNIVERSITY	TENN	UNCF
2953	JOHNSON C. SMITH UNIVERSITY	N.C.	UNCF
3361	LINCOLN UNIVERSITY (PENN)	PA	
3610	MILES COLLEGE	ALA	UNCF
3805	MOREHOUSE COLLEGE	GA	UNCF
3903	MORRIS BROWN COLLEGE	GA	UNCF
4578	SAINT AUGUSTINE'S COLLEGE	N.C.	UNCF
4800	SHAW UNIVERSITY	N.C.	UNCF
5610	SPELMAN COLLEGE	GA	UNCF
5797	VIRGINIA UNION UNIVERSITY	VA	UNCF
5896	WILBERFORCE UNIVERSITY	OHIO	UNCF
6050	XAVIER UNIVERSITY	LA	UNCF

CLUSTER #2.6

TACTICS ID	NAME	STATE	AFFILIATION
2695	HAMPTON INSTITUTE	VA	
5606	TUSKEGEE INSTITUTE	ALA	UNCF

CLUSTER #2.7

TACTICS ID	NAME	STATE	AFFILIATION
3556	MEHARRY MEDICAL COLLEGE	TENN	

Appendix III-G

STATES AND CODE NAMES

STATE	ABREV	STATE	ABREV
ALABAMA	ALA	MONTANA	MONT
ALASKA	ALAS	NEBRASKA	NEB
ARIZONA	ARI	NEVADA	NEV
ARKANSAS	ARK	NEW HAMPSHIRE	N.H.
CALIFORNIA	CAL	NEW JERSEY	N.J.
COLORADO	COL	NEW MEXICO	N.M.
CONNECTICUT	CON	NEW YORK	N.Y.
DELAWARE	DEL	NORTH CAROLINA	N.C.
DISTRICT OF COLU	D.C.	NORTH DAKOTA	N.D.
FLORIDA	FLA	OHIO	OHIO
GEORGIA	GA	OKLAHOMA	OKLA
HAWAII	HAW	OREGON	ORE
IDAHO	IDA	PENNSYLVANIA	PA
ILLINOIS	ILL	RHODE ISLAND	R.I.
INDIANA	IND	SOUTH CAROLINA	S.C.
IOWA	IOWA	SOUTH DAKOTA	S.D.
KANSAS	KAN	TENNESSEE	TENN
KENTUCKY	KEN	TEXAS	TEX
LOUISIANA	LA	UTAH	UTAH
MAINE	MA	VERMONT	VT
MARYLAND	MD	VIRGINIA	VA
MASSACHUSETTS	MASS	WASHINGTON	WASH
MICHIGAN	MICH	WEST VIRGINIA	W.VA
MINNESOTA	MINN	WISCONSIN	WISC
MISSISSIPPI	MISS	WYOMING	WYO
MISSOURI	MO	VIRGIN ISLANDS	VI

Appendix III-H

MIS/TACTICS 1973 SUMMER WORKSHOP

NAME _____ TEAM _____

INSTITUTION _____

MIS/TACTICS 1973 SUMMER WORKSHOP
Participant's Evaluation of Q U E R Y Sessions

NOTE: Please complete this form and give it to the instructor. Thank you for helping us to plan future programs to serve you.

1. Did you find the Q U E R Y presentation helpful? _____

   clear? _____ interesting? _____ provocative? _____

   Other comments: _____

2. Did you find the Q U E R Y system useful? _____ Explain: _____

   _____

3. If a similar facility were available at your institution, how would you use it? _____

   _____

4. How did you feel about using a terminal at the beginning of the workshop? _____

   and now? _____

5. How did you feel about using a computer at the beginning of the workshop? _____

   and now? _____

6. Have you had any previous experience involving direct use of a computer system? _____

   Please explain: _____

7. Does your institution have a computer? _____

8. Are you interested in learning more about statistical analyses of data? _____

   Please explain: _____

9. Are you interested in learning more about Q U E R Y? _____

10. Please add any further comments or suggestions you may have regarding the Q U E R Y system or presentation: _____

    _____

    _____

    _____

GENERAL APPENDIX

MODEL PROBLEMS FOR SUMMER INSTITUTE

Each team has the option of selecting *one* of the four problems listed here as his project for this training session. The solution developed by an individual team should be written-up using your best penmanship--and a formal presentation of about 15 minutes should be prepared for Thursday afternoon. (Materials such as pins, paper, charts, magic markers, etc. shall be distributed from the MIS office in the Hotel.)

EACH INDIVIDUAL'S UNIQUE CONTRIBUTION IS A NECESSARY ELEMENT IN ORDER FOR THE TEAM TO REACH AN OPTIMUM SOLUTION TO THESE PROBLEMS

Problem No. 1. School A needs a new library. The following arguments applied to several schools could be used to justify this venture. Please consider these and other criteria to promote school A's new library.

- Show what impact the library size has on the number of different degree granting programs.
- Does the library size indicate whether a school is likely to have a graduate program or not?
- Add other arguments that demonstrate the effect of a good library in the school.

Problem 2. School B, an average size public institution, would like to introduce a Communications Department as part of its undergraduate program. Areas to be included in this departmental arrangement are communications, radio, television, speech and drama. Prepare a feasibility study to support the new program with the suggested arguments:

- Undergraduate programs that offer development of a specific skill have a positive effect on upper-class enrollment.
- College programs (e.g., radio, drama) that may reach the outside community could increase enrollment, particularly on a part-time basis.

Problem 3. School C is a small, private, 4-year institution in a rural community. Its freshman enrollment has been decreasing steadily over the past few years. The President suspects that surrounding junior colleges are drawing students away from School C.

- What factors inside the school are contributing to the declining enrollment?
- Suggest some constructive programs for establishing policy to reverse this trend, with arguments to support them.

Problem 4. Write a description of School D which portrays and analyzes its finances, student body, faculty status, etc. for the past few years. After constructing a picture of the school, develop some projected goals indicating what directions School D must move to remain educationally and economically viable and responsive to the community.