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GRADUATE COLLEGE

AN INVESTIGATION OF THE RELATIONSHIP BETWEEN TRAINING ON TASK ANALYSIS TECHNOLOGY, PROFESSIONAL ROLE AND REALLOCATION BEHAVIOR IN A SIMULATION GAME OF FAMILY PLANNING JOB DESIGN

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

BY

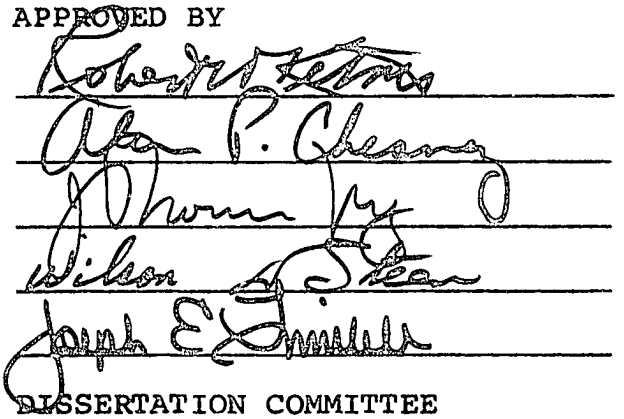
JOSEPH PATRICK HART

Oklahoma City, Oklahoma

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APPROVED BY



DISSERTATION COMMITTEE

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TABLE OF CONTENTS

		Page
ACKNOWLEDGEMENTS		iii
LIST OF TABLES		vii
LIST OF FIGURES		viii
Chapter		
I.	INTRODUCTION	1
	Family Planning Services and Manpower Need for Flexible Utilization Practices Steps Toward Flexible Manpower Utilization Theoretical Framework Purpose, Problem, and Hypotheses	
II.	METHODS	43
	Subjects Research Design Procedures Materials	
III.	RESULTS	75
	Overall Task Reallocation Reallocation Responses for each of Six Possible Directions	
IV.	DISCUSSION	98
V.	SUMMARY	111
REFERENCES		115

Page

APPENDIX A 120

Tabular Display of Subject Background Information

APPENDIX B 128

Instructor's Guide

APPENDIX C 163

Registration and Participant Background Form

APPENDIX D 166

Training Materials

APPENDIX E 205

Task Statements Used in Simulated Game

APPENDIX F 220

Coding Guide for Subject Background and Task Reallocation Responses

LIST OF TABLES

Table		Page
1.	Administration of Control and Treatment Conditions by Regional Composition of Groups and Sequence of Administration . . .	47
2.	Mean Number of Tasks Reallocated for all Treatment Combinations	77
3.	Summary of Analysis of Variance for Level of Instruction, Professional Role and Interaction	78
4.	Comparison of Control with Level One and Level Two Groups of Mean Number of Tasks Reallocated	80
5.	Comparison of Level One and Level Two Groups on Mean Number of Tasks Reallocated	81
6.	Summary of Analysis of Variance for Simple Main Effects	85
7.	Mean Number of Tasks Reallocated for all Treatment Combinations and for Six Possible Directions of Task Reallocation	89
8.	Summaries of Analysis of Variance for Level of Instruction, Professional Role and Interaction and for Five Possible Directions of Reallocation	94

LIST OF FIGURES

Figure		Page
1.	Sample Task Analysis Data Sheet	16
2.	Schematic Representation of Levels of Organization of Job Category as Configuration and Relationships between Levels	30
3.	Schematic of Job Category as Configuration with Multiple Tasks and Multiple Task Attributes	32
4.	Schematic Representation of the Two Outcomes of the Process of Identification	35
5.	Schematic Representation of Process of Substitution	37
6.	Summary of Information Presented in Scenario of the Family Planning Job Design Simulation Game	61
7.	Mean Number of Tasks Reallocated by Health Nonprofessionals and Professionals at Three Levels of Instruction . .	83
8.	Mean Number of Tasks Reallocated in the Control, Level One, and Level Two Conditions for Two Categories of Professional Role	86
9.	Mean Number of Tasks Reallocated at Three Levels of Instruction for Two Directions of Reallocation, Physician to Nurse and Physician to Clinic Assistant	91

Figure Page

10. Mean Number of Tasks Reallocated at Three Levels of Instruction for Two Directions of Reallocation, Nurse to Clinic Assistant and Nurse to Physician . . . 91

11. Mean Number of Tasks Reallocated at Three Levels of Instruction for Two Directions of Reallocation, Clinic Assistant to Nurse and Clinic Assistant to Physician 92

AN INVESTIGATION OF THE RELATIONSHIP BETWEEN TRAINING ON TASK ANALYSIS TECHNOLOGY, PROFESSIONAL ROLE AND REALLOCATION BEHAVIOR IN A SIMULATION GAME OF FAMILY PLANNING JOB DESIGN

CHAPTER I

INTRODUCTION

Family Planning Services and Manpower

It has become evident in recent years that there have been inequalities in access to contraceptive services which offer the health and social benefits of timing, spacing, and limiting pregnancies (U.S. Congress, Senate, 1971). In recognition of this inequality there has been an increase in the past decade in both the provision and plans for provision of publicly subsidized voluntary family planning services offered by the Office of Economic Opportunity (Hellman, Corfman and Beckles, 1971). Another source of national commitment is found in the inclusion of family planning within the public assistance payments of the Social and Rehabilitative Service of the Department of Health, Education, and Welfare (Family Planning Perspectives, 1971). In October of 1969 the National

Center for Family Planning Services (NCFPS) was established within the Health Services and Mental Health Administration of the Department of Health, Education, and Welfare. The NCFPS

> . . . is the first federal agency devoted exclusively to supporting family planning services. The NCFPS provides leadership in the extension of family planning services through special service project grants and other supporting programs. (Hellman, Corfman and Beckles, 1971, p. 37)

The passage of the Family Planning Services and Population Research Act of 1970, Public Law 91-572 further commits national support to the provision of family planning services by providing legislative authority ". . . to assist in making comprehensive voluntary family planning services readily available to all persons desiring such services" [Section 2(1)].

The findings of a study conducted by the Center for Family Planning Program Development of Planned Parenthood-World Population in 1969 indicated that

> in the 50 states and the District of Columbia, approximately 5,367,000 women in families with incomes below the near-poverty level formulated by the Social Security Administration, are estimated to be in need of subsidized family planning services at any given time. (Center for Family Planning Program Development, 1970, p. viii)

In order to fulfill the national commitment to provide family planning services to all who desire them, substantial efforts will be required in manpower development and utilization to assure adequate numbers of qualified

personnel to develop, manage, deliver and evaluate the system for delivery of the needed services. A plan for making family planning services available to the approximately 5.3 million women in need by Fiscal Year 1975 was prepared by the National Center for Family Planning Services and submitted to the Senate on October 12, 1971 by Elliot L. Richardson, former Secretary of Health, Education, and Welfare. It was estimated in the plan that approximately 90,000 staff members would be needed by Fiscal Year 1975 and that most of the 90,000 would work half or quarter-time; also, an estimated 6,000 to 8,000 physicians will be needed on a part-time basis (U.S. Congress, Senate, 1971).

Manpower requirements for responding to the unmet need for service must be viewed from yet another perspective. It was reported in the study by the Center for Family Planning Program Development (1970), that of those in need of subsidized family planning services, 47% live in the 123 largest Standard Metropolitan Statistical Areas (SMSAs) with 250,000 population or more, 8% live in 98 smaller SMSAs, and 45% live in 2,627 nonmetropolitan counties. Another finding was that "no organized program of family planning services could be identified in 1,636 counties, [or] 53% of all U.S. counties" (Center for Family Planning Program Development, 1970, p. viii). An implication of these findings is that a variety of

staffing patterns will be required to match the geographical differences in service demand and the progressive stages of program development. The Five Year Plan for Family Planning Services (U.S. Congress, Senate, 1971) and the study by the Center for Family Planning Program Development (1970) suggest that a large number of personnel appropriately distributed and organized in a variety of staffing patterns will be required to meet the existing commitment to assure access to the benefits of family planning services to all persons who desire them.

The problems associated with the manpower component may be grouped in four general categories. The first is the acquisition or recruitment of personnel into the field of family planning. The family planning service delivery system exists within a larger health service system that has been described as having serious manpower shortages (Davis, 1972; National Advisory Commission, 1967). Jobs in the field of family planning must be competitive in terms of salary, hours, benefits, status and interest if adequate numbers of qualified personnel are to be employed.

A second problem area is education and training of family planning personnel. Given that there is a projected need for new service programs and expansion of existing programs (Center for Family Planning Program

Development, 1970), there will be concomitant training requirements to accommodate program starts and program expansion. Training will also be required for new staff resulting from turnover, and for updating of staff in new procedures. A national or regional network of centers and training projects for consultation and training has been proposed (U.S. Congress, Senate, 1971) and is developing to meet the training needs.

The distribution of manpower is another topic of concern. The part-time use of personnel employed in other health services, volunteer services, use of mobile health vans and the use of "flying physicians" have been suggested or tried in an effort to solve unbalances in the distribution of family planning manpower (U.S. Congress, Senate, 1971; Westinghouse Population Center, 1972).

The fourth major problem area associated with the manpower component is that of manpower utilization. The term "utilization" as used in the present research is defined as the efficient and effective application of manpower abilities to the work requirements derived from the goals of and environmental influences on an organization. The effective utilization of personnel is a major aim in the proposed efforts to develop a national system for the delivery of subsidized family planning services. The following statement from the Five Year

Plan for Family Planning Services and Population Research indicates the importance placed on utilization practices:

> The goal of the manpower development plan is to encourage the maximum effective utilization of all existing categories of personnel and the introduction of new or previously unused types of staff in order to free highly trained physicians and nurses to perform the functions for which they alone are qualified. (U.S. Congress, Senate, 1971)

The focus of the present research is on a specific problem area concerning procedures intended to encourage effective manpower utilization practices in the field of family planning service delivery.

Need for Flexible Utilization Practices

Several factors associated with the present and projected family planning service delivery system suggest a need for strategies and methodologies that encourage flexibility in the organization of job tasks into jobs and staffing patterns. One factor, introduced above, is the considerable variation among existing service delivery programs in terms of organizational characteristics. Substantial variation among 125 grantees of the National Center for Family Planning Services was found to exist with regard to the following five dimensions: (a) size of budget; (b) age of program; (c) location in metropolitan versus nonmetropolitan area; (d) patient load; (e) type of clinic, i.e., single purpose, multi-purpose, hospital-based and mobile (Westinghouse Population Center,

1972). The variations in organizational characteristics can be expected to necessitate variation in job and staffing pattern design. For example, differences were found in task content of nurse jobs in small rural service units as opposed to large urban service units in that the nurse job in the small service units included a larger number of tasks and a wider range of skill requirements than did the nurse job in the large urban service unit (Task Analysis and Job Design Project, 1971).

In situations in which there may be a shortage of physicians or nurses such as in rural areas, it would be advantageous to have the flexibility to distribute job tasks among the available personnel. Delegation would of course be dependent upon the availability of adequate training and upon the capability of the available personnel to perform the delegated tasks at an acceptable level of performance.

There has been increasing recognition of the potential contribution of paraprofessional personnel in the delivery of family planning services as well as in the delivery of other health services (Hoff, 1968; Holister, 1970; Moore and Stewart, 1972; Stein, 1969; U.S. Congress, 1971). A continuing increase in utilization of paraprofessional manpower would require reorganization of existing health service job categories

so that certain tasks now usually performed by professionals could be allocated to paraprofessionals.

Another factor that suggests the need for flexibility in the distribution of job tasks is the limited amount of finances available for training and education programs for family planning personnel (U.S. Congress, Senate, 1971). Expenditure of training resources on programs which prepare manpower for traditional job roles that may not reflect the most effective utilization pattern represents an ineffective use of resources. If jobs that represent maximum utilization of manpower within individual, organizational, and environmental constraints can be designed and then job related training programs can be developed, there would be greater assurance of efficient use of scarce training resources.

There is a tendency among service delivery and administrative personnel to make judgments about manpower utilization in terms of traditional job titles and categories such as physician, nurse, registered nurse, licensed practical nurse, nurse aide, and outreach worker (U.S. Congress, Senate, 1971). If a unit of work is judged according to the job or professional title in which it has traditionally resided, as opposed to being judged according to the actual type and level of ability required for performance, then the reallocation of the

unit of work may become severely constrained. For example, if a unit of work is considered a physician task or a nurse task, then movement of the unit becomes more dependent upon the possession of a degree, license, or certificate than upon actual skill or knowledge required to perform the work. The problem and its effect are succinctly stated in the following description of the experience of a group of research workers involved in the development of health planning methodology.

> Efforts to develop an innovative planning methodology were not productive when we approached the problem directly. As research workers we found ourselves handicapped by the tendency to hold to personalized stereotypes of health manpower categories which led to presuppositions that a nurse could be assumed to be a nurse and a doctor a doctor. Mention of any manpower category conjured up a nimbus of associated attributes and functional capacities that set our minds in a rut of traditional thinking and hampered new job definitions. (Rienke, Taylor, and Parker, 1971)

Although the statement pertains to the experience of research workers, there is evidence to suggest that the same problem is found among some administrators and service delivery personnel working in family planning and other health services (Boaz, 1972; Hoff, 1971; U.S. Congress, 1971; U.S. Dept. of Labor, 1973).

Steps Toward Flexible Manpower Utilization

At present there appear to be five types of manpower-oriented activities that hold promise of identifying or encouraging the application of nontraditional

patterns of manpower utilization in the field of family planning.

New Job Categories

One activity directed at utilization problems is the development of new job categories which represent intermediate steps between existing job categories. Examples of such categories which have been proposed or developed are the Family Planning Assistant (Weisbuch and Watson, 1969), Family Planning Physician Assistant (Westinghouse Learning Corporation, 1971), Family Planning Nurse (Britanak, 1972), and Family Planning Specialist (Ostergard, Broen, and Marshall, 1972). A central theme among programs involved in the development of new job categories is the delegation of routine or repetitive tasks from jobs that have requirements of long term and specialized training to the newly created job categories. Another commonality is the development of training programs intended to provide individuals who will work in the designated category with the skills and knowledge required to perform the delegated tasks.

Legal Review

The review of law regarding delegation of medical tasks typically performed by physicians to subordinate health personnel is another activity that holds promise

for identifying possibilities for job restructuring. It was found, for example, in a review conducted in conjunction with the Westinghouse Learning Corporation's Physician Assistant Feasibility Study (1971), that in many states there has been an acceptance of supervised delegations without specific statuatory language. Such findings regarding task delegation may at least suggest to program administrators some of the possibilities for restructuring.

Mathematical Techniques

One kind of information that may encourage commitment to try alternative utilization patterns is the reported application of mathematical techniques to evaluate clinic performance and to develop models of clinic production processes. Perkin (1969) presented a simple procedure for deriving a patient/staff index that ". . . expresses in a standardized manner the relationship between volume and type of patient service provided by a given staff during a specific clinic session" (p. 37). The index was intended to be used in conjunction with other output measures to compare the performance of different clinics. Presumably such comparative information would be useful to family planning clinic administrators in identifying problems associated with staff size.

In addition to the question of an appropriate staff/patient ratio, Dean (1970) introduced the factors of cost and production function in a procedure for examining utilization of family planning personnel. The method proposed by Dean allowed an administrator to determine the relative productivity of three categories of personnel: doctors, nurses, and nonprofessionals (1970). Although this method provided an increase in information over the method presented by Perkin (1969), it relied on the use of traditional job categories as opposed to job tasks and therefore, in this author's opinion, does not have the potential for encouraging versatile job design that it might otherwise have.

In regard to the family planning clinic production process, Boaz (1972) proposed a mathematical model that also relies on the use of conventional job categories as inputs in the model and consequently suffers from the same deficiency pointed out in the review of the method proposed by Dean (1970). A mathematical model of optimal resource allocation which includes the use of service units defined in terms of job tasks is presently being developed by Colosi (1972). The model appears to offer examples of greater flexibility in organization of work than do the other approaches described above since it uses specific work activities as opposed to job categories. Although somewhat different in purpose and scope,

each of the methods described above represents a potential influence which may stimulate consideration of innovative utilization of manpower.

Utilization Survey

A survey of nursing personnel employed in a statewide family planning program was conducted by Bennett (1972) to obtain the nurses' judgments regarding the assumption by nurses of tasks usually performed by physicians. For 36 of the 39 tasks ordinarily performed by physicians, more than 50% of the 105 nurses included in the survey responded with some degree of qualification (such as, with supervision) that they could assume these duties (Bennett, 1972).

Opinions of willingness, by a sample of 15 physicians in Federal Region VI, to delegate selected family planning job functions to other health personnel were obtained as a part of the Physician Assistant Feasibility Study (Westinghouse Learning Corporation, 1971). The results of the inquiry indicated that few physicians were delegating tasks but many would delegate

> . . . if appropriate training can be provided beforehand, if adequate medical supervision can be maintained, and if existing legal conventions can be amended or reinterpreted to accommodate supervised delegations. (Westinghouse Learning Corporation, 1971, p. 1)

Utilization survey activities such as the two cited above and a national family planning manpower utilization

survey that has been proposed by the Center for Family Planning Program Development (1971) have potential for identifying the locus and range of interest in and of reluctance to restructuring jobs.

Task Analysis

The fifth activity which appears to hold potential for encouraging the recognition of alternative ways to organize family planning service delivery work is the application of task analysis. Task analysis is an approach to the study of jobs that has been applied in various industries for at least 50 years (Zerga, 1943) but which has not been widely used in the health service industry until the 1960's. Essentially it is a procedure for studying jobs in which separate units of work activity are identified and examined to determine characteristics of the work units such as abilities required for performance and equipment or work-aids used. Additional definition of task analysis is provided in a research report of the Health Services Mobility Study (1971):

> Task analysis may include identifying and rating the skills and knowledge needed for each task. The unit of work activity called 'task' usually is of such a size that a meaningful production output can be associated with it and it can be shifted from one job to another. (pp. xi-xii)

The size of a task and the complexity of the information about the characteristics of a task vary depending upon

the uses intended and the sophistication of the task analysis methodology. A sample of task analysis data from a Dictionary of Family Planning Tasks and Task Analysis Data (Task Analysis and Job Design Project, 1973) is shown in Figure 1. The range of data included on the Task Analysis Data Sheet shown in Figure 1 is intended to provide data for job descriptions, selection instruments, job related training curricula, career ladders, and employee evaluation procedures; thus the data sheet contains a considerable amount of detailed information about the task.

Task analysis is expected to demonstrate to its users, substantial utility in the development and utilization of manpower resources required to deliver the projected family planning services. It is stated in the Five Year Plan for Family Planning Services that:

> One approach which offers promise as a mechanism for broad manpower development analysis, including the most effective utilization of all current and new types of manpower, is the technique of task analysis. (U.S. Congress, Senate, 1971)

Task analysis data appear to be useful in facilitating recognition of potential for restructuring of jobs because of the mobility, scope and detail of the data. While the task statements are small enough to place on cards for the purpose of examining alternative clusters of tasks, they are, however, detailed enough to obtain

TASK ANALYSIS DATA

FUNCTION: Service Delivery
SUB-FUNCTION: Diagnosis
ACTIVITY: Testing

TASK NO. 332 01

"ONE LINER" TASK STATEMENT

Draws capillary blood sample to test for anemia.

TASK STATEMENT

Cleanses finger, explains procedure to patient, noting any physical indications of fear, reassures, calms patient, punctures finger with sterile lancet, fills capillary tube with blood, seals tube with clay, inserts tube in numbered tray, writing corresponding number on patient's route slip, directs patient to next service,

IN ORDER TO obtain blood specimen to be used in testing for anemia.

PERFORMANCE VARIABLES

1. Sensitivity to fears of patient.
2. Fewer than ___% of patients complain of treatment.
3. Fewer than ___% of patients refuse to cooperate.
4. Between ___ and ___ samples are obtained per hour.
5. Fewer than ___% of pipettes are broken while handling.
6. Fewer than ___% of patients are lanced more than once.
7. Fewer than ___% of pipettes are filled incorrectly.

TRAINING CONTENT

1. Medical terminology relating to hematocrit test.
2. Reason for HCT test.
3. Relationship of task to other tasks and workers.
4. Observation and practice of the task.
5. Observation and awareness of physical symptoms of patient nervousness.
6. Specific procedures for the task.

TOOLS/AIDS/MATERIALS

1. Spongette.
2. Gauze square.
3. Blood lancet.
4. Capillary tubes (2).
5. Seal-ease tray.
6. Pencil or pen.
7. Patient route slip.

TASK ANALYSIS SCALES

WORKER FUNCTIONS

DATA	PEOPLE	THINGS	S
2	3	4	5

G.E.D.

REAS	MATH	LANG
2	1	2

RESPONSIBILITY

CHOICE	H.E.C.
2	3

Task Analysis and Job Design Project
Instructional Services Division, The Family Health Foundation
New Orleans, Louisiana

Fig. 1. Sample task analysis data sheet.

a clear understanding of the activity and types of skills required for performance. When ratings of type and level of skill or knowledge attributes of each task are provided, such as the ratings at the bottom of Figure 1, they can be used to help solve a difficult problem in task reallocation which is identifying true similarities and differences between tasks.

The question of whether task analysis will contribute to the actual reorganization of traditional job categories in the field of family planning is one that would require large scale longitudinal research. Amenable to more immediate investigation is the question of whether the data generated from task analysis affect the acceptance, in principle, of reallocating tasks from jobs in which the tasks have traditionally been located. In addition to being more amenable to immediate research, findings about the relationship between exposure to task analysis data and acceptance of job restructuring, in principle, may provide clues about the way in which task analysis data should be introduced to health service personnel to encourage change.

The present research involves an investigation of the effect of differing levels of exposure to the characteristics and uses of task analysis data on simulated task reallocation behavior. It also involves another issue regarding job restructuring. Although there have

been surveys dealing with task delegation in the field of family planning (Bennett, 1972; Westinghouse Learning Corporation, 1971) and training programs designed to prepare persons for nontraditional jobs in family planning (Britanak, 1972; Ostergard, Broen, and Marshall, 1972; Weisbuch and Watson, 1969), this author did not find any indication of attempts to determine the characteristics of individuals who have shown innovative actions in reallocation or assumption of nontraditional tasks. In response to two apparent areas which lack clarification, the present research was undertaken to investigate the relationship between amount of training on characteristics of task analysis data and simulated reallocation of tasks by individuals with differing professional roles in the family planning service delivery system.

Because of the lack of past research findings in these two areas of family planning service delivery, the present research was exploratory in nature. It was also highly practical in that this author hoped that the findings would shed light on the effects of an ongoing training program in task analysis for service delivery personnel. Although exploratory and practical in nature, a theoretical framework was used to guide the formulation of the research hypotheses and to add a theoretical perspective to viewing the phenomenon of task reallocation behavior.

Theoretical Framework

Culture Change

One of the problems discussed in the preceding pages was the need for more flexibility in the distribution of job tasks among family planning service delivery personnel. Greater flexibility is needed to accommodate variations in size of service delivery operations, provide a solution to supply shortages, insure more efficient use of training resources, and clarify requirements. The application of data from task analysis to job design, and restructuring was proposed as a technology for achieving greater flexibility in task assignment. The successful introduction and application of task analysis technology imply changes in the occupational structure of the family planning service delivery system. A new division of labor would replace traditional and accepted ways of doing the work of service delivery. Patterns of work behavior would be changed. The current values and norms of professional and occupational groups that provide reference points for determining the allocation of tasks would also require change. Because reallocation of tasks involves a reorientation of values and norms and the emergence of new patterns of behavior, the problem of task reallocation can be approached as a problem of culture change.

The study of culture change may focus on one or more of several contemporary problem areas; the appearance of new culture elements, whether material or nonmaterial, has been studied under the headings of invention and innovation; the pattern, rate, and cycles of diffusion or distribution of cultural elements are other problem areas; acceptance of new elements and resistance to culture change may also be a focal area of study within the topic of culture change (Barnett, 1953; Faris, 1964; Gould and Kolb, 1964; Keesing, 1965). The levels of research analysis used in culture change studies have ranged from psychological level analysis involving personality or attitude constructs to historical or evolutionary studies involving world society or civilization as the level of analysis (Gould and Kolb, 1964; Keesing, 1965). Change within a single culture as well as change associated with interaction and transfer between cultures or subcultural groups are also of interest as problems in culture change (Gould and Kolb, 1964; Keesing, 1965). The focus most relevant to the present research is that of the processes that occur in the appearance of new cultural elements. New norms and patterns of carrying out job tasks are the intended results of applying task analysis technology to the family planning job structure. As an aid to understanding the processes involved in applying task analysis technology to job restructuring,

a theory of culture change that addresses the rise of new culture elements was applied in the present research.

Innovation

The theoretical framework used to study simulated task reallocation behavior was a theory of culture change process proposed by H.G. Barnett in Innovation: The Basis of Culture Change (1953). According to Barnett, "an innovation is here defined as any thought, behavior, or thing that is new because it is qualitatively different from existing forms" (p. 7). He further states:

> In defining an innovation as something that is qualitatively new, emphasis is placed upon reorganization rather than upon quantitative variation as the criterion of a novelty. Innovation does not result from the addition or subtraction of parts. It takes place only when there is a recombination of them. (1953, p. 9)

Barnett's aim was to provide a general theory of innovation which included the processes and social, personal, and situational conditions for innovation and which would contribute to establishing regularities in the functioning of culture change (Barnett, 1953). Constructs from Barnett's theory which deal with both the processes and the conditions for innovation were used in the present research. The constructs and the way they were used are described below after a brief explanation of assumptions and boundaries of Barnett's theory.

No distinction is made in Barnett's theory between the psychological processes that account for the rise of such diverse culture elements as new objects, behavior patterns, theories, or social relations. Barnett contends that when the emergence of new cultural elements is understood to be a commingling of psychological processes, the content may be either material or nonmaterial culture; consequently, the term invention which is ordinarily used to refer to development of a new material technology and the term discovery which ordinarily is used in reference to theories and processes are both names for innovation.

Neither the magnitude of difference between the newly formed cultural element and the preexisting elements from which the new element was formed, nor the ultimate impact or consequence of the new element serve to distinguish innovation from non-innovation. Similarly, although the title innovator or inventor may be bestowed on the basis of consequence or importance of an innovation, innovative acts are not limited to only a few gifted individuals. Barnett states:

> Whether a novelty is striking or shocking or is a minor or major departure from previous patterns has nothing to do with the mental processes which brought the idea of it into existence. The innovative act is the same; 'radical' or 'minor' are expressions of attitudes toward certain of its consequences. When this evaluative attitude is discounted, it will appear that innovations, whether major or minor,

> whether of private or public significance, and whether of ephemeral or lasting utility, are constantly being made. Everyone is an innovator, whether popular definitions allow him that recognition or not. (1953, p. 9)

Barnett contends that innovation is more common than usually thought and that there is no innovative faculty possessed by some and not by others.

Factors that influence the acceptance or rejection of an innovation once it has occurred are proposed by Barnett, but his theoretical framework stops short of relating the processes of innovation to social consequences of an innovation. His theory does not include constructs involving the cumulative results of acceptance of an innovation.

The focus of Barnett's theory is the process and conditions for the occurrence of innovations. Barnett explains:

> They [innovations], rather than combinations of them, are taken as the complexes to be analyzed and compared. They are not studied as components in patterns of change, or viewed as steps in an evolutionary sequence, or dealt with as events localized in time and place. (1953, p. 1)

Innovations themselves, not their role in diffusion, rates of change, drifts, trends, or cycles are the focus of Barnett's theory of innovations as the basis of culture change (Barnett, 1953).

Theoretical Constructs

Several constructs from Barnett's theory were used in the present research. The constructs that were applied are described below together with an overview of how they relate to the present research. A more detailed explanation of the relationships between the theoretical constructs, hypotheses, and empirical data is given in the method chapter.

Configurations. A construct of central importance for the present research is configuration. There are four principal attributes that serve to delimit the meaning of configuration in the context of Barnett's theory. The first is that "basically, configurations are mental activity systems that are somehow the counterparts of external referents" (Barnett, 1952, p. 183). The term mental activity systems refers to a linkage between ideas. The linkage involves " . . . a complex commingling of perception, cognition, recall, and affect" (Barnett, 1952, p. 181). Psychological concepts such as perception are drawn upon to help describe and delimit the meaning of configuration. Barnett does not attempt or presume to specify the neurological correlates of a configuration. Neither does he attempt a theoretical explanation of the psychological concepts themselves; they are used simply as descriptive aids.

As explained by Barnett, "configurations are as varied in character as are human experiences involving organization" (1952, p. 182). The external referent of a configuration may be large or small; it may be generic or specific; it may be a tangible thing such as a chair or a house, or it may be an abstract concept such as role or system. Configurations are standards of thought, but

> they may be standardized for the individual only or for a social class or an ethnic group. Their relative character is indicated by their variation from individual to individual and from group to group. (Barnett, 1953, p. 183)

Another attribute of configuration is wholeness. Barnett posits that " . . . a configuration is any unified pattern of experience" (1953, p. 182). The external referents of configurations may vary in size, shape, substance, or temporal duration; "but in all cases they are organized; their elements stand in certain definite relationships to each other so that they make up a whole that is configurated by an arrangement of its parts" (Barnett, 1953, p. 182).

The mention of elements and parts in the previous sentence leads to the third defining attribute which is that "every configuration can be analyzed. It can be reduced [by analysis] to distinct configurations or subwholes within itself" (Barnett, 1953, p. 185). The

subwholes identified by analysis appear as unified patterns of experience until they are analyzed to identify their elements. Although the terms part, element, and subwhole are used interchangeably in the present report, the term subwhole is preferred because it suggests a wholistic quality but also suggests derivation from a larger unit. In addition to being subject to analytical reduction, a configuration may be incorporated, as a subwhole, with other configurations to form a larger configuration. Whether a configuration is regarded as a part or a whole is dependent upon the level of analysis that has been conducted (Barnett, 1953).

The fourth attribute has to do with the nature of relationships between the subwholes of a configuration. "When a configuration is analyzed, its parts are recognized as being bonded together by specific relationships" (Barnett, 1953, p. 186). The following types of relationships that may bond the parts of a configuration were enumerated by Barnett: (1) spatial, (2) temporal, (3) ordinal, (4) comparative, (5) genetic, (6) causal, (7) correlative, (8) incorporative, and (9) attitudinal (1953, p. 187). Other types of relationships may occur between parts of configurations, and the relationship between two parts may be characterized by a complex combination of types of relations (Barnett, 1953).

In summary, configurations are mental activity systems or ideas that are based upon external referents. As a perceptual or cognitive whole, a configuration represents a step or level within a hierarchy of organization. Lower levels of organization may be identified by analyzing a configuration. Barnett explained the hierarchial organization of configurations in the following way:

> In analysis the moment a relationship is conceived between constituent elements within a configuration, the latter dissolves, and the component parts appear as wholes-plus-relations. If these subwholes become the focus for further analysis, they too disintegrate into their elements-plus-relations, and their properties as wholes disappear. (1953, pp. 193-194)

Under usual circumstances the specific relationships between subwholes of a configuration bond the subwholes and contribute to maintaining the configuration as a whole. However, when a configuration is analyzed and the subwholes and relationships are recognized, the relationships tend to contribute to the distinctness of the subwholes rather than maintain them as entities (Barnett, 1953, p. 186).

In the present research, the job role categories physician, nurse, and clinic assistant used in the simulation game are assumed to constitute configurations as the term is used within the context of Barnett's theory of innovation. The role categories of physician, nurse,

and clinic assistant (or clinic aide) are common to the field of family planning and have as their external referents the job behavior patterns of incumbents in family planning service delivery jobs.

The three job categories are more or less stable perceptual wholes. The terms physician or doctor, nurse, and clinic assistant or nurse aide are commonly used by both service providers and consumers when referring to or distinguishing incumbents in health service delivery jobs. The unitary character of these job categories is also indicated by the existence of educational degrees and legal sanctions that serve to distinguish and give unique identity to the categories.

Job categories as configurations are subject to analysis at successively lower levels of organization. A job category may be analyzed by using job analysis procedures. The result of such an analysis is the identification of the tasks that constitute the job category. The configuration may be analyzed at a still lower level. The tasks identified in the first level of analysis may themselves be analyzed to identify the skill, knowledge, and other attributes required to perform the tasks. A schematic representation of the levels of organization that are of interest in the present research is shown in Figure 2. The subwhole, task attribute, is shown in Figure 2 as a dotted line. The next higher level of

organization, which is task, is represented by a dashed line in Figure 2. The solid line in Figure 2 represents the highest level of organization which is that of job category. An assumption of the present research is that job categories such as physician, nurse, and clinic assistant are infrequently analyzed at the two lower levels by administrators and incumbents and that without such analysis the job categories tend to remain fixed with regard to the content of tasks. In terms of Figure 2, the three levels of organization that are shown, collectively represent the configuration job category; however, without intentional or accidental analysis only the highest level of organization, i.e., job category, would ordinarily be focal.

The bonding relationship between a task and the job category in which the task was identified by analysis is based on expectations regarding the assignment of responsibility for performing the task. That is, a task is related to a particular job category by the normative expectation that the responsibility for carrying out the task rests with any incumbent of the particular job category. The responsibility may be fixed by law, policy, or tradition. A statement such as: "Taking the patient's blood pressure is the responsibility of the nurse," reflects the nature of the relationship

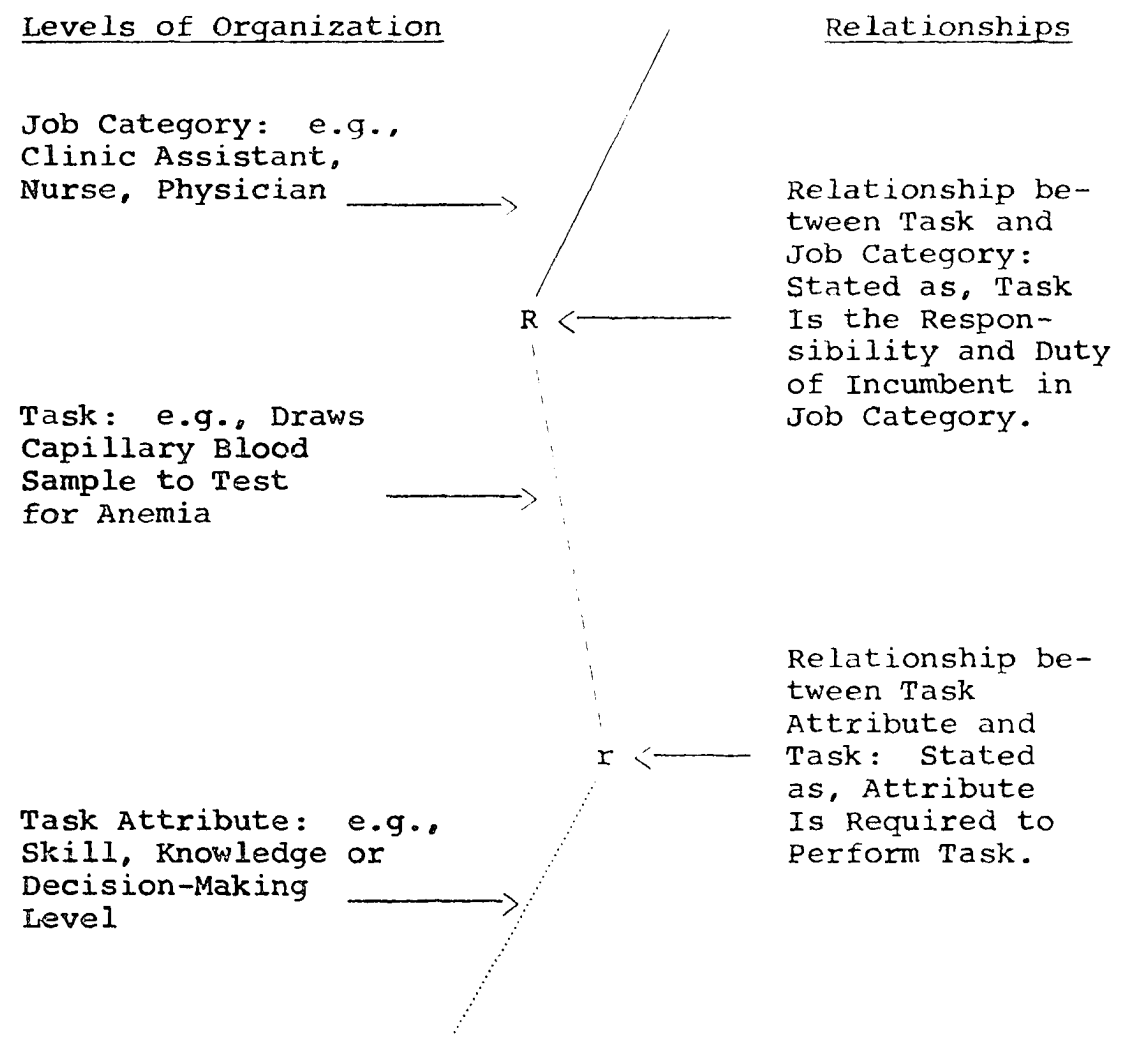


Fig. 2. Schematic representation of levels of organization of job category as configuration and relationships between levels.

between a task (taking blood pressure) and a job category (nurse). The underlined part of the previous sentence is the verbalized representation of the relationship that bonds tasks with job categories. The general case of the relationship between task and job category may

be stated: "Task X is the responsibility of job category Y." The relationship between task and job category is represented in Figure 2 by the capital letter R.

The skill, knowledge, or decision-making attributes identified by analysis of a task are abilities that are required for acceptable performance of the task. A bridge between an attribute and the task from which it was identified, is the constraint that a given attribute is required for performance of the task in which it was identified. In the present research the constraint represented by the statement "is required for performance of" is the verbalized representation of the primary bonding relationship between task attribute and task. A small letter r is used in Figure 2 to represent the relationship between task attribute and task.

Job categories usually comprise many tasks, and each task may have several attributes. A more complex version of a schematic of a job category as configuration and the levels of organization that result from analysis is shown in Figure 3. The multiple dashed and dotted lines in Figure 3 indicate that a job category may include many tasks each of which comprises several attributes.

The definition of innovation given earlier pointed out that innovation takes place when there is a recombination of the subwholes of two preexisting configurations;

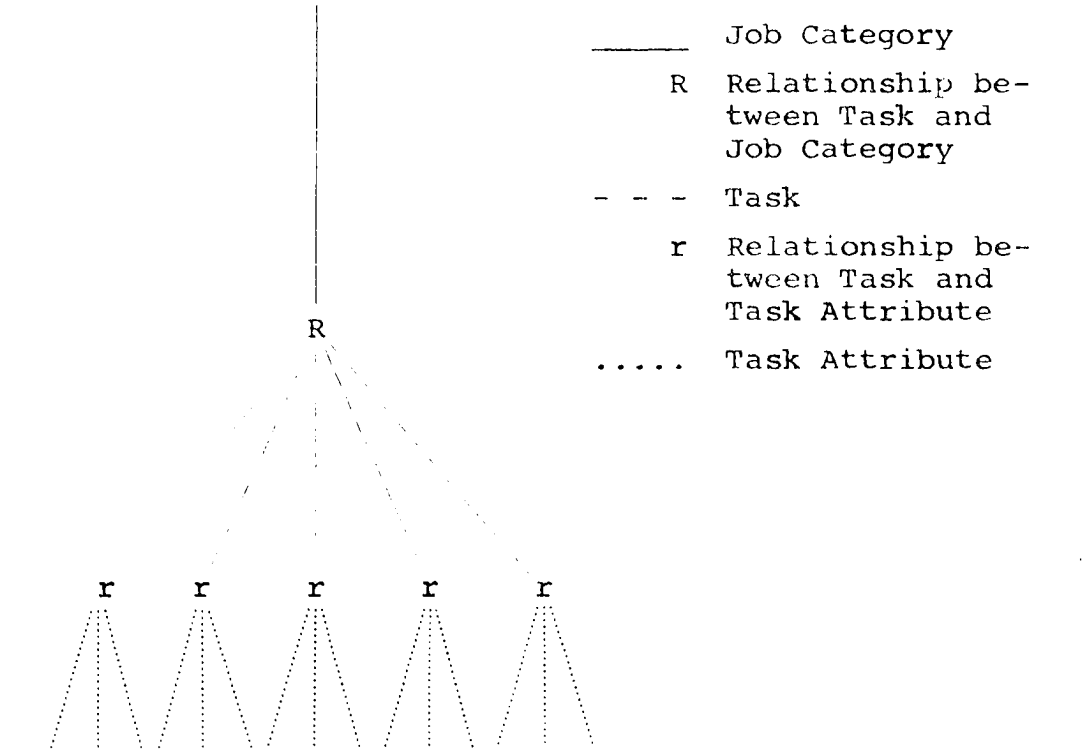


Fig. 3. Schematic of job category as configuration with multiple tasks and multiple task attributes.

the result of recombination is a new configuration that is qualitatively different from the original configurations (Barnett, 1953). In support of the preceding definition, Barnett proposed and described the construct recombination which is comprised of three processes titled identification, substitution, and discrimination (Barnett, 1953, pp. 188-218). The processes of identification and substitution were applicable to the present research; they are explained below and are related to

the procedures used in the research reported in this dissertation. The process of discrimination is an alternative to identification and was not applied in the present research; consequently, it is not discussed here.

Identification. The outcome of identification is that the subwholes of two different configurations are regarded as equivalent. In order for the outcome of equivalency to occur, some element common to both subwholes must be found by an analysis of the configuration and then of the subwholes. The analysis may be the result of a deliberate and calculated search for correspondences or it may be an unexpected flash of insight associated with a particular combination of personal and social conditions (Barnett, 1953). Figure 4 shows a schematic representation of the two steps involved in the process of identification. The schematic in Part A of Figure 4 represents two job categories that have as a common element the same task attribute. The commonality is indicated by the convergence of the dotted lines from two different tasks in different job categories to the letter C which stands for commonality. The common attribute may be a common level of skill, a common knowledge requirement, or a common decision-making requirement for the two tasks and is focal in the first phase of identification. An analysis that results in

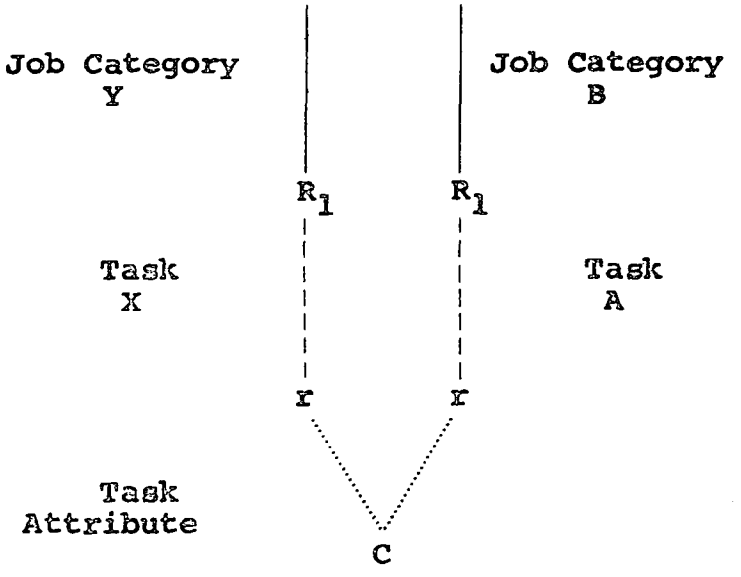
the discovery of a common factor is called a convergent analysis (Barnett, 1953).

The second step in the process of identification is that the common element plus the subwhole to which it is related, which in the present example are the task attribute and task respectively, are redintegrated as a whole at the higher level of organization (Barnett, 1953, p. 208), and the subwholes in the two configurations are regarded as equivalent. In the present example, once the common task attribute was identified the focus would shift to the tasks, and it would be the tasks that would be perceived as equivalent. Equivalency of the two job tasks is represented by the brackets and equal sign shown in Part B of Figure 4. The occurrence of identification does not mean that innovation has occurred:

> Although identification is a prerequisite to innovation it is not sufficient to create one. . . . Identification is not a cross combination, which we have assumed by definition to characterize an innovation. (Barnett, 1953, p. 207)

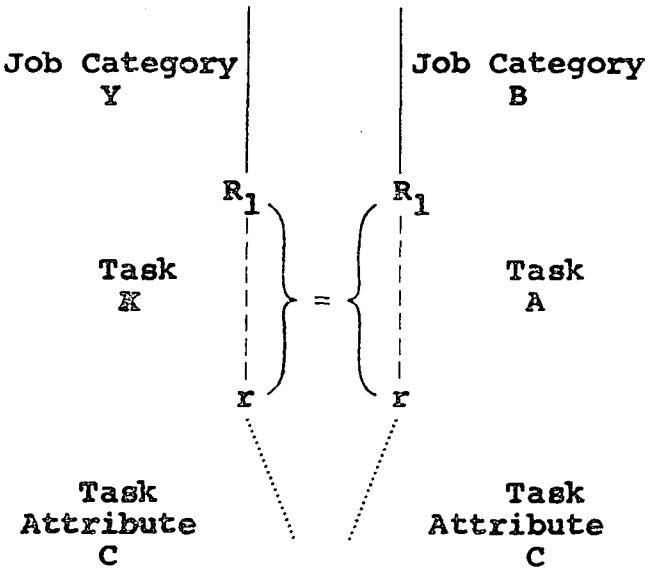
The recognition of the subwholes of two different configurations as equivalent simply sets the stage for the process of substitution which is the second phase in the recombination of configurations.

Substitution. Substitution may involve the cross combining of subwholes or relationships between subwholes or both (Barnett, 1953, p. 188). The present research



Task Attribute
as Element That Is
Common to Both Tasks

PART A



Tasks X and A Regarded
as Equivalent because
of Common Factor C

PART B

Fig. 4. Schematic representation of the two outcomes of the process of identification.

involved the cross combining of tasks as subwholes of job categories and did not involve changes in the types of relationships between subwholes. The type of relationship that was assumed to join tasks with job categories was assumed to be the same for the three job categories and their respective tasks; consequently, the relationship between task and job category was assumed to be constant for a task that was originally within a job category and for a task that was reallocated into a new category during the simulation. A schematic representation of the process of recombination using job categories, tasks, and task attributes as examples is shown in Figure 5. Assuming that identification has occurred, the subwholes CX and CA (task attribute-plus-task) in Part A of Figure 5 are regarded as equivalent because of the presence of a common factor C. They are, however, subwholes of different configurations (job categories) and have not yet been substituted. The arrows in Part A represent the possibility of cross combining either subwhole (reallocating either task) to the opposite configuration (job category) under conditions conducive to cross combining. Part B of Figure 5 shows that two new configurations, CAY and CXB, have resulted from the substitution.

The identification of equivalent subwholes and the substitution of cross combining of equivalent parts

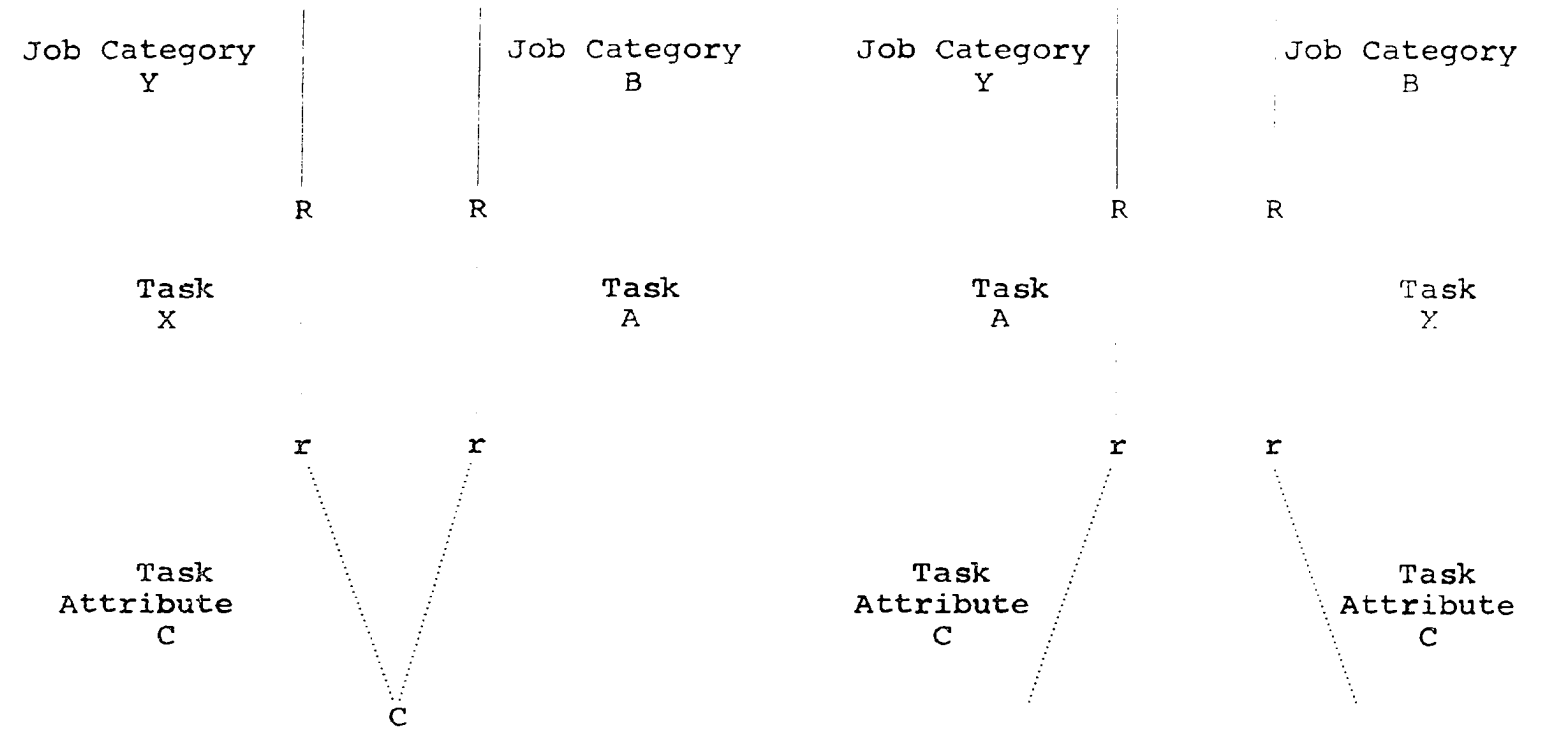


Fig. 5. Schematic representation of process of substitution.

of different configurations are the two mental processes that are assumed to occur in innovation. The behavioral manifestations of the innovative process occur in relation to the external referents of configurations. In the present research the behavioral manifestation of innovation is the cross combining of tasks within the physician, nurse, and clinic assistant job categories that were presented in the simulation game.

Group and Situational Factors. Certain conditions, according to Barnett, are more propitious for the occurrence of innovations. One such condition is a motivational state that Barnett (1953) refers to as a want. The term includes physiological and psychological need states; it involves conscious and subconscious levels of recognition of need; it also includes motivational states based on individual, group, and societal factors. Barnett chose the term want over the term need to avoid the connotation of fulfillment of a need as being indispensable for survival. The various types of motivational states that are subsumed under the term want are, according to Barnett, " . . . assumed to exist, but their nature and origin is not made the object of inquiry [within his theory of innovation]" (1953, p. 99).

Discomfort and dissatisfaction with an accepted cultural element, whether material or nonmaterial, is a

motivational want state under which there is a greater propensity for the occurrence of innovation; the dissatisfaction may be based on a desire to avoid an unpleasant or frustrating situation or it may be based on a desire for achievement or prestige (Barnett, 1953). In the present research an area of interest was the task reallocation behavior of health professionals and health nonprofessionals. The call for greater delegation of tasks to nonprofessionals was assumed to reflect dissatisfaction with the current task content of jobs assigned to nonprofessionals and the desire for task content that allows greater prestige and feeling of accomplishment. It was further assumed that although the need for greater delegation has been expressed by both professionals and nonprofessionals, there would be a more widespread feeling of dissatisfaction among health nonprofessionals than among health professionals and that there would be differences in reallocation behavior based on the assumed differences in motivation.

Situational factors may also influence the occurrence of innovative behavior. A situation in which efforts are taken to introduce an exploratory or analytical mental set may encourage innovative recombinations. An individual's orientation toward the configurations in his stimulus field ". . . may be conditioned by instruction or by requirements, such as the task attitude

in the laboratory, or by other coercives in ordinary life situations" (Barnett, 1953, p. 203). The possibility of reallocating tasks in the simulation was introduced to the subjects of the present research in the explanation of the context of the simulation game. The subjects were told that they should consider keeping a task in the original job category or moving the task to another of the job categories included in the simulation. The scenario also included a statement of problems that existed among the personnel who were incumbents in the job categories that constituted the staffing pattern of the simulated clinic. The problems included in the scenario and the request that the subjects consider reallocating tasks were assumed to introduce a situational factor favoring an analytical set on the part of the subjects.

Summary of Theoretical Framework

The four defining attributes of a configuration were presented and then the concept of job category was described in terms of the four attributes to establish an analogy between the concepts of configuration and job category. The reallocation of tasks from one job category to another was assumed to involve the processes of identification and substitution and was therefore considered analogous to innovation as defined in Barnett's

(1953) theory of innovation as the basis of culture change. Analysis was presented as a necessary prerequisite to identification and substitution and was represented in the present research by a training program that presented techniques for analyzing job tasks to identify attributes of tasks that different tasks have in common.

According to Barnett (1953) motivational states and situational factors may influence the occurrence or nonoccurrence of innovation. Conditions were present in the simulation game that were assumed to introduce a state of preparedness on the part of subjects to apply analytical skills presented in the training.

Purpose, Problem, and Hypotheses

The purpose of this research was to obtain a clearer understanding of the impact of task analysis technology on the family planning service delivery system by using a theoretical framework in which task allocation is assumed analogous to innovative culture change behavior. With this purpose in mind, the following problem was studied: What is the relationship between training on task analysis technology, classification as health professional or health nonprofessional, and task reallocation in a simulation game of family planning job design? The hypotheses that were used to explore the research problem are stated below.

1. Subjects who receive training will reallocate more tasks than will subjects who receive no training.
2. Subjects who receive a greater amount of training will reallocate more tasks than subjects who receive a lesser amount of training.
3. Health nonprofessionals will reallocate more tasks than will health professionals.
4. The difference in number of tasks reallocated by health nonprofessionals and health professionals will be greater for increasing amounts of training.

CHAPTER II

METHOD

Subjects

The subjects were 92 personnel employed in organizations that deliver or have coordinating responsibility for family planning services and who participated in training sessions on the use of task analysis technology. The subjects represented a total of 70 organizations and were from 11 states. Appendix A, Table A, contains a list of the states and the number of subjects from each state.

The amount of experience of the subjects in a program that delivers family planning services varied from three subjects with no experience to 36 subjects with more than 30 months. Of the three subjects that reported no experience, one had been on the job only five days, one was from a coordinating agency, and one was from a new program that had not started delivery of services. A total of 25 subjects reported 12 months or less experience, 21 subjects had 13 to 24 months, and 44 subjects reported having had 25 or more months

of experience. One subject did not report the amount of experience. A total of 64 subjects held administrative or supervisory jobs, 21 held direct service jobs such as nurse or outreach worker, and 7 subjects held other types of jobs such as clerk or secretary. Of the 92 subjects a total of 63 were classified, according to the highest level of occupational training or education completed, as health professionals, and 27 as health nonprofessionals. The educational background of the subjects in years of education was as follows: (a) 22 subjects had 12 or less years of education; (b) 46 had 13-16 years; and (c) 24 subjects had 17 or more years of education.

There were 82 female and 10 male subjects. There were no subjects under 21 years of age. A total of 46 subjects were between ages 21 and 40, and 46 subjects were over 41 years of age.

Research Design

Assignment of Groups

Six groups which consisted of individuals assembled for training programs constituted the subject groups to which the control and experimental treatments were administered. There was a range of 6 to 22 subjects per training program. The six training programs were

delivered over the period of July, 1972, to February, 1973, a period of eight months.

Although it was not possible to assign individuals to experimental treatments, some control over the assignment of subject groups to the control, level one, or level two experimental treatments was possible. The dates and locations of the training programs and the composition of groups with regard to geographical residence of subjects for all training sessions were not known at the beginning of the research. However, it was expected that three programs would be conducted in northern states and three programs would be conducted in southern states. Consequently, the assignment of subject groups to treatment conditions was done in stages as the dates, places, and composition of groups were verified. The procedures for assigning subject groups to control and experimental treatments involved a combination of random assignment and assignment on the basis of composition of groups. The first subject group consisted primarily of subjects from southern states and was assigned by random procedures to the control condition. Advance registration indicated that the second subject group would also consist of subjects from primarily southern states. Consequently, the decision was made to assign this group to either the level one or

level two treatment condition by means of random assignment which resulted in the second group being assigned to the level one condition. The third training program was also conducted for subjects who were all from a southern state and this group was assigned to the level two condition to assure that data would be collected on subjects from southern states for the control and both treatment conditions.

The fourth and fifth training programs included subjects who were from northern states. The first of these two subject groups was randomly assigned to the level one condition. Assignment of the second group was made randomly but was restricted to either the control or level two condition. The result was that the group was assigned to the level two condition. The subjects assembled for the final training program were from a southern state and were assigned to level two to make the number of subjects from southern states in the control, level one, and level two conditions more equal.

A tabular display of the sequence of administrations of control and treatment conditions by regional composition of groups is shown in Table 1. It can be seen in Table 1 that there was one administration of the control condition, two administrations of the level one treatment, and three administrations of the level two

TABLE 1

ADMINISTRATION OF CONTROL AND TREATMENT CONDITIONS BY REGIONAL COMPOSITION OF GROUPS AND SEQUENCE OF ADMINISTRATION

Regional Composition	Sequence of Administration					
	1	2	3	4	5	6
South	Control Group	Level One	Level Two			Level Two
North				Level One	Level Two	

treatment. The subjects from the two administrations of the level one treatment were pooled to form the level one treatment group and the subjects from the three administrations of the level two treatment were pooled to form the level two treatment group. Table 1 shows that the control group for this research was comprised of subjects from a single administration of the control condition, that the administration was the first of six, and that the subjects were from programs located in the south. The level one treatment group was comprised of subjects from the second and fourth administrations and was comprised of subjects from the north and south. The level two treatment group was comprised of subjects from administrations three, five, and six and included two

sets of subjects from southern states and one set of subjects from northern states. The pooled number of subjects in the control, level one, and level two groups were 22, 39, and 31 subjects, respectively.

Data were collected from the subjects on various demographic, organismic, occupational, and educational variables in order to examine the composition of the control, level one, and level two groups that resulted from the procedures for assigning subject groups to treatment conditions. A detailed comparison of the three groups on selected background variables may be made by referring to the seven tables in Appendix A. A summary of the main differences and similarities among the control, level one, and level two groups on the background data that were collected is presented below.

The background variables on which there appeared to be the greatest differences between the groups were as follows: (a) proportion of subjects from northern and southern states, (b) amount of experience of subjects in a program that delivers family planning services, and (c) educational background of subjects. The control group, level one group, and level two group all seemed to differ from one another on the proportion of subjects from northern and southern states. Subjects from southern states constituted 100% of the subjects in the control

group, whereas the level one group was comprised of 26% of the subjects from southern states and 74% of the subjects from northern states. A more equal proportion was found in the level two group, with 48% of the subjects from southern states and 52% from northern states.

Subjects in the level two group appeared to differ from subjects in the control and level one group in amount of experience in a program that delivers family planning services. The percentage of subjects with over 30 months of experience was 55% for the level two group in comparison to 27% and 33% in the control group and level one group respectively.

Educational background was another area in which the groups appeared to be dissimilar. The percentage of subjects that reported completing 17 or more years of education was 9% in the control group, 41% in the level one group, and 19% in the level two group.

The background variable on which there was greatest similarity among the groups was sex of subject. The percentage of female subjects in the control, level one, and level two groups was 91%, 87%, and 90% respectively.

Research Variables

The present research included one dependent and two independent variables. The dependent variable was

the number of job tasks reallocated in a simulation game of family planning job design. One independent variable was amount of training on procedures for analyzing job tasks to identify attributes of the tasks. The second independent variable was occupational classification as health nonprofessional or health professional. A description of the levels of training, the protocol for classifying subjects as health nonprofessional or health professional, the characteristics of the dependent measure, and the relationship of the research variables to the theoretical constructs are described below.

Dependent Variable. All subjects participated in a simulation game of family planning job design in which they were presented with three sets of job tasks. The sets represented the job tasks of a physician, a nurse, and a clinic assistant in a hypothetical family planning clinic. There were 17 tasks in the physician job, 15 tasks in the nurse job, and 12 tasks in the clinic assistant job for a total of 45 tasks. The subjects were asked to consider each task in each job and decide whether to keep the task in the job in which it was originally assigned or to reallocate the task to another job. The subjects were free to reallocate from physician to nurse or clinic assistant, from nurse to physician or clinic assistant, or from clinic assistant to physician

or nurse. They were also free to reallocate as many or as few tasks as they wanted to reallocate. The dependent measure in the present research was the number of tasks reallocated.

The three sets of job tasks presented to the subjects at the beginning of the simulation game represented traditional assignments of tasks to jobs in the field of family planning. The determination of traditional assignments was based on descriptions of traditional job roles or task assignment reported in the Physician Assistant Feasibility Study (Westinghouse Learning Corporation, 1971), the Five Year Plan for Family Planning Services (U. S. Congress, Senate, 1971), and the Joint Statement on Maternity Care (1971). The reallocation of job tasks from a traditional pattern of assignment into other patterns of assignment was considered to be deviations from customary cultural patterns of work behavior in the field of family planning and was assumed analogous to innovation as described in Barnett's (1953) theory of innovation as the basis of culture change.

Independent Variables. One of the independent variables in the present investigation was amount of instruction on identifying attributes of job tasks. Three different training programs, each of which included different amounts of training on identifying attributes

of tasks, represented the levels of the variable that were included in the present research.

The subjects in the control condition did not receive training on procedures for analyzing job tasks to identify task attributes before they played the simulation game. Also, the subjects in the control condition participated in a version of the job design simulation game that did not include an analysis of the attributes of the tasks before they were asked to decide on reallocating or not reallocating each task. In terms of the theoretical framework, subjects in the control condition had not been prepared to conduct a convergent analysis of the tasks (subwholes) to identify common elements (task attributes). It was therefore assumed that the occurrence of identification and substitution would be relatively infrequent among subjects in the control condition in comparison to the other two experimental conditions.

The subjects in the level one condition played a version of the simulation game that included an analytical examination of the tasks in the game. Approximately twenty minutes was allowed for the analysis. The subjects were asked to sort the tasks within each of the three job categories into two piles. One pile was to include tasks that the subjects judged as requiring

relatively high level abilities and the other pile was to include tasks they judged as requiring relatively low abilities. After completing the sort, a discussion of the results of the sort was conducted. The discussion included a comparison of the distribution of tasks as relatively high or relatively low that was made by the subjects; it also included the identification of the factors or criteria that were used by the subjects to make their decisions during the sort.

The sorting of the tasks into levels of relative ability requirements and the discussion of the task attributes that the subjects used to determine relative level were assumed to represent a convergent analysis of the tasks that would facilitate identification of common attributes and substitution of tasks among the three job categories included in the simulation game.

The level two treatment condition included the analytical examination of the tasks that was carried out in the level one condition; it also included additional lecture, discussion, and exercises on identifying attributes of job tasks. The additional training was assumed to represent an increase in the capability of subjects in the level two condition over the capability of subjects in the level one condition to identify common task attributes. It was further assumed that with a greater

capability for identifying common task attributes, there would be a greater tendency for reallocation of job tasks by subjects in the level two condition than by subjects in the level one or control conditions.

Subjects in the level two condition received two units of instruction that were not presented to subjects in the other two experimental conditions before administration of the dependent measure. The total amount of time of the two instructional units was 150 minutes. One of the units provided an introduction to the task analysis data base. The second unit of instruction was an introduction to the characteristics of scales that are used to determine skill, knowledge, and decision-making attributes of tasks. The primary focus of both units of instruction was the attributes of job tasks.

The second independent variable studied in the present research was occupational classification as health nonprofessional or health professional. Each subject was asked to enter any diplomas, degrees, licenses, or certificates that the subject had received and to indicate the area or field to which the diploma, etc., pertained. The entry made by each subject was used to classify the subject as health nonprofessional or health professional. Subjects whose highest level of education or training was in an area or field designated

as a health occupation in Health Resources Statistics: Health Manpower and Health Facilities, 1969 (Dept. of H.E.W., 1970), were classified as health professionals. Subjects who reported no training or education past a high school diploma or who reported advanced preparation in a field other than those listed as health occupations in the Department of Health, Education, and Welfare document were classified as health nonprofessionals.

Summary of Design

The research design of the present study was a 3 x 2 factorial design. The three-level factor was amount of instruction on procedures for identifying attributes of job tasks. The three levels included the control condition (no training), the level one condition (20 minutes of training), and the level two condition (170 minutes of training). The second factor included two levels which were classification as health nonprofessional or health professional. The dependent variable was number of job tasks reallocated among the physician, nurse, and clinic assistant job categories included in the simulation game of family planning job design.

Procedures

The manipulation of the main independent variable, which was amount of training, was accomplished by presenting three different programs of training. The

programs differed in the amount of training that was presented to subjects before administering the dependent measure. All of the instruction in a given program took place on a single day. The same instructor delivered all units of instructions in each program with one exception. In one of the administrations of the level one condition training program, a second instructor delivered the simulation game to a part of the subject group because there was not enough table space for all subjects in a single room.

The first 75 minutes of activity in each of the three programs was the same. Following a registration period, each program was initiated with a 15-minute session in which the instructor welcomed the subjects and then the instructor and the subjects introduced themselves. The instructor then provided an overview of the training topics and explained the training objectives and training techniques that would be used in the program. The overview and explanation of objectives and techniques took approximately 15 minutes. The next 45 minutes was devoted to an instructional unit on a conceptional model for manpower development and utilization. The model was presented to the subjects as a framework for identifying how task analysis technology fits into the various aspects of developing and managing family planning manpower.

A brief description of each of the following components of the model was presented: (a) manpower planning, (b) recruitment, (c) selection, (d) training, (e) directing, (f) staff development, (g) evaluation, and (h) task analysis data base. Following the description of the model, a short structured discussion was conducted in which subjects were asked to describe how one or more manpower development activities, carried out by supervisors, related to the components of the model.

The intent of the first 75 minutes of instruction was to orient the subjects to the training program and to provide a frame of reference that could be used to integrate the subsequent instructional units. None of the instruction in the first 75 minutes of each program dealt directly with procedures for identifying task attributes by analysis. A more detailed description of the instructional units that were included in the first 75 minutes of each of the three training programs is provided in the Instructor's Guide in Appendix B. The Guide in Appendix B also contains a detailed outline of the other instructional units in the training programs which are described in the remainder of the present chapter. The Instructor's Guide includes a detailed outline of the topics, directions for presenting the topics, a reference to training materials used, and a specification of the time allocated to each unit and subunit of instruction.

Level Two Condition Training Program

In addition to the first 75 minutes of instruction that was presented in all three conditions, three units of instruction, all of which focused on job tasks and attributes of job tasks, were presented to subjects in the level two condition before administration of the dependent measure. The first of the three units was titled Introduction to the Family Planning Task Analysis Data Base and was 75 minutes in length. It included the following subunits: an overview of the terms job analysis and task analysis; an explanation of the task analysis data sheet; and an exercise on analytical reading of task statements.

In the first subunit, the terms job analysis and task analysis were defined and a brief description of the procedures and outcomes of job and task analysis was presented. The next subunit of instruction included an explanation of the six major sections of a task analysis data sheet and of several uses of the data on a task data sheet. Four of the sections of a task analysis data sheet contain information about task attributes. Content on the relationship between task attributes and tasks was included in the explanation of the four sections. An exercise on reading task statements to determine the worker actions, objects of the actions, instruments

used, and the output of a task constituted the next subunit.

The title of the second instructional unit in the level two training program was Decision-Making and Skill Requirements of Family Planning Job Tasks. A total of 75 minutes was allocated to this instructional unit. Lecture, discussion, and an exercise were used to present the uses, characteristics, and importance of task analysis scales as a means to obtain information about skill and decision-making attributes of tasks. The uses of scale data for hiring and promotion decisions, for job restructuring, and for building career ladders were pointed out. The subjects participated in an exercise in which they individually assigned scale values to four tasks using the decision-making scale; they then participated in a guided discussion of the values they had assigned and the reasons they gave for choosing the particular values. After the scaling exercise, the instructor pointed out the importance of using scale data for manpower management decisions to help prevent overutilization and underutilization of personnel.

The third unit of instruction presented to subjects in the level two condition before administration of the dependent measure, consisted of the first two phases of the Family Planning Job Design Simulation Game. The

first two phases of the simulation game were, respectively, an explanation of the game scenario, and a sorting of the game tasks to determine relative ability requirements.

The scenario, which was 20 minutes in length, was begun with an explanation of the reasons for conducting the simulation game. Subjects were told that the reasons were to become familiar with using task statements and to identify and discuss variables involved in job design or re-design. The characteristics and advantages of simulations in general were also presented. The next part of the scenario was a description of the context of the simulation which included the role to be played by the subjects, selected characteristics of the hypothetical clinic and its staff, the reason for the review of existing jobs, and the constraints on the simulation game player. A summary of the information included in the context is shown in Figure 6. The last part of the scenario was a description of the organization of the deck of 45 job tasks used in the simulation game and the format of the information on the cards in the deck. Each subject was given a deck to aid in the description and to prepare for the next phase of the simulation game.

The second phase of the simulation game involved (a) a sorting procedure to determine the relative ability requirements of the tasks in the game, and (b) a discussion

Role of Player:	Family Planning Project or Clinic Administrator.
Characteristics of Clinic:	Small in size, three jobs in addition to administrator (physician, nurse, clinic assistant). Has been operational for one year.
Characteristics of Staff:	Physician reports feeling rushed. Nurse fairly satisfied with amount and type of work. Clinic assistant reports lack of work at times when other staff seem busy; also doesn't feel enough growth in skills and knowledge since starting job.
Reasons for Review of Jobs:	Wants to start procedure of annual manpower review. Patient waiting lines seem longer. Possibility of increased referrals from Welfare Department suggests need for review of task assignments.
Constraints:	Number of persons on staff must remain the same. Must use all tasks provided in the game.

Fig. 6. Summary of information presented in scenario of the family planning job design simulation game.

of the results of the sort. The second phase of the game took approximately 20 minutes. The reasons given to the subjects for the sort were to become familiar with the tasks in the hypothetical clinic and to become familiar

with the factors or criteria that individuals use to make decisions about the relative levels of abilities required to perform job tasks. The subjects were instructed to read the tasks in each of the three job categories (i.e., physician, nurse, and clinic assistant) and to sort the tasks in each job category into two stacks. One stack was to contain the tasks that the subject thought were relatively high in ability requirement and one stack was to contain tasks that were relatively low in requirement. In determining whether a task was relatively high or relatively low, the task was to be compared only with other tasks in the same job category. The outcome of the sorting procedure was two stacks of tasks for each category.

The discussion of the results of the sort was initiated with an explanation by the instructor that the purpose of the discussion was to identify and list the criteria or factors that were used by the subjects to make their judgments about the relative level of the tasks. The instructor then asked various subjects to report which tasks they had judged as relatively high and which they had judged as relatively low; he also asked the subjects to explain the criteria they had used to make the judgments. Differences in opinion regarding whether a task should be judged as relatively

high or relatively low were identified and were discussed in terms of the characteristics or attributes of the tasks that would indicate the level of ability required to perform the task. Six factors that were attributes of tasks were identified during the discussion of the sort. The factors were (a) decision-making level, (b) skill level, (c) knowledge level, (d) amount of training required, (e) error consequences, and (f) amount of involvement with inanimate objects versus humans. An additional factor that influenced the designation of a task as relatively high or low was the job category in which the task was traditionally assigned. For example, a task that was thought by a subject to be usually performed by a physician was judged higher than a task thought to be usually performed by a nurse. The discussion was concluded with a summary of the task attributes that had been identified and an explanation of the need to make decisions about manpower utilization on the basis of actual abilities required to perform tasks rather than on traditional patterns of task assignment. The instructional units that constituted the level two experimental treatment were concluded upon the completion of phase two of the simulation game.

The next unit of instruction consisted of phases three and four of the simulation game. The third phase

of the game was a sorting of tasks to decide which, if any, tasks to reallocate. A discussion of the job design criteria, used by the subjects, to decide on reallocation was the fourth and final phase of the simulation game.

The third phase of the game involved the administration of the dependent measures and took approximately 20 minutes. The instructor introduced the third phase of the simulation game by telling the subjects that in the third phase they would be asked to decide whether or not they wanted to reallocate any of the tasks and, if so, to decide to which job categories to reallocate the tasks to. The subjects were also told that there is no actual right or wrong way to design the jobs, and that they should simply construct the jobs in the way they thought to be best, given the information contained in the earlier description of the hypothetical clinic and its staff. After the introductory comments, the subjects were given the following instructions:

> Everyone lay out the three cover cards labeled physician, nurse, and clinic assistant, in front of you. Next, take the nurse deck (white cards) and read each task and decide for each task whether you wish to keep the task in the nurse job or reallocate the task to the clinic assistant or the physician. Place each task under the cover card that represents the job in which you want to assign the task.
>
> When you have finished going through the nurse deck, take the physician deck (orange cards) and read each task and decide for each task whether you wish to keep the task in the physician job or reallocate the task to the nurse or clinic assistant job. After finishing the physician deck, go on to

> the clinic assistant deck and decide for each task whether to keep it in the clinic assistant deck or reallocate it to the nurse or physician jobs.
>
> Be sure to do the nurse deck, then the physician deck, and then the clinic assistant deck.
>
> You can reallocate as many or as few tasks as you wish from any job to any other job. When you have finished your design you can have as many or as few tasks in the resulting jobs as you wish.
>
> Are there any questions about this phase of the game?
>
> Begin now with the nurse deck and feel free to ask any questions that may occur to you.

The instructor observed each subject to determine if she or he was following the instructions, and additional explanation was provided to subjects who were not following the procedures. When the instructor observed that one or more persons had completed sorting, the following instructions were given to the group:

> After you have finished sorting the tasks, go through each job as you have now designed it and see if there are any additional changes you wish to make. After you have finished this step, please keep the tasks, within each job as you have now designed it, together throughout the rest of the game.
>
> Next, count the number of tasks in each job as it is now designed and record the number of tasks in each job on a sheet of paper for future reference.

The instructor observed the progress and when everyone had completed sorting, the next phase of the game was begun.

The fourth phase of the game and the instructional unit that followed the game, involved content related to task analysis but were not a part of the independent or dependent variables of the research; consequently, only

a brief description of the instruction that followed the administration of the dependent variable will be given in the present section. The Instructor's Guide in Appendix B, however, contains a detailed description for the reader interested in the instructional units that followed the dependent measure.

The fourth phase of the simulation game was approximately 30 minutes long and involved a guided discussion of the similarities and differences in task assignment made by the subjects. It also included an identification and discussion of the factors or criteria used by the subjects to make decisions about reallocating tasks. After the discussion, the subjects were instructed to put a rubber band around the tasks in each of the three job categories and to pass the decks to the instructor. The subjects were told that the results of the game would be used for research about the game and that the decks would be returned to them.

The last unit of instruction in the level two condition training program was a 30-minute unit titled Use of Family Planning Task Analysis Data for Developing Job Descriptions. The unit included a description of the procedures for identifying the distribution of tasks among personnel in a clinic and an explanation of the format and uses of a task based job description.

The level two condition training program was concluded with a review of the training objectives, an expression of gratitude for the participation of the subjects, and an offer to answer any special questions after the session.

Level One Condition Training Program

The same instructional units that were presented in the level two condition training program were presented in the level one condition training program, but the order of presentation was changed so that subjects in the level one program received less training before the dependent measure was administered. The subjects in the level one condition training program received the following orientation and instruction before the dependent measure was administered:

1. The same initial 75 minutes of orientation delivered in all three training programs which included (a) Welcome and Introductions, (b) Overview of Training Topics, Objectives and Techniques, and (c) A Conceptual Model for Manpower Development and Utilization.

2. Phases one and two of the simulation game which were (a) the presentation of the game scenario and (b) the sorting of the game tasks into relatively high or low levels of requirements and the discussion of the results of the sort.

After phase two of the simulation game was completed, phases three and four were presented in order and in the same fashion as in the level one condition training program.

The presentation order of the subsequent instruction in the level one training program was as follows: (1) Introduction to the Family Planning Task Analysis Data Base; (2) Decision-Making and Skill Requirements of Family Planning Job Tasks; (3) Use of Family Planning Task Analysis Data for Developing Job Descriptions; and (4) Review of Training Objectives.

Control Condition Training Program

The sequence of instructional units in the control condition training program was arranged so that the subjects did not receive any training on procedures for identifying task attributes before the dependent measure was administered. Subjects in the control condition program received the standard initial orientation which consisted of a welcome, an overview of the training program, and the conceptual model presentation. Following the orientation, a modified version of the simulation game was presented which included only the scenario (phase one), the sorting of tasks to decide which, if any, tasks to reallocate (phase three), and the discussion of the job design criteria used by the subjects to decide on reallocation (phase four). Phase two of the simulation game which involved an analytical examination of the tasks in the game was omitted from the agenda of the control condition training program. The order of

presentation of the instructional units that followed the simulation game was the same as the order of presentation in the level one training program. That order was as follows: (1) Introduction to the Family Planning Task Analysis Data Base; (2) Decision-Making and Skill Requirements of Family Planning Job Tasks; (3) Use of Family Planning Task Analysis Data for Developing Job Descriptions; and (4) Review of Training Objectives.

Materials

The following description of the materials used in this research is divided into three parts. The first part describes the registration form that was used to obtain background information about the subjects. The second part enumerates the training materials that were used and the third describes the materials used to measure the task reallocation behavior of the subjects in the job design simulation.

Registration Materials

A form titled Participant Registration and Background Information was completed by each subject. The form is shown in Appendix C. Four types of information were requested on the form. The first type was personal and demographic information which included the subject's name, address, and age group. Information about the program in which the subject was currently employed was

the second type. The third type of information requested on the form was job experience information which included current job title, areas of program activity of the subject's current job, and amount of work experience in a family planning program. Items of information about the educational background of the subjects including years of education completed and degrees received were also requested.

Training Materials

The training program included six instructional components in addition to registration and the job design game. The sequence of presenting the instructional components varied for each of the three treatment conditions, but the training materials used in each component was the same regardless of the order in which the component was given. The training materials used to deliver each of the six instructional units is described below. Appendix D contains copies of all of the materials used in the training programs.

Welcome and overview. No materials were used during the Welcome and Introductions unit. A handout containing an outline of the major topics to be covered in the training and a list of the training objectives were given to the subjects to aid in the overview of the program.

A conceptual model for manpower development. One of the instructional components was titled A Conceptual Model for Manpower Development. Three training material aids were used to deliver this component. A 30" x 40" chart was used as an aid to explain the parts and relationships of A Conceptual Model for Manpower Development and Utilization. A reduced copy of the chart is shown in Appendix D. Slips of paper sized ½" x 2" which had a supervisory activity related to developing or utilizing manpower written on each slip, were handed out to the subjects. The subjects were instructed to explain how the activity they had been given contributed to one of seven components of the conceptual model. A nine-page handout of pictorial and narrative information that was presented in the instructional unit on the conceptual model was given to the subjects at the conclusion of the presentation.

Introduction to the family planning task analysis data base. The subjects were given a handout which contained three sample task analysis data sheets. Each sheet included the following information pertaining to a single task:

1. task identification number
2. organizational function to which the task contributes

3. one-liner task statement

4. full task statement

5. performance standards

6. training content

7. functional and general educational scale data.

The instructor referred to the data sheets as an aid to explaining the types of information listed above that are included on a task analysis data sheet.

As an aid to explaining the forms of task statements, how to identify the elements of a task statement, and how those elements indicate skill and knowledge requirements of tasks, the experimenter handed out a single sheet which contained examples of the three forms of a task statement and a written exercise for identifying the elements of a task statement.

Decision-making and skill requirements of tasks. An exercise was conducted to familiarize the subjects with the concept of task analysis scales. The subjects were given a copy of a scale pertaining to levels of decision-making requirements, instructions for using the scale, and a response sheet containing three tasks for them to scale.

Use of task data for job descriptions. Sample pages from an instrument for studying the distribution of job tasks among personnel in a family planning clinic

were given to the subjects. The sample pages were used to help explain how a task distribution study is conducted and how the results provide information for developing job descriptions. Subjects were also given a list of organizational functions, subfunctions, and activities which may be used to organize lists of job tasks in a job description. A sample task based job description was also handed out to each subject and was used as an aid in the presentation.

Simulation Game Materials

Each subject was given a deck of 49 cards 4¼" x 5½" in size. One card was a title card that contained the name of the simulation game and information that indicated the name and location of the organization that had developed the game. Three cards were divider cards. Each divider card had one of the following terms printed in ½" letters on it: Physician, Nurse or Clinic Assistant. The title card and the three divider cards were printed on blue paper. The remaining 45 cards each contained a full task statement, a one-liner task statement, and a two-digit identifying number. A list of the task information that was on the cards is contained in Appendix E. The 45 cards consisted of three sets of 17, 16, and 12 cards which had task statements representing the physician,

nurse, and clinic assistant job categories respectively. The cards that contained physician tasks were orange in color, those that contained nurse tasks were white, and the clinic assistant tasks were yellow.

CHAPTER III

RESULTS

The hypotheses of this research involved examination of the relationships among amount of training on task analysis technology, role as health nonprofessional or health professional, and task reallocation behavior in a simulation game of family planning job design. The primary questions raised were: Would an increase in amount of training in task analysis technology be associated with an increase in task reallocation?; Would health nonprofessionals reallocate a greater number of tasks than health professionals?; and, Would the difference in number of tasks reallocated by health nonprofessionals and health professionals be greater under the conditions of increased amount of training?. The analyses of the data that were collected to examine these questions are presented below in two parts, the first of which consists of a test of each hypothesis in terms of the overall amount of task reallocation. The second part consists of an analysis of task reallocation responses for each of the six possible directions in which a

subject could reallocate tasks in the simulation game. The analyses were facilitated by coding the task reallocation and subject background data onto data processing cards. The coding guide and coded data are contained in Appendix F.

The analysis of overall task reallocation was done by computing a 3 x 2 factorial analysis based on procedures described by Winer (1962, pp. 241-244), where the three level factor was amount of instruction on procedures for identifying attributes of job tasks and the two level factor was classification as health nonprofessional or health professional. Table 2 contains the number of tasks reallocated by subjects in each treatment condition.

As a guide for examining the results of the tests, a significance level of .30 was set. It was felt by the author that a .30 significance level would accurately reflect the relative importance of type 1 error and type 2 error in the present research. Because of the exploratory nature of the research it was thought important to take a substantial risk of rejecting the null form of the hypotheses when they were true in order to increase the scope of exploration of outcomes.

TABLE 2

MEAN NUMBER OF TASKS REALLOCATED
FOR ALL TREATMENT COMBINATIONS

Professional Role	Level of Instruction			Row Means
	Control	Level One	Level Two	
Health Nonprofessional	17.75 (N=8)	20.63 (N=11)	18.25 (N=8)	19.07 (N=27)
Health Professional	17.64 (N=14)	16.78 (N=28)	16.82 (N=23)	16.98 (N=65)
Column Means	17.68 (N=22)	17.87 (N=39)	17.19 (N=31)	

Overall Task Reallocation

Main Effects and Interaction

An overall measure of task reallocation, which was the sum of tasks reallocated regardless of direction of delegation, was the dependent measure used in the analysis reported in this section of Chapter III. Hypotheses 1 and 2 involved the general question of whether an increase in amount of training in identification of task attributes would be associated with an increase in task reallocation. It can be seen in Table 2 that there was not a consistant increase in amount of task reallocation with increasing amounts of training. Although

the mean number of tasks reallocated by the level one group (mean = 17.87) was larger than that reallocated by the control group (mean = 17.68), the level two group (mean = 17.19) reallocated a smaller mean number of tasks than did the control group and the level one group. Table 3, which contains the analysis of variance summary for the 3 x 2 factorial design, shows that the overall level of instruction main effect was not significant ($F = 0.59$; 2,86 df).

TABLE 3

SUMMARY OF ANALYSIS OF VARIANCE FOR LEVEL OF INSTRUCTION, PROFESSIONAL ROLE AND INTERACTION

Source of Variation	Sum of Squares	d.f.	Mean Square	F
Professional Role	61.75	1	61.75	3.56**
Level of Instruction	20.54	2	10.27	0.59
Interaction	45.93	2	22.96	1.32*
Within Cell	1490.76	86	17.33	

*$p < .30$
**$p < .10$

In regard to individual comparisons in factorial experiments, Winer (1962) states that "the specific comparisons which are built into the design or suggested by the theoretical basis for the experiment can and should

be made individually, regardless of the outcome of the corresponding over-all F test" (p. 208). Consequently, although the overall F test for the level of instruction main effect was not significant, individual tests of Hypotheses 1 and 2 were made. The t statistic for orthogonal comparisons among means in a factorial design having unequal cell frequencies was used (Kirk, 1968; Winer, 1962). Hypothesis 1, which stated that subjects who receive training will reallocate more tasks than will subjects who receive no training, involved a comparison of the subjects in both the level one and level two groups (who had received training) with the subjects in the control group (who had not received training). The responses of subjects in the level one and level two groups were pooled and a mean of 17.57 (N = 70) was computed. The difference, shown in Table 4, between subjects who received training (mean = 17.57) and subjects who did not receive training (mean = 17.68) was not in the predicted direction. Also shown in Table 4 is the t-ratio which indicates the size of the difference was not significant ($t = -0.10$; 86 df).

A comparison of the mean number of tasks reallocated by the level one group and level two group, using a t statistic (Kirk, 1968; Winer, 1962), was made to test Hypothesis 2 which stated that subjects who receive

TABLE 4

COMPARISON OF CONTROL WITH LEVEL ONE AND LEVEL TWO GROUPS ON MEAN NUMBER OF TASKS REALLOCATED

Group	N	Mean	Mean Square w. Cell[a]	t-Ratio
Control (No Training)	22	17.68	17.33	-0.10
Levels One and Two (Training)	70	17.57		

[a] df = 86

a greater amount of training will reallocate more tasks than will subjects who receive a lesser amount of training. The results of the test displayed in Table 5 contradict the prediction. Table 5 shows that the means of 17.87 and 17.19 for the level one and level two group respectively are not in the predicted direction and that the t-ratio of -0.68 is significant at the .30 level.

It was predicted in Hypothesis 3 that health nonprofessionals would reallocate more tasks than would health professionals. It can be seen in Table 2 that the difference between health nonprofessionals (mean = 19.07) and health professionals (mean = 16.98) in mean number of tasks reallocated was in the predicted direction.

TABLE 5

COMPARISON OF LEVEL ONE AND LEVEL TWO GROUPS ON MEAN NUMBER OF TASKS REALLOCATED

Group	N	Mean	Mean Square w. Cell[a]	t-Ratio
Level One (Less Training)	39	17.87	17.33	-0.68*
Level Two (Greater Amount of Training)	31	17.19		

[a]df = 86
*p < .30

The prediction is further supported by the significant professional role main effect ($F = 3.56$; 1,86 df; $p < .10$) that is shown in Table 3.

Hypothesis 4 required an analysis to determine the presence or absence of interaction between level of instruction and professional role; it also required analyses to determine the nature of the relationship between the two factors. Hypothesis 4 predicted that the difference in number of tasks reallocated by health non-professionals and health professionals will be greater for increasing amounts of training. The F ratio ($F = 1.32$; 2,86 df) for the interaction of level of instruction and

professional role that is reported in Table 3, indicates a significant interaction at the .30 level of significance. Although significant, the nature of the interaction was not fully in the predicted direction. Figure 7 shows a graph of the mean number of tasks reallocated by health nonprofessionals and health professionals at the three levels of training associated with the control, level one, and level two groups respectively. The means in the graph are the means for each treatment condition reported in Table 2. It can be seen in Figure 7 that the difference in mean number of tasks reallocated by health nonprofessionals and health professionals is initially consistent with the prediction of Hypothesis 4 in that the difference is greater at the level one training condition than at the control condition. However, in the level two condition, which represents an increase in amount of training over the level one condition, the difference between health nonprofessionals and health professionals is less than the difference at the level one condition. Thus, the overall direction of differences between health nonprofessionals and health professionals in task reallocation at increasing levels of training is not fully consistent with the prediction of Hypothesis 4.

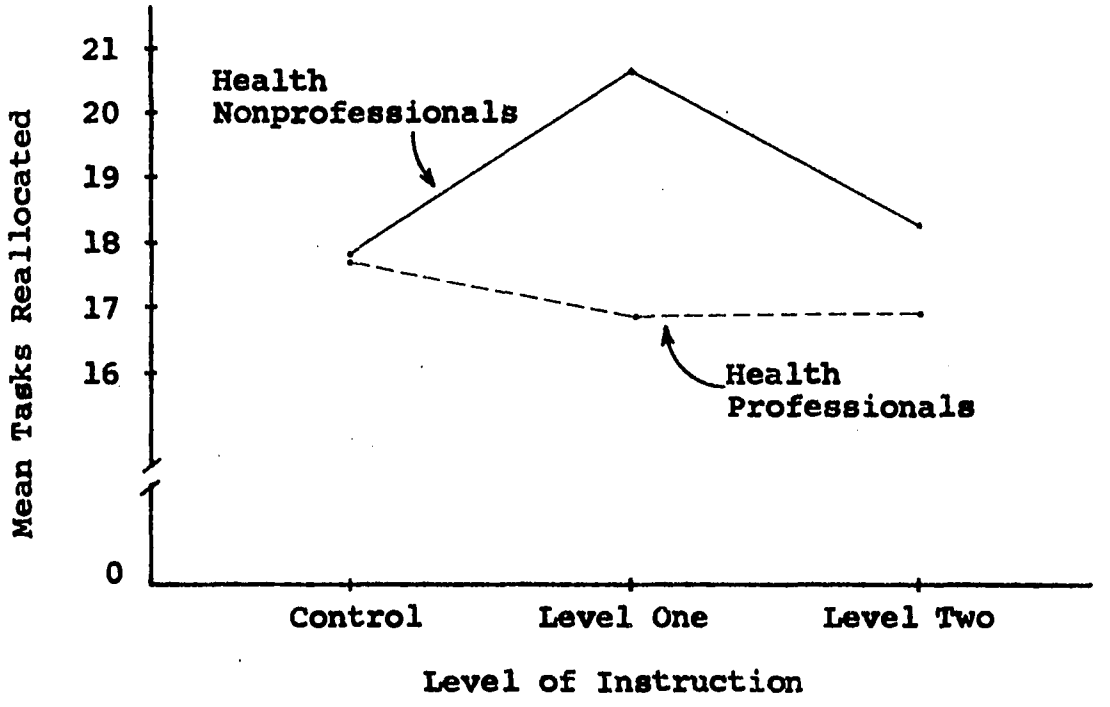


Fig. 7. Mean number of tasks reallocated by health nonprofessionals and professionals at three levels of instruction.

Simple Main Effects

Because of the significant result for level of instruction by professional role interaction, and the observed difference in profiles of health nonprofessionals and professionals at the three levels of instruction, two additional analyses were conducted. The first was an analysis of the simple main effects of level of instruction for health nonprofessionals and health professionals; the second was an examination of the simple effects of professional role for each level of instruction. Procedures presented by Winer (1962, pp. 243-244) for

analysis of variance for simple main effects in factorial experiments that involve unequal cell frequencies were followed.

The test of the simple main effects of level of instruction for health nonprofessionals involved a comparison of the control, level one, and level two means in the health nonprofessional profile displayed in Figure 7. The results of the analysis of variance for simple main effects depicted in Table 6 indicate that there were significant differences between levels of instruction (control, level one, and level two) for health nonprofessionals ($F = 1.74$; 2,86 df; $p < .20$). It can be seen in the health professional profile shown in Figure 7 that there was little apparent difference in mean number of tasks reallocated at the three levels of instruction. Table 6 contains the results of the analysis of variance of simple main effects of level of instruction for health professionals which confirm that there were no significant differences between levels of instruction for health professionals ($F = 0.17$; 2,86 df).

The analysis of the simple main effects of professional status for level of instruction involved an analysis of variance of the health nonprofessional and health professional results at each level of instruction.

TABLE 6

SUMMARY OF ANALYSIS OF VARIANCE
FOR SIMPLE MAIN EFFECTS

Source of Variation	Sum of Squares	d.f.	Mean Square	F
Simple Effects of Professional Role				
For Control Condition	0.078	1	0.078	0.004
For Level One Condition	94.56	1	94.56	5.45**
For Level Two Condition	13.05	1	13.05	0.75
Simple Effects of Instruction Level				
For Health Non-professionals	60.48	2	30.24	1.74*
For Health Professionals	6.12	2	3.06	0.17
Within Cell	1490.76	86	17.33	

*$p < .20$
**$p < .01$

Figure 8 shows the profiles of the simple effects of professional role for each level of instruction. It can be seen in Figure 8 that the profile for the level one group appears to be somewhat different from the profiles for the control and level two groups. The profiles for the control group and the level two group suggest

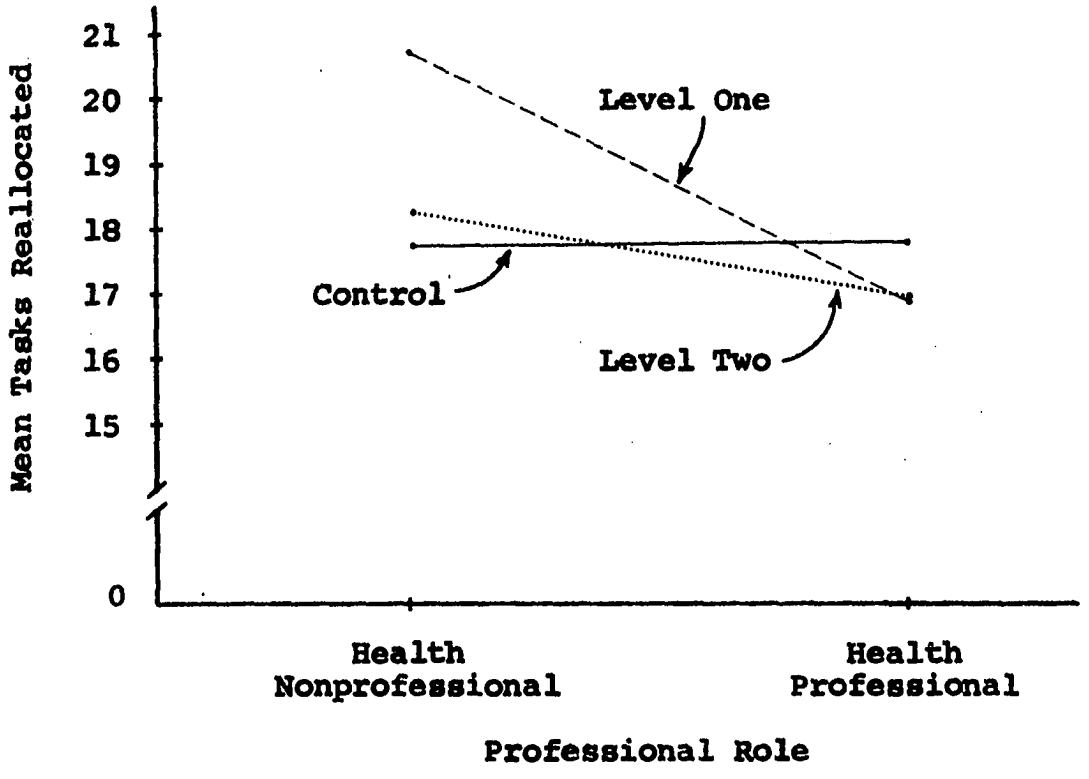


Fig. 8. Mean number of tasks reallocated in the control, level one, and level two conditions for two categories of professional role.

relatively little difference between health nonprofessionals and professionals for these conditions, whereas the profile for the level one condition suggests a relatively greater difference between health nonprofessionals and health professionals than do the other two profiles. The analysis of variance for simple main effects of professional role reported in Table 6 appears to support these observations. There is no significant difference between health nonprofessionals and health professionals for the control ($F = 0.004$; 1,86 df) and level two

(F = 0.75; 1,86 df) conditions. However, a significant difference between health nonprofessionals and health professionals is indicated (F = 5.45; 1,86 df; $p < .01$) at level one.

Reallocation Responses for Each of Six Possible Directions

One constraint in the structure of the simulation game was a limit of six possible directions in which a subject could reallocate tasks. If a subject decided to reallocate a task in one of the three job categories included in the game, the task could be reallocated to only one of the two remaining job categories; the task could not be removed from the game and there could be no task overlap among job categories. The six possible directions for reallocation that resulted from this constraint were physician to nurse, physician to clinic assistant, nurse to clinic assistant, nurse to physician, clinic assistant to physician, and clinic assistant to nurse.

In addition to the examination of overall task reallocation, analyses were conducted to examine the task reallocation responses for five of the six possible directions for reallocation. The analyses consisted of computing the same 3 x 2 (instruction by role) analysis of variance, for five of the six reallocation directions,

as was computed for overall reallocation. An analysis of variance was not computed for the clinic assistant to physician direction because only one person delegated one task from clinic assistant to physician.

The only tests included in the analysis reported below are tests of the main effects and interaction components of the 3 x 2 analysis of variance. Consequently, Hypotheses 3 and 4 which involve predictions regarding differences between health nonprofessionals and health professionals, and the interaction of instruction and professional role respectively, are addressed directly but Hypotheses 1 and 2 are not. Reference is made, however, to Hypotheses 1 and 2 in the description and interpretation of the tests of the level of instruction main effects. The significance level of .30 which was used for the analysis involving overall reallocation was again used to guide the examination of the results reported below.

Table 7 contains the mean number of tasks reallocated in all treatment conditions for all six reallocation directions. It can be seen by examining the range of mean values contained in Table 7 that there appears to be varying amounts of task reallocation for the six reallocation directions. Figures 9, 10, and 11 contain a graphic display of the means reported in Table 7. An

TABLE 7

MEAN NUMBER OF TASKS REALLOCATED FOR ALL TREATMENT COMBINATIONS AND FOR SIX POSSIBLE DIRECTIONS OF TASK REALLOCATION

Professional Role	Level of Instruction			Row Means
	Control (N=22)	Level One (N=39)	Level Two (N=31)	
	Physician to Nurse			
Nonprofessional	5.50	7.09	7.12	6.62
Professional	6.14	6.17	7.04	6.47
Column Means	5.90	6.42	7.06	
	Physician to Clinic Assistant			
Nonprofessional	3.25	1.63	0.75	1.84
Professional	1.64	0.46	0.26	0.64
Column Means	2.22	0.79	0,38	
	Nurse to Clinic Assistant			
Nonprofessional	6.87	9.27	7.87	8.14
Professional	7.85	7.96	7.39	7.73
Column Means	7.50	8.33	7.51	
	Nurse to Physician			
Nonprofessional	0.50	0.63	1.00	0.70
Professional	0.28	0.46	0.78	0.53
Column Means	0.36	0.51	0.83	

TABLE 7--CONTINUED

Professional Role	Level of Instruction			Row Means
	Control (N=22)	Level One (N=39)	Level Two (N=31)	
Clinic Assistant to Physician				
Nonprofessional	0.00	0.90	0.00	0.90
Professional	0.00	0.00	0.00	0.00
Column Means	0.00	0.90	0.00	
Clinic Assistant to Nurse				
Nonprofessional	1.62	1.90	1.50	1.69
Professional	1.71	1.71	1.34	1.57
Column Means	1.68	1.76	1.38	

examination of Figures 9, 10 and 11 reveals that the greatest amount of task reallocation took place in the nurse to clinic assistant direction and that the least amount of reallocation occurred in the clinic assistant to physician reallocation direction. The profiles displayed in Figures 9, 10 and 11 suggest that the nurse to assistant and physician to nurse directions were relatively similar in terms of amount of reallocation as compared to the remaining four reallocation directions.

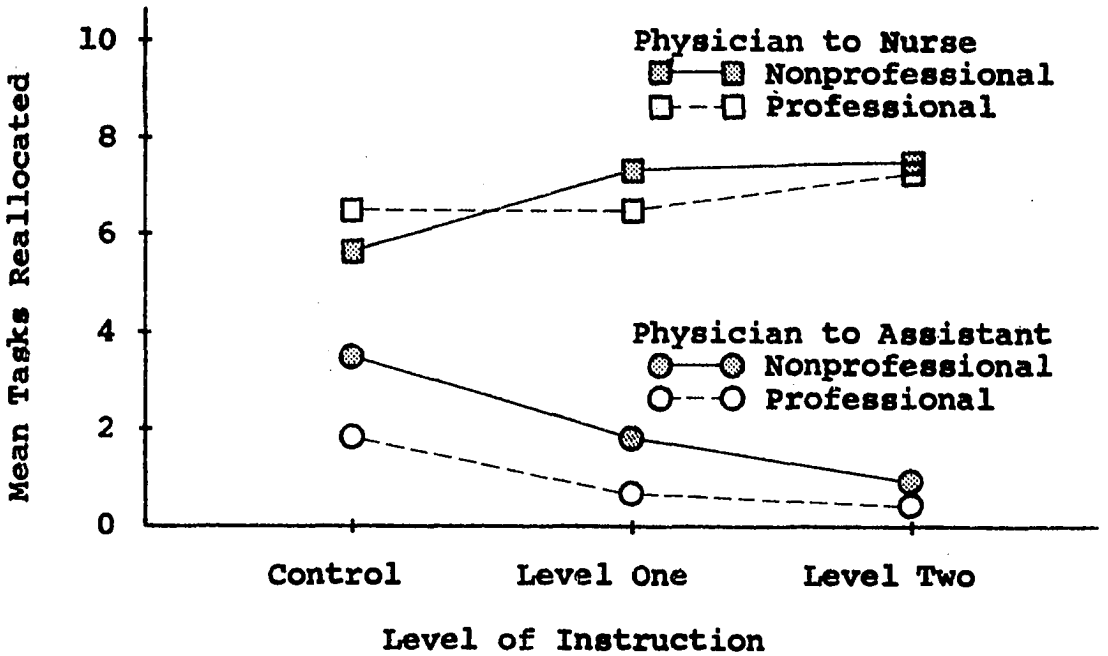


Fig. 9. Mean number of tasks reallocated at three levels of instruction for two directions of reallocation, physician to nurse and physician to clinic assistant.

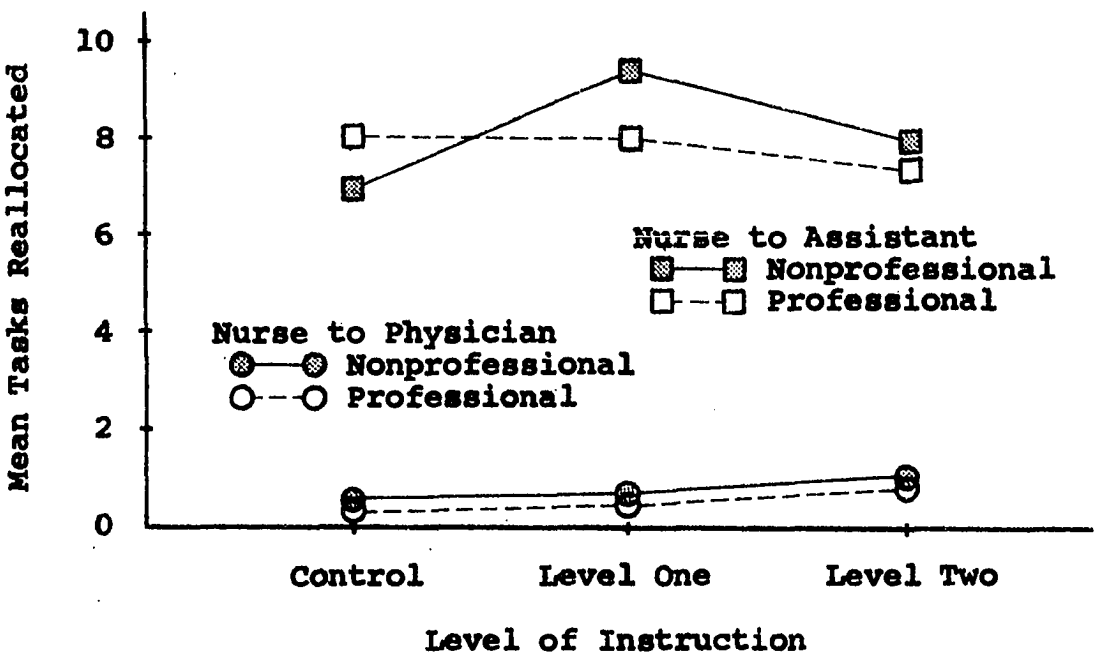


Fig. 10. Mean number of tasks reallocated at three levels of instruction for two directions of reallocation, nurse to clinic assistant and nurse to physician.

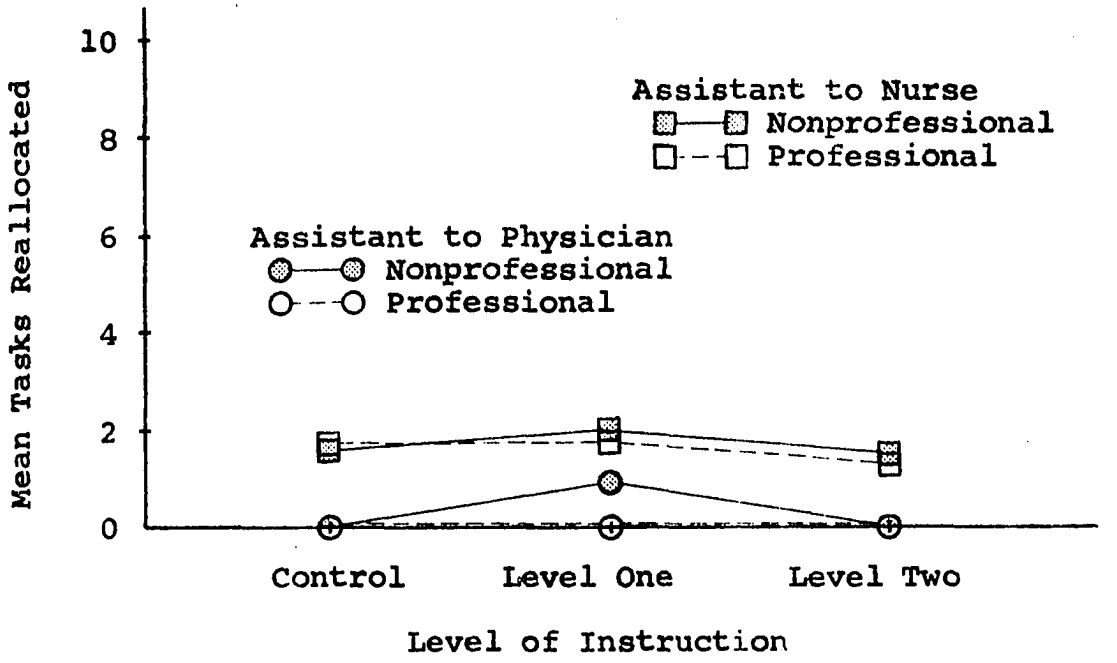


Fig. 11. Mean number of tasks reallocated at three levels of instruction for two directions of reallocation, clinic assistant to nurse and clinic assistant to physician.

Level of Instruction

It can be seen by examining the column means in Table 7 that for three of the five reallocation directions there was a larger mean number of tasks reallocated by subjects in the level one and level two groups than by subjects in the control group; this was the case for the physician to nurse, nurse to clinic assistant and nurse to physician directions. These three cases, in which subjects who received training (level one and two) reallocated a larger mean number of tasks than did subjects who did not receive training (control group), were

consistent with the results predicted by Hypothesis 1. The pattern of reallocation in two of the three reallocation directions, physician to nurse and nurse to physician, are consistent with Hypothesis 2 which predicts a larger mean number of tasks in the level two condition than in the level one condition. It can be seen in Table 8, which contains the analysis of variance summaries pertaining to each reallocation direction, that the main effect for level of instruction is statistically significant for the directions of physician to nurse ($F = 1.79$; 2,86 df; $p < .20$), nurse to clinic assistant ($F = 1.67$; 2,86 df; $p < .25$) and nurse to physician ($F = 1.36$; 2,86 df; $p < .30$). The significant F ratios suggest that for two of the three reallocation directions considered, increased instruction was associated with an increase in task reallocation, and for all three reallocation directions, training was associated with a greater amount of reallocation than was no training.

The means of the control, level one, and level two groups shown in Table 7 for the clinic assistant to nurse direction are not consistent with the predictions of Hypotheses 1 and 2 in that the mean for level one (mean = 1.76) was larger than the mean for the control condition (mean = 1.68), but the mean for level two (mean = 1.38) was smaller than either control or level

TABLE 8

SUMMARIES OF ANALYSIS OF VARIANCE FOR LEVEL OF INSTRUCTION, PROFESSIONAL ROLE AND INTERACTION AND FOR FIVE POSSIBLE DIRECTIONS OF REALLOCATION

Source of Variation	Sum of Squares	d.f.	Mean Square	F
Physician to Nurse				
Role	0.25	1	0.25	0.04
Instruction	20.79	2	10.39	1.79*
Interaction	7.78	2	3.89	0.67
Within Cell	498.53	86	5.79	

*p < .20

Physician to Clinic Assistant				
Role	22.71	1	22.71	14.01*
Instruction	51.16	2	25.58	15.79*
Interaction	4.08	2	2.04	1.25
Within Cell	140.14	86	1.62	

*p < .0005

Nurse to Clinic Assistant				
Role	1.40	1	1.40	0.21
Instruction	22.20	2	11.10	1.67*
Interaction	17.22	2	8.61	1.25
Within Cell	570.06	86	6.62	

*p < .25

TABLE 8--CONTINUED

Source of Variation	Sum of Squares	d.f.	Mean Square	F
		Nurse to Physician		
Role	0.76	1	0.76	0.62
Instruction	3.31	2	1.65	1.36*
Interaction	0.00	2	0.00	0.00
Within Cell	104.26	86	1.21	
*p < .30				
		Clinic Assistant to Nurse		
Role	0.12	1	0.12	0.03
Instruction	1.91	2	0.95	0.30
Interaction	0.25	2	0.12	0.03
Within Cell	268.54	86	3.12	

one. The analysis of variance results that are shown in Table 8 indicate no difference between the levels of instruction ($F = .30$; 2,86 df) for the clinic assistant to nurse reallocation direction.

It can be seen in Figure 9 that the pattern of task reallocation of both health nonprofessionals and health professionals for the reallocation direction of physician to clinic assistant is contradictory to Hypotheses 1 and 2. Considered together, Hypotheses 1 and 2

predict an increasing amount of task reallocation with increasing levels of instruction. The profiles of the health nonprofessionals and health professionals for the physician to clinic assistant direction both indicate that amount of task reallocation decreased with an increase in instruction. The test for statistical significance of the differences among the control, level one, and level two groups indicated a significant difference ($F = 14.01$; 1,86 df; $p < .0005$) among the groups.

Professional Role

An inspection of the row means reported in Table 7, indicates a consistent pattern of a higher mean number of tasks reallocated by health nonprofessionals than by health professionals in each of the six reallocation directions. However, the profiles of health nonprofessionals and health professionals in Figures 9, 10 and 11 indicate that the means of health nonprofessionals appear consistently higher only for the level one and level two conditions. It can be seen in Table 8 that the results of four of the analyses of variance indicate no statistically significant differences between health nonprofessionals and health professionals; a statistically significant difference between health nonprofessionals and health professionals is present for only the physician

to clinic assistant direction ($F = 15.79$; 2,86 df; $p < .0005$).

Interaction

Hypothesis 4 predicted that the difference in number of tasks reallocated by health nonprofessionals and health professionals will be greater for increasing amounts of training. The profiles of health nonprofessionals and health professionals for all six reallocation directions in Figures 9, 10 and 11 appear to disconfirm Hypothesis 4. Also, all five of the analyses of variance reported in Table 8 indicate no significant interaction between level of instruction and professional role.

CHAPTER IV

DISCUSSION

The hypotheses included in this research were examined from two perspectives. One perspective was the amount of overall reallocation of tasks, that is, the reallocation behavior of subjects was analyzed in terms of the number of tasks reallocated regardless of the direction from one job category to another in which the tasks were moved. When examined from this overall perspective, as was seen in Chapter III, the evidence pertaining to Hypotheses 1, 2, and 4 was largely contradictory or inconclusive in terms of statistical significance, whereas, the data appeared to support Hypothesis 3. The second perspective was an analysis of the data in terms of the amount of task reallocation in each of the six possible reallocation directions that were included in the structure of the simulation game. The results of analyzing the data in this way indicated that the pattern of findings identified from the perspective of overall task reallocation was not uniform for all six separate reallocation directions. There were variations among the

six delegation directions in the extent to which the results supported or failed to support the predictions stated in the Hypotheses. Consequently, the findings of this research are summarized and interpreted in terms of both the overall reallocation and individual reallocation directions.

One trend evidenced by the data was an apparent systematic variation in number of tasks reallocated among the separate reallocation directions. The profiles displayed in Figures 9, 10 and 11 showed that the reallocation directions that represent downward reallocation appeared to be consistently greater in number of tasks delegated than the profiles for upward reallocation. Although the subjects were instructed to move as many or as few tasks as they wished and were told that they could move tasks in any of the six directions, the description of personnel problems in the hypothetical clinic provided definite encouragement to reallocate downward. These problems may have represented a situational influence that contributed to the apparent trend of greater reallocation in a downward direction than in an upward direction. Also, with the current emphasis in health manpower literature on downward reallocation of tasks from physicians to nurses or new intermediate job categories, and from nurses to nonprofessionals (Britanak, 1972; Hoff, 1971; Ostergard, Broen, and

Marshall, 1972; U. S. Congress, 1971; U. S. Dept. of Labor, 1973), it seems reasonable to expect that subjects in the field of family planning would be somewhat familiar with these trends and would tend to reallocate more tasks in the downward directions available in the game rather than in the upward directions.

The prediction of Hypothesis 1 that subjects who receive training will reallocate a greater number of tasks than will subjects who do not receive training was not confirmed when the prediction was tested using an analysis of overall task reallocation. As was reported in Chapter III, the mean for subjects who had not received training was larger than the mean for subjects who had received training but this difference was not statistically significant. There was, however, support for the prediction in the results of three of the six individual reallocation directions. The analyses of the physician to nurse, nurse to clinic assistant, and nurse to physician reallocation directions indicated differences between the mean number of tasks reallocated by the trained subjects (level one and two groups) and the untrained subjects (control group) that were in the predicted direction, and resulted in significant F ratios for the level of instruction main effect for each of these three directions.

The contradictory outcome of the overall reallocation analysis for Hypothesis 1 that was mentioned earlier, appears to be related to the reallocation pattern for the physician to clinic assistant direction. The profiles for both health nonprofessional and health professional for the physician to clinic assistant direction displayed in Figure 9 indicated an inverse relationship between amount of task reallocation and amount of instruction. The main effect for level of instruction in the physician to clinic assistant direction was statistically significant at the .0005 level. This relatively strong level of statistical significance for the differences among means in the control, level one, and level two conditions for this direction suggests that the results in the physician to assistant direction may have masked the results of the other directions, thus contributing to the contradictory results in the analysis of overall reallocation.

In addition to the possible effect of this outcome on the overall results, this inverse pattern is interesting in its own right, and merits an attempt at interpretation. According to Simon (1972), a scenario " . . . refers to all the descriptive material that provides the <u>context</u> for a game. It is the coding or labels given the environmental structure and the accompanying rules of game play" (pp. 3-4). Alternate

scenarios were found by Simon to have a considerable effect on the type of problem-solving behavior in simulation game play.

A possible explanation for the inverse relation between task reallocation and amount of instruction in the physician to clinic assistant direction may be found in the content and differences in timing of the scenario of the simulation game used in the present research. One aspect of the scenario used was the description of the characteristics of the hypothetical incumbents of the three job categories included in the game. This description indicated that the physician incumbent felt quite rushed in his work, the nurse was fairly satisfied with amount and type of work, and the clinic assistant lacked enough work to keep busy. Thus, the scenario suggested that the physician job contained too many tasks and that the clinic assistant job contained too few. This content in the scenario may have indicated to the subjects that tasks should be reallocated directly from physician to clinic assistant without regard to the characteristics of the tasks. If it did have such meaning for the subjects, the question then arises: Why were there differences in number of tasks reallocated in the control, level one, and the level two conditions since the scenario was presented to subjects in each

condition? The differences in timing of presentation of the scenario in each of the conditions suggests a possible answer to the question. In the control condition, the hypothetical problems associated with the physician and the clinic assistant which were part of phase one of the simulation game, were presented immediately before phase three which was the sorting to decide which tasks, if any, to reallocate. In the level one condition the presentation of the problems was followed by phase two of the game, which consisted of a sorting procedure to identify the relative ability requirements of the tasks and a discussion of the results of the sort. Phase three, which was the reallocation sort followed phase two. The sequence in the level two condition was the same as in level one condition, that is, presentation of the problems, phase two and then phase three which was the reallocation sort.

The possibility is proposed that the personnel problems included in the scenario had the effect of encouraging reallocation directly from physician to clinic assistant in all three conditions. However, the effect of the scenario was evidenced more in the control condition than in the level one or level two condition because the phase two sort in the latter conditions enabled subjects to better identify dissimilarities as well as

similarities among the physician and clinic assistant task attributes. By increasing the amount of task attribute information for reallocation decisions in the level one and level two conditions, this identification process possibly reduced the tendency of the subjects to reallocate directly from the physician to the clinic assistant on the basis of situational pressure.

The findings from both the overall reallocation and individual reallocation direction analyses indicated a trend contrary to Hypothesis 2 which predicted greater reallocation in the level two condition (greater training) than in the level one condition (less training). It appeared that the instruction associated with the level two condition was less effective in encouraging reallocation than was the instruction associated with level one. There were no trends in the data of the primary analysis or in the subject background data that suggested an explanation to this author for the contradictory results. Only a thorough review of content and process of the two treatment conditions revealed one characteristic on which the two conditions differed which may have contributed to the contradictory outcome.

This difference is the length of time between the beginning of instruction and administration of the

dependent measure. Where the instruction in the level one condition took approximately twenty minutes, the level two condition involved 170 minutes of instruction. Perhaps the subjects in the level two condition were less willing than level one subjects to participate in decision-making regarding reallocation because of fatigue or boredom associated with the relatively long period of instruction.

It was found that health nonprofessionals reallocated a greater number of tasks than did health professionals, which tended to confirm Hypothesis 3. The interpretation of this result is that greater reallocation by health nonprofessionals was associated with a heightened motivational state on their part. The heightened motivational state is presumed to be based on dissatisfaction with the content and status of jobs usually assigned to nonprofessionals. The findings are consistent with research reported by Doggett (1968) in which he found a lack of consensus between professionals and nonprofessionals in the health field on division of labor and on expectations regarding job performance. This lack of consensus was attributed to role conflict (Doggett, 1968). The difference found in the present research between health professionals and health nonprofessionals in number of tasks reallocated also suggests lack of consensus with regard to division of labor.

A review of the profiles for the six possible reallocation directions shown in Figures 9, 10, and 11, indicated that the mean for health nonprofessionals was consistently greater than it was for health professionals but only at the level one and level two conditions. In the control condition health nonprofessionals did not consistently reallocate a greater mean number of tasks than health professionals for each of the reallocation directions. It is proposed that the lack of consistency noted in the control condition may have been associated with a situation that provided little structure to the subjects and that the uniformity in the level one and level two conditions was associated with training conditions of relatively greater structure. That is, subjects in the level one and level two conditions had available, through the instruction on task attributes, a greater amount of relevant information in the immediate setting which they could use in decision-making about reallocation than did subjects in the control condition. Subjects in the control condition, having only the description of the hypothetical clinic to use in decision-making in the immediate situation, may have drawn heavily upon their own attitudes and previous experiences to determine the options and constraints on reallocation, whereas, subjects in the other two conditions, having been provided with

more information in the immediate setting to use in decision-making, may have relied less on internal anchorages. The range of attitudes and experiences represented by the subjects in the control condition may have then been expressed to a greater degree than the range of experiences and attitudes represented in the level one and level two groups, the result being less consistency in the outcomes in the control condition than in the other two conditions. A similar relationship between variability in judgment and amount of structure in a social situation has been noted in other research. A tendency for greater variability of judgment in unstructured rather than in structured situations was found in several studies involving social judgment and perception which were reported by Sherif and Sherif (1969, pp. 56-60). Also, greater fluctuation in scores in an optimization game was found by Simon (1970) for an abstract (unstructured) version of the optimization game than for a meaningful (structured) version.

The results of the analyses involving overall reallocation and individual reallocation directions both indicated lack of support for Hypothesis 4 which stated that the difference between mean number of tasks reallocated by health nonprofessionals and health professionals will be greater for increasing amounts of training. An

unexpected and contradictory finding involving Hypothesis 4 was an increase in difference between health nonprofessionals and professionals for a limited amount of training and a decrease in difference for a greater amount of training. This increase for the limited amount of training (level one condition) was associated with a substantial rise from control to level one for health nonprofessionals and with virtually no change from control to level one for health professionals. The instruction in the level one condition focused directly on the tasks in the game and involved the identification of attributes of the game tasks. Perhaps nonprofessionals tended to identify obvious similarities among tasks and given considerable motivation to delegate tasks as was posited previously, used the obvious similarities to justify reallocation of a relatively large number of tasks. Professionals, however, may have been motivated to identify dissimilar attributes and may have used the identification of dissimilarities to justify not reallocating. That is, given limited instruction in identifying attributes and different motivation, dissimilar attributes may have been focal for professionals while similar attributes may have been focal for nonprofessionals. However, given the increased amount of training in identifying attributes that was included in the level

two condition, nonprofessionals may have been able to perceive dissimilar as well as similar attributes, and professionals perhaps were able to identify a greater amount of similarities. The additional training may have increased the tendency of both groups to perceive the tasks with less bias, thus reducing the differences in reallocation responses between the groups.

The results of the present research suggested that certain aspects of the simulation game scenario were a source of influence on reallocation behavior. One aspect of the scenario was the personnel problems said to exist in the hypothetical clinic in the simulation game. It was proposed that the focus on downward delegation indicated by the personnel problems may have been associated with the greater amount of delegation in a downward rather than in an upward direction. In order to learn more about the effect of alternate scenarios on direction of reallocation, additional research should be carried out in which variation in scenarios is incorporated as a research variable.

The results of the present research bring into question the practicality of the training programs included in this research for the purpose of encouraging increased task reallocation. Training programs involve costs for design and delivery and, also, cost associated

with lost productivity for the time the trainees are in training. If the only effect of training that was expected was reallocation, then the methods of training presented here would not appear to be highly effective, since limited training was only somewhat effective for health nonprofessionals, and apparently neither limited nor extensive training was effective for health professionals.

Training in task analysis may, however, have purposes other than to encourage reallocation. The concepts and procedures of task analysis may be taught to aid administrators in developing personnel procedures and instruments such as selection procedures and employee evaluation forms. Additional research which explores the relative effectiveness of instruction in task analysis for use in various aspects of manpower development and utilization is needed. Especially important with regard to the results of the present research would be research using the family planning simulation game to explore reasons given by health professionals for not reallocating a greater number of tasks, since it is especially important for professionals who are more often in decision-making roles, to be able to explore alternative patterns of task allocation.

CHAPTER V

SUMMARY

A review of the increasing support for and provision of publicly subsidized family planning services in the U. S. and the need for manpower to deliver the services were presented. Factors that suggest a need for greater flexibility in the utilization of manpower were described. Task analysis was presented as a technology that appears useful in achieving flexible manpower utilization and the problem of changing manpower utilization patterns through task analysis was posed as a problem of culture change. The reallocation of job tasks from jobs categories in which they have traditionally resided, to other job categories, was considered an innovative act as defined in Barnett's (1953) theory of innovation as a basis for culture change.

The purpose of this research was to obtain a clearer understanding of the potential impact of task analysis on the family planning service delivery system by using a theoretical framework in which task reallocation was considered to be innovative culture change.

behavior. The subjects were 92 personnel employed in organizations that deliver or have coordinating responsibility for family planning services and who participated in training sessions on the use of task analysis technology. The subjects represented a total of 70 organizations and were from 11 states. There were 82 female and 10 male subjects. Of the 92 subjects a total of 65 were classified, according to the highest level of occupational training or education completed, as health professionals, and 27 as health nonprofessionals.

The research design of the present study was a 3 x 2 factorial design. The three-level factor was amount of instruction on procedures for identifying attributes of job tasks. The three levels included the control condition (no training), the level one condition (20 minutes of training), and the level two condition (170 minutes of training). The second factor included two levels which were classified as health nonprofessional or health professional. The dependent measure was number of job tasks reallocated among the physician, nurse, and clinic assistant job categories included in a simulation game of family planning job design.

The following hypotheses were used to explore the research problem:

(a) Subjects who receive training will reallocate

more tasks than will subjects who receive no training;

(b) Subjects who receive a greater amount of training will reallocate more tasks than subjects who receive a lesser amount of training;

(c) Health nonprofessionals will reallocate more tasks than will health professionals;

(d) The difference in number of tasks reallocated by health nonprofessionals and health professionals will be greater for increasing amounts of training.

Results of the analysis of overall reallocation did not support the prediction that subjects who receive training reallocate more tasks than subjects who do not receive training; the prediction appeared to be supported for three of the six reallocation directions. The results of the overall reallocation and separate reallocation directions disconfirmed the hypothesis that subjects who receive a greater amount of training reallocate more tasks than subjects who receive a lesser amount of training. The hypotheses that health nonprofessionals reallocate more tasks than health professionals was supported for the overall reallocation analysis. Health nonprofessionals tended to reallocate a higher mean number of

tasks in the level one and level two condition for five of six reallocation directions, than did professionals but the pattern was not supported by statistical significance. There was not an increasing difference between health nonprofessionals and health professionals with an increase in instruction, as was predicted in Hypothesis 4.

Additional research to determine the effect of variations in game scenarios on reallocation behavior and to further explore the reallocation behavior of health professionals is needed. Also, the practicality of using the training methods included in the present research for encouraging task reallocation behavior was discussed.

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APPENDIX A

TABULAR DISPLAY OF SUBJECT BACKGROUND INFORMATION

TABLE A

NUMBER AND PERCENTAGE OF SUBJECTS BY STATE IN WHICH SUBJECT WORKS AND TREATMENT GROUP

State	Control Group N=22		Level One N=39		Level Two N=31		All Groups N=92	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Arkansas	1	4.5	0	-	0	-	1	1.1
Illinois[a]	0	-	27	69.2	0	-	27	29.3
Indiana[a]	0	-	0	-	16	51.6	16	17.4
Louisiana	0	-	0	-	15	48.4	15	16.3
Mississippi	0	-	2	5.1	0	-	2	2.2
North Carolina	0	-	3	7.7	0	-	3	3.3
Oklahoma	5	22.7	0	-	0	-	5	5.4
Oregon[a]	0	-	2	5.1	0	-	2	2.2
South Carolina	1	4.5	0	-	0	-	1	1.1
Tennessee	0	-	1	2.6	0	-	1	1.1
Texas	15	68.3	4	10.3	0	-	19	20.6
Total	22	100%	39	100%	39	100%	92	100%

[a]States designated as northern states.

TABLE B

NUMBER AND PERCENTAGE OF SUBJECTS BY AGE CATEGORY AND TREATMENT GROUP

Age Category (Years)	Control Group N=22		Level One N=39		Level Two N=31		All Groups N=92	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under 21	0	-	0	-	0	-	0	-
21-30	5	22.7	11	28.3	3	9.7	19	20.6
31-40	4	18.2	10	25.6	13	41.9	27	29.3
41-50	11	50.0	10	25.6	9	29.0	30	32.7
51-60	2	9.1	8	20.5	5	16.1	15	16.3
Over 60	0	-	0	-	1	3.3	1	1.1
Total	22	100%	39	100%	31	100%	92	100%

TABLE C

NUMBER AND PERCENTAGE OF SUBJECTS BY SEX AND TREATMENT GROUP

Sex	Control Group N=22		Level One N=39		Level Two N=31		All Groups N=92	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Female	20	90.9	34	87.2	28	90.3	82	89.1
Male	2	9.1	5	12.8	3	9.7	10	10.9
Total	22	100%	39	100%	31	100%	92	100%

TABLE D

NUMBER AND PERCENTAGE OF SUBJECTS BY JOB TITLE CATEGORY AND TREATMENT GROUP

Job Title Category	Control Group N=22		Level One N=39		Level Two N=31		All Groups N=92	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Director/ Administrator	11	50.0	16	41.0	20	64.5	47	51.1
Asst. Director/Administrator	2	9.1	4	10.3	1	3.2	7	7.6
Supervisor	1	4.5	6	15.4	3	9.7	10	10.9
Health Educator	0	-	6	15.4	0	-	6	6.5
Family Planning Nurse	4	18.2	2	5.1	2	6.5	8	8.7
Outreach Worker	4	18.2	2	5.1	1	3.2	7	7.6
Other	0	-	3	7.7	4	12.9	7	7.6
Total	22	100%	39	100%	31	100%	92	100%

TABLE E

NUMBER AND PERCENTAGE OF SUBJECTS BY AMOUNT OF EXPERIENCE IN A PROGRAM THAT DELIVERS FAMILY PLANNING SERVICES AND TREATMENT GROUP

Experience (Months)	Control Group N=22		Level One N=39		Level Two N=31		All Groups N=92	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
None	1	4.5	0	-	2	6.5	3	3.3
1-6	1	4.5	7	17.9	2	6.5	10	10.9
7-12	4	18.3	5	12.8	3	9.7	12	13.0
13-18	1	4.5	3	7.7	1	3.2	5	5.4
19-24	6	27.3	6	15.5	4	12.9	16	17.4
25-30	2	9.1	5	12.8	1	3.2	8	8.7
Over 30	6	27.3	13	33.3	17	54.8	36	39.1
No Entry	1	4.5	0	-	1	3.2	2	2.2
Total	22	100%	39	100%	31	100%	92	100%

TABLE F

NUMBER AND PERCENTAGE OF SUBJECTS BY YEARS OF EDUCATION AND TREATMENT GROUP

Education (Years)	Control Group N=22		Level One N=39		Level Two N=31		All Groups N=92	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1-11	2	9.2	2	5.1	1	3.2	5	5.4
12	4	18.2	4	10.3	9	29.0	17	18.5
13	4	18.2	0	-	3	9.7	7	7.6
14	3	13.6	4	10.3	2	6.5	9	9.8
15	3	13.6	6	15.4	1	3.2	10	10.9
16	4	18.2	7	17.9	9	29.0	20	21.7
17	0	-	6	15.4	2	6.5	8	8.7
18	1	4.5	3	7.7	3	9.7	7	7.6
19	0	-	0	-	1	3.2	1	1.1
20 or More	1	4.5	7	17.9	0	-	8	8.7
Total	22	100%	39	100%	31	100%	92	100%

TABLE G

NUMBER AND PERCENTAGE OF SUBJECTS BY HIGHEST LEVEL OF EDUCATION OR TRAINING FOR WHICH SUBJECT RECEIVED A DEGREE, LICENSE, CERTIFICATE OR DIPLOMA AND BY TREATMENT GROUP

Highest Level of Certificated Education or Training	Control Group N=22		Level One N=39		Level Two N=31		All Groups N=92	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No Post High School Training or Education	6	27.3	6	15.4	5	16.1	17	18.5
Post High School Training or Education	10	45.4	11	28.3	11	35.5	32	34.8
Bachelor Degree	6	27.3	11	28.3	13	41.9	30	32.7
Master Degree	0	-	8	20.5	2	6.5	10	10.9
Doctoral Degree	0	-	3	7.5	0	-	3	3.1
Total	22	100%	39	100%	31	100%	92	100%

APPENDIX B

INSTRUCTOR'S GUIDE

The instructional units in this Instructor's Guide are sequenced in the order of the level two training program presentation.

Time in Minutes and Materials Needed	Instructional Units and Sub-units; Including Directions for Presentation of Content
15	WELCOME and INTRODUCTIONS
15	OVERVIEW OF TRAINING TOPICS, OBJECTIVES AND TECHNIQUES
	A. Major Topics and Training Techniques
Handout of Topical Outline and Objectives.	1. A Conceptual Model of Manpower Development and Utilization as a context or framework for learning about task analysis technology (lecture-discussion).
	2. The characteristics of a Family Planning Task Analysis Data Base (reading and lecture-discussion).
	3. A learning game called The Family Planning Job Design Game (simulation and discussion).
	4. Use of Family Planning Task Analysis Data for Job Description (lecture-discussion).
	B. Training Objectives
	1. List the seven components of a Conceptual Model of Manpower Development and Utilization.

2. List the six parts of a Task Analysis Data sheet and the four parts of a task statement.

3. List three reasons which make decision-making and skill information important to development and utilization of personnel.

4. List five or more factors that should be considered in the design or re-design of family planning jobs.

5. List and describe the three major parts of a task based job description and describe one use for each part.

45 A CONCEPTUAL MODEL FOR MANPOWER DEVELOPMENT AND UTILIZATION

A. Introductory Comments

1. The model we are going to discuss provides a framework for identifying how task analysis technology fits into various aspects of developing and managing manpower.

2. I will refer back to the model throughout the whole afternoon, it will be our frame of reference for this session and I hope for you after you leave this training.

B. Components of the Model

Conceptual Model Chart without components and activities.

1. Outline of the Conceptual Model
   a. We will fill in the outline as we go.
   b. Become familiar with its structure, content and processes.

c. What do arrows suggest? --motion, interrelatedness.
d. Note top and bottom sections. What do arrows from bottom to top row suggest?--Input.

2. Components
   a. Manpower Planning
      (1) Design of other subsystems (e.g., career ladder).
      (2) Forecasting manpower needs.
      (3) Establishing and maintaining a data base (e.g., task analysis data).
         (a) Task analysis data label.
         (b) A source of information that can be used to build tools with, and for carrying out activities.
   b. Recruitment
      (1) Identify manpower pool.
      (2) Inform persons in pool of nature of job and organization.
   c. Selection
      (1) Screening for minimal requirements.
      (2) Mutual appraisal.
      (3) Comparison of applicants.
      (4) Decision-making.
   d. Training
      (1) Development.
      (2) Delivery.
      (3) Evaluation.
   e. Directing
      (1) Day-to-day interaction.

Affix component labels a through g as each is presented.

(2) Giving assignments.
(3) Managing differences.
(4) Disciplining.

f. Staff Development
(1) Career counseling.
(2) Interrelating individual skills and knowledge with career ladders and curriculum ladders.

g. (1) Appraising individual performance.
(2) Comparing individual with each other and with standards.

h. Task Analysis Data Base
(1) Information about job tasks, performance variables, training content, tools/aids/materials and skill requirements.
(2) Used to build tools and help carry out activities.
(3) Will focus on the characteristics of that data base in next section.

C. Classification of Supervisory and Administrative Activities and Aids (Tools)

1. Become familiar with using the model by classifying the activities we talked about earlier and other activities according to the components of the model.

2. Also consider the idea that there are certain tools or aids that we should have to carry out the activities properly.

Affix activity and tool labels to Conceptual Model Chart as each is considered.

3. Classification Exercise
   a. Explain exercise.
   b. Instructor selects activities and asks participants to specify which component(s) the activity is a part of and how the activity contributes to the component.
   c. Instructor selects tools and asks participants to specify which component(s) the tool is a part of and in what way the tool is used.

D. Summarize Parts of Model.

1. Components.
2. Task Analysis Data Base.
3. Supervisory and administrative activities.
4. Supervisory and administrative tools.

E. Refer to Training Objective Regarding Conceptual Model.

1. Ask participants if topics have been covered well enough for them to meet objective.

2. Give additional explanation if necessary.

75 INTRODUCTION TO THE FAMILY PLANNING TASK ANALYSIS DATA BASE

(15) A. Overview of Terms

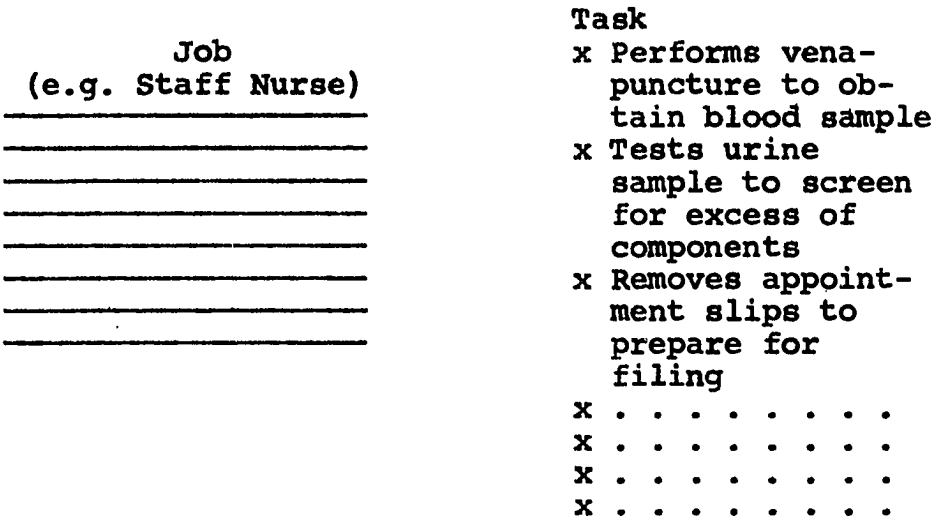
Write on chalk board or flip chart.

1. Job Analysis
   a. "Analysis" means breaking something into its parts so that those parts can be examined and the relations between the parts can be identified.

b. Job analysis means breaking down jobs into components and we call those components "tasks."
   (1) The task statements used in the game are examples of tasks.
   (2) Analysis of a job is done by interviewing and/or observing people in a job and writing down what are observed as task statements.
      (a) Each program doesn't have to do this. Once the task analysis statements are written they can be used by many programs.
      (b) With task statements available the process of determining exactly "who is doing what tasks" becomes easier than if one has to start from scratch.
      (c) The data base we are developing will be available in 2-4 months.

Write on chalk board or flip chart.

c. Graphic display



(1) Square represents a job.
(2) Rows represent parts (tasks) of the job.
(3) Give examples of tasks.

2. Task or Task Statement
   a. Various meanings of "task."
      (1) Group that undertakes efforts to solve large problem or develop something (e.g., open a clinic, plan a new service).
      (2) Group Task
         (a) Support.
         (b) Guide.
      (3) We are referring to a "job task" or a component of a job.
   b. Definition of a task
      (1) A series of actions carried out by one person which results in an output that contributes to project activities.

3. Task Analysis

a. Identifying the characteristics of a task.
b. Asking a series of questions about a single task which results in:
   (1) Performance standards.
   (2) Training content.
   (3) Equipment/materials used in doing the task.
   (4) Skill requirements to do the task.

Write items 1-4 on chalk board or flip chart.

(30) B. Task Analysis Data Sheet

1. Major Sections
   a. Identifying Information
      (1) Identification number.
      (2) Date worked on.
      (3) Organizational function that the task contributes to.
         (a) Function, Sub-function and Activity categories (explain one heading as an example).
   b. Task Statement
      (1) One-line summary--(most frequently used).
      (2) Full task statement--(action and outcome parts).
      (3) Used in job description and selection.
   c. Performance Variables
      (1) Contain qualitative and quantitative.
         (a) Each program would determine its own standards for each variable.

Ask participants to read sample sheets (4) then explain.

(b) Useful in orienting new employees.

d. Training Content
   (1) Topics only, not how to do training.
   (2) Useful in curriculum development.

e. Equipment/materials/aids
   (1) Useful in planning training curriculum.

f. Functional and General Educational Scales
   (1) The level of ability required for each of these kinds of skills is determined and the level as represented by a numerical value is entered.
   (2) Kinds of Skills
      (a) Worker Instruction--level of decision making requirements.
      (b) Requirements in the areas of data, people, things, reasoning, math and language are entered in other columns.
   (3) Level was chosen by a team of research and clinic staff trained in task analysis.
   (4) Orientation of Tasks
      (a) The relative degree of involvement with data, people and things is indicated by

Refer to Task Analysis Data sheet on giving appointments.

entry of percent next to each scale value.

(b) Useful in job restructuring and selection.

(5) The nature and use of scale information will be explained later in session.

2. Task Analysis Data sheet as a Source Document
   a. Parts of the sheet are useful for various needs and is a data bank to go to for specific purposes.
      (1) Trainer goes to the training content section to develop curriculum.
      (2) Manager goes to performance standards to select standards to use for employee evaluation.
      (3) Supervisor goes to performance standards to use for employee evaluation.

3. Summary
   a. Job Analysis--breaking job into tasks.
   b. Task--activities and outcome.
   c. Task Analysis--identification of performance.

4. Refer to training objective on parts of the Task Analysis Data sheet.
   a. Ask if topic has been covered sufficiently for participants to meet the training objective.

b. If not covered sufficiently, then give additional explanation.

(30) C. Task Statement Exercise

1. Need to become more familiar with reading task statements.
   a. Useful to be able to refer to in a detailed way when designing jobs, giving work assignments or orienting new employees.
   b. Must be familiar with the concept of task, especially the aspect of determining the scope or size of tasks.

Hand out exercise sheet on forms and elements of task statements.

2. Forms of Task Statements
   a. One-liner--used in check lists.
   b. Full task statement.

3. Exercise on Elements of Tasks
   a. Action part--this part is indicated by specific action verbs, e.g., greets.
      (1) Actions give you clues to the skills required.
      (2) Circle each of the actions in the sample task statement.
      (3) Ask a participant to read words circled. Ask other participants for additional words that could be circled. Indicate any verbs missed by participants.
      (4) Ask a participant to name those

Write selected (underlined) words on board or chart.

verbs which suggest data, people, things and decision-making skills.

b. Object part--each action is done in relation to an object of some kind (e.g., person or equipment).
   (1) Similar actions done in relation to different knowledge (e.g., interacting with patient, co-worker or board member).
   (2) Put square around each object.
   (3) Ask participant to read objects, other participants for additional objects and point out any objects missed.
   (4) Ask participants to name those objects which suggest data, people, things or decision-making skills.

c. Tools/Materials/Work Aids part
   (1) Put a dark underline under any tools, aids or materials mentioned in the task.
   (2) Ask participant to read tools, aids or materials, other participants for additional tools, etc., missed.
   (3) Ask participants to name those tools, etc., which suggest data, people, things or decision-making skills.

d. Outcome or Immediate Result part
   (1) Put a bracket around the immediate result expected.
   (2) Ask participant to read part bracketed.
   (3) Immediate outcome may be tangible (e.g., filled in record) or intangible (e.g., calmed a patient).
   (4) Performance variables can often be determined from the statement of immediate result.
      (a) Example--"to obtain blood sample." If questions are asked about the characteristics of the sample such as amount and number of capillary tubes, then the answers become performance standards.

4. Refer to training objective on parts of a task statement.
   a. Ask if topic has been covered sufficiently for participants to meet the training objective.
   b. If not covered sufficiently, then give additional explanation.

75 DECISION-MAKING AND SKILL REQUIREMENTS OF FAMILY PLANNING JOB TASKS

(10) A. Uses of Skill Requirement Information

Write selected (underlined) words on board or flip chart.

1. Hiring or promotion--matching skill and decision-making requirements of a job with skill and decision-making qualifications of a person.

2. Job restructuring--combining skill and decision-making requirements to produce a job fit for human habitation and appropriate for achieving organizational goals.

3. Building career ladders--developing reasonable steps of skill and decision-making requirements.

(5) B. Task Analysis Scales

1. Scales are an easily accessible and summarized reference source for information about types and levels of skill requirements.

2. After learning how task analysis scales "work" and after using them it becomes easier to make judgments about the level of requirements of tasks on a day-to-day basis without needing to refer to the scales.

3. Exercise on Scales
   a. Will use one scale in the exercise, the Worker Instruction scale, which is a scale of decision-making levels.
   b. Instructions for exercise

Hand out the Instructions and Response Sheet and Worker Instruction Scale.

(1) Participants read the instructions.
(2) Instructor explains each part of the instruction and asks if there are any questions.
(3) Participants read scales and task statements and make judgments of levels.

c. Conduct of exercise

(1) Instructor asks for results of judgments and records on chalk board or flip chart in following way:

Write results on chalk board or flip chart.

Level	Tasks 1	2	3
8			
7			
6	(Enter number of persons who chose each level for each task.)		
5			
4			
3			
2			
1			

(2) Ask one or more participants who chose a given level to explain what part of the task statement or part of the scale descriptor influenced the participant to choose that level.
   (a) Instructor may suggest looking at action verbs or objects or tools or outcome parts of task statement.

(b) After discussion on each task the instructor gives "expert's" judgment of the level.
(c) Repeat step 2 for each of the three tasks.

(3) Variability of judgments
(a) Instructor points out variability of judgments.
(b) Explains usual reasons for variability--poorly written task statements, untrained judges, too many dimensions in each scale, tendency to think of skill requirements in terms of job categories and educational degrees as opposed to actual skills in jobs or job tasks.

Write selected (underlined) words on chalk board or flip chart.

(10) C. Importance of Making Manpower Development and Utilization Decisions in Terms of Actual Skill Requirements

1. Discrimination against persons who have the skills but lack the credentials.

2. Underutilization of highly trained personnel.

3. Denial of services to

patients because of lack of personnel due to discrimination and under-utilization.

(5) D. Refer to Training Objective on Importance of Decision-Making and Skill Requirements Information

1. Ask if topic has been covered sufficiently for participants to meet the training objective.

2. If not covered sufficiently, then give additional explanation.

100 THE FAMILY PLANNING JOB DESIGN GAME

(3) A. Introduce the Topic

1. Do a simulation game of designing family planning jobs.

2. Objectives or reasons
   a. Become familiar with using task statements.
   b. Identify and discuss variables involved in job design or re-design.

(7) B. Usefulness of Simulations

1. Instructor asks participants to name advantages or usefulness of simulations. If no responses then instructor gives one example and asks again.
   a. Responses desired
      (1) Economy--changes can be made and results observed in a simulation without the expense of actually carrying out the change

Write selected (underlined) words on chalk board of flip chart.

in the system being simulated.

(2) Able to try "<u>way out" ideas</u> and get some knowledge of what the system would look or behave like <u>without facing the problems or criticism</u> that might arise in the system being simulated.

(3) Able to <u>try many ideas</u> because the <u>time</u> required to do the simulation is <u>usually shorter</u> than time required to make changes in the system being simulated.

(5) C. Introduce the Context

1. Participants play the role of Project or Clinic Administrator.
   a. You make the decisions in the game, you have responsibility and authority.

2. Fairly small clinic.
   a. Three jobs--Doctor, Nurse (RN) and Clinic Assistant.

3. Reason for review of jobs.
   a. Project has been in operation one year and you decide to review the status of the jobs.

4. Three kinds of information you want.
   a. A <u>listing of the tasks</u> in the jobs. For purposes of the game a

sample of the tasks in each job will be provided.

b. Want some information about how the three feel about their job and about the productivity or status of the clinic.
   (1) You find out that the Physician feels quite pressed and at times somewhat rushed.
   (2) The Nurse feels fairly satisfied with the amount of work, she is always busy.
   (3) The Clinic Assistant has observed that the MD and Nurse are constantly busy but that she seems to have times when there is nothing to do. She also feels that she hasn't grown much in her time on this job and she anticipated getting more responsibility than she currently has.

c. You note in your general observations of the clinic that there seem to be longer waiting times for patients.

Refer to chart depicting the three jobs.

5. You decide to review the tasks performed on each job and see if there are any changes in the content of the jobs that you would like to see made by shifting tasks from one job to another. At this point in your review you decide not

to consider changing the number of people in a job but rather to look only at whether or not the kinds of tasks in the jobs should be the same or changed and if they should be changed what tasks to shift.

(5) D. Explain the Materials

1. Each participant will receive three decks of tasks.

2. One deck will be tasks that the Physician currently does, one that the Nurse currently does and one that the Clinic Assistant currently does. The Physician's deck will be orange, the Nurse's white and the Clinic Assistant's yellow.

Hand out Decks of Game Cards.

3. Explain the format of the cards.
   a. Each deck has a cover card that says Physician, Nurse, or Clinic Assistant.
   b. Each card has a full task statement which describes the task in some detail; a "one liner" or summary of the full statement; an identification number that we will use to quickly identify which task we are referring to when we are discussing during the game. For example, you would refer to orange number 2 and then read the one liner or full statement depending upon what the discussion was about.

(20) E. High-Low Sort

1. Become familiar with the tasks in the jobs and get some feel for the range of skill, decision-making and other requirements.

2. Method for becoming familiar with the tasks.
   a. Sort the tasks in each job into tasks you consider relatively high in requirements and tasks you consider relatively low in requirements.
      (1) Start with Clinic Assistant Deck (yellow).
      (2) Read full task statement and one liner.
      (3) Sort into relatively high and relatively low level tasks.
      (4) Use your own judgment about what are relatively high and relatively low.
      (5) After you finish the CA Deck go on next to the Nurse Deck (white) and then to the Physician Deck (orange). Be sure to do them in that order--CA, Nurse, then MD.

3. Identification of criteria for judging high or low.
   a. Instructor observes progress and when all are finished sorting Clinic Assistant Deck, asks participants to stop sorting temporarily.

b. Explanation to participants--purpose of discussion is to identify and list the criteria that are being used to determine the relative level of tasks.

(1) We will examine the results of the sort of the CA tasks.

Record number of each task on chalk board or flip chart under heading of "CA-LOW."

(2) Instructor asks a participant to read the number and the one liner for each CA task sorted into the low category and asks if other tasks were put in low.

(3) Instructor asks if there are any similarities among the tasks in the low category. Usual responses--tasks mentioned are tasks dealing with things or objects, tasks mentioned are routine or prescribed. Instructor lists these criteria on board.

(4) Instructor asks if there are any cases in which one of the tasks put in low category was considered high by someone. Asks why task(s) seemed high and contrasts with opinion of participant who judged task to be low.

Write any criteria that have been identified on chalk board or flip chart.

(5) Instructor summarizes criteria identified in discussion.

(6) Instructor asks a participant to

read the number and one liner for each CA task sorted into the high category and asks if any other tasks were put in high category by other participants.

(7) Instructor repeats steps 3-5 above.

(8) Instructor asks participants to continue sorting.

(9) When all sorting is completed, instructor repeats steps 3-5 above for Physician job.

c. Instructor summarizes criteria identified and adds any criteria not identified in discussion.

(1) Usual criteria

(a) Decision-making level.

(b) Skill level.

(c) Knowledge required.

(d) Amount of training required.

(e) Human error consequences.

(f) Financial error consequences.

(g) "Things" orientation of tasks.

(h) Category of personnel that usually performs task (e.g., Aide, MD, Nurse).

d. Review of importance of making manpower development and utilization

decisions in terms of actual skill requirements.
(1) Discrimination.
(2) Underutilization.
(3) Denial of services.

e. Relation of criteria used for determining levels of tasks to decisions about job design or re-design.
(1) One aspect of restructuring or designing jobs is matching similar levels of skill, decision-making and knowledge with a person.
(2) There are other considerations as you will see in next phase of the game.

(20) F. Restructuring Sort

1. Context for restructuring sort
a. In hi-lo sort you become familiar with the types and range of skills in the jobs and with task statements in general.
b. In this phase of game you decide whether or not you want to reallocate tasks and if so, where to reallocate them.
c. There is no actual right or wrong way to design the jobs. The idea here is simply to construct the jobs in the way you think they should be designed and through discussion of

the various designs we will identify a wide range of factors to consider in designing family planning jobs.

2. Instructions for restructuring sort
   a. Everyone lay out the three cover cards labeled Physician, Nurse and Clinic Assistant, in front of you.
   b. Next, take the Nurse Deck (white cards) and read each task and decide for each task whether you wish to keep the task in the Nurse job or reallocate the task to the Clinic Assistant or the Physician. Place each task under the cover card that represents the job in which you want to assign the task.
   c. When you have finished going through the Nurse Deck take the Physician Deck (orange cards) and read each task and decide for each task whether you wish to keep the task in the Physician job or reallocate the task to the Nurse or Clinic Assistant job.
   d. After finishing the Physician Deck go on to the Clinic Assistant Deck and decide for each task whether to keep it in the Clinic Assistant Deck or reallocate it to the Nurse or Physician jobs.

Write the word "order" and the words "Nurse," "Physician" and "Clinic Assistant" under the word "order" on chalk board or flip chart.

e. Be sure to do the Nurse Deck, then the Physician Deck and then the Clinic Assistant Deck.
f. You can reallocate as many or as few tasks as you wish from any job to any other job.
g. When you have finished your design you can have as many or as few tasks in the resulting jobs as you wish.
h. Are there any questions about this phase of the game?
i. Begin now with the Nurse Deck and feel free to ask any questions that may occur to you.

Instructor observes each participant to determine if each is following the instructions.

Instructor observes progress and when first participant to complete sorting is finished, the instructor goes on with following instructions.

j. After you have finished sorting the tasks, go through each job as you have now designed it and see if there are any additional changes you wish to make. After you have finished this step, please keep the tasks within each job as you have now designed it, together throughout the rest of the game.

k. Next, count the number of tasks in each job as it is now designed and record the number of tasks in each job on a sheet of paper for future reference.

(30) G. Discussion of Job Designs

1. Expectations for this phase of game.

Write selected (underlined) words on chalk board or flip chart.

a. Specify types of changes made in jobs (i.e., number and kinds of tasks reallocated).

b. Identify, list and discuss the factors people used in decisions about reallocating tasks and arriving at their designs.

2. Procedures for discussion

a. Changes in number of tasks in each job.

Write Physician (17), Nurse (16), Clinic Assistant (12) on board or flip chart.

(1) Instructor lists titles and number of tasks initially in each job.

(2) Instructor asks each participant to give number of tasks in each job and records under appropriate column.

(3) Instructor points out range of changes in number and distribution of changes.

(4) Instructor asks participants if change in number of tasks per job would have implications for change in number of persons

per job title and summarizes responses.

b. Discussion of tasks reallocated
   (1) Explain procedures for discussion.
      (a) Consider one job at a time.
      (b) Will do Clinic Assistant, Nurse and Physician in that order.
      (c) In each job we will consider the tasks reallocated into the job from other jobs first then tasks that remain.
      (d) Instructor will list the ID number of tasks on the chalk board to facilitate discussion.
      (e) The main idea is to identify the reasons for and against reallocation and thereby identify the factors involved in job design.
   (2) Conduct discussion.
      (a) Instructor asks participants to state the number and read the one liner of each task that was reassigned from the Physician Deck

List task numbers on board or flip chart under following headings:
Clinic Assistant
Phys.
Tasks

List task numbers on board or flip chart under following headings:

Clinic Assistant
Phys. ___
Tasks ___
___
___
___

Nurse Tasks

to the Clinic Assistant job.

(b) Ask participant why each task was shifted and write reasons on board.

(c) Ask for show of hands of participants who did not shift, ask one or more participants why task was not shifted and write reasons on board or flip chart.

(d) Ask participants to state the number and read the one liner of each task that was reassigned from the Nurse Deck to the Clinic Assistant job.

(e) Ask for show of hands of participants who did not shift, ask one or more participants why task was not shifted and write reasons on board or flip chart.

(f) Repeat procedures a-e above for the Nurse job noting tasks reallocated

to Nurse job from Physician and Clinic Assistant, respectively.

(g) Repeat procedures a-e above for the Physician job noting tasks reallocated to Physician job from Nurse and Clinic Assistant Decks, respectively.

(3) Summarize results.

(a) Instructor adds variables not mentioned by group.

(b) Common varibles mentioned are--

- Sequence of tasks.
- Proximity.
- Facility constraints.
- Personnel resources.
- Complexity of tasks.
- Overlap desired.
- Emphasize policy or procedures.
- Frequency/ duration of task performance.
- Legal constraints.
- Training resource constraints.
- Patient Acceptance or expectations.

- Professional attitudes.
- Distribution of work load.

(10) H. Overview of Job Design Factors

1. Game provided good grounding in job design factors that relate to job content as defined by job tasks.

2. Other factors are involved.
   a. Worker variables or the characteristics that a worker has with regard to ability to do work.
      (1) Skills--types, levels, preferences and experience.
      (2) Knowledge.
      (3) Personality.
      (4) Attitudes.
   b. System or situational variables.
      (1) Organizational philosophy, goals and policy.
      (2) Administrative variables--hierarchy, authority, supervisory style.

3. Knowledge of these factors and application of them should lead to greater job satisfaction and a more effective manpower system.

30 USE OF FAMILY PLANNING TASK ANALYSIS DATA FOR DEVELOPING JOB DESCRIPTIONS

(15) A. Task Distribution Study

1. First step in using task data is to determine exactly what tasks each employee is doing.

Hand out copy of Instruction page and Sample Checklist page.

a. Use a checklist procedure.
   (1) Instruction page.
   (2) Checklist of one-liner tasks.
   (3) Columns for job titles.
b. Each supervisor checks tasks that she or he thinks are in the job.
c. A list of tasks for each job is them compiled.
d. Each employee reads list of tasks supposedly in the job, adds tasks not listed and deletes tasks not actually done.
e. Final list is agreed upon by discussion of worker, supervisor and analyst.

Hand out sample of Function, Subfunction and Activity List.

2. Organize tasks into a sequence for writing a job description.
   a. Use of function, subfunction and activity system of organizing tasks.

(15) B. Task Based Job Description

Hand out sample Task Based Job Description.

1. Parts of Task Based Job Description
   a. Task Listing
   b. Summary
      (1) One-page maximum.
      (2) Includes information about policy and procedures in addition to task summary.
   c. Qualifications
      (1) Write qualifications for each main skill area, i.e., Data, People, Things, Reasoning,

Math, Language and Worker Instruction.

(2) Determine levels of requirements from scale descriptors.

2. Uses of Job Description
   a. Task listing used in conjunction with interview procedures.
   b. Summary used in recruitment.
      (1) Mail to employment centers.
      (2) Use to write advertisements.
   c. Qualifications used in selection in conjunction in interview procedures.

15 REVIEW OF TRAINING OBJECTIVES

A. Review each training objective.

1. Objective on Conceptual Model.

2. Objective on Task Analysis Data Sheet.

3. Objective on Parts of a Task Statement.

4. Objective on Importance of Decision-Making and Skill Requirements Information.

5. Objective on Factors to be Considered in Designing Family Planning Jobs.

6. Objective on Major Parts of a Task Based Job Description.

B. Ask if participants think the topics have been covered adequately for them to meet these objectives.

1. Provide explanation to questions about objectives.

CONCLUDE SESSION

A. Thank participants for their participation.

B. Offer time after session for any special questions.

APPENDIX C

REGISTRATION AND PARTICIPANT BACKGROUND FORM

THE FAMILY HEALTH FOUNDATION
136 SOUTH ROMAN STREET
NEW ORLEANS, LOUISIANA 70112
504 581-6613

REGISTRATION AND PARTICIPANT BACKGROUND FORM DATE: _____

NAME: _____
(Dr.) (Mr.) (Mrs.) (Miss) (Ms.)

TITLE: _____

(BUSINESS ADDRESS) _____

_____

_____(ZIP CODE) _____

(BUSINESS TELEPHONE) _____

PROGRAM FUNDED BY: _____

LOCAL ADDRESS: (HOTEL) _____(ROOM NO.) _____

_____

INDICATE ANY SPECIAL NEEDS OR CONSIDERATIONS YOU ANTICIPATE DURING YOUR STAY: _____

_____

_____

PLEASE CONTACT THE COORDINATOR OF THIS SESSION FOR ANY ASSISTANCE YOU MAY NEED.

INDICATE THE AMOUNT OF WORK EXPERIENCE THAT YOU HAVE HAD IN A PROGRAM THAT DELIVERS FAMILY PLANNING SERVICES BY CIRCLING ONE OF THE FOLLOWING:

NONE 1-6 MONTHS 7-12 MONTHS 13-18 MONTHS

19-24 MONTHS 25-30 MONTHS MORE THAN 30 MONTHS

PLEASE INDICATE THE APPROXIMATE PER CENT OF TIME THAT YOU CURRENTLY SPEND IN THE FOLLOWING FAMILY PLANNING PROGRAM ACTIVITIES AND THE TWO ACTIVITIES IN WHICH YOU HAVE HAD THE MOST EXPERIENCE.

Percent of Time Spent	Programmatic Activity	Most Experience
_____	PATIENT RECRUITMENT	_____
_____	MEDICAL SERVICES	_____
_____	PATIENT EDUCATION	_____
_____	SOCIAL SERVICES	_____
_____	PERSONNEL SUPERVISION	_____
_____	PROGRAM MANAGEMENT	_____
_____	PATIENT RECORDS	_____
_____	STAFF TRAINING	_____
_____	OTHER_____	_____

CIRCLE HIGHEST GRADE COMPLETED:

Elementary High School College

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

PLEASE LIST DEGREES, CERTIFICATES, LICENSES OR DIPLOMAS RECEIVED AND MAJOR AREA OF STUDY:

Degrees, etc. Major Area

_____

_____

_____

CIRCLE AGE GROUP:

Under 21 21-30 31-40 41-50 51-60 Over 60

THANK YOU.

APPENDIX D

TRAINING MATERIALS

OUTLINE OF TRAINING TOPICS

A Conceptual Model for Manpower Development and Utilization

- Components of the Model
- Classification of Manpower Activities and Tools

Introduction to the Family Planning Task Analysis Data Base

- Overview of Terms
- Task Analysis Data Sheet
- Task Statement Exercise

Skill and Decision-Making Requirements of Family Planning Job Tasks

- Uses of Skill Requirement Information
- Task Analysis Scales (Exercise)

The Family Planning Job Design Game

- Usefulness of Games and Simulations
- Context for Game
- Judging Levels of Tasks
- Restructuring of Jobs
- Discussion of Task Reallocation
- Summary of Job Design Factors

Uses of Family Planning Task Analysis Data

- Training Needs Assessment
- Job Description

TRAINING OBJECTIVES

At the completion of the training session each participant should be able to do the following:

1. List the seven components of a Conceptual Model of Manpower Development and Utilization.

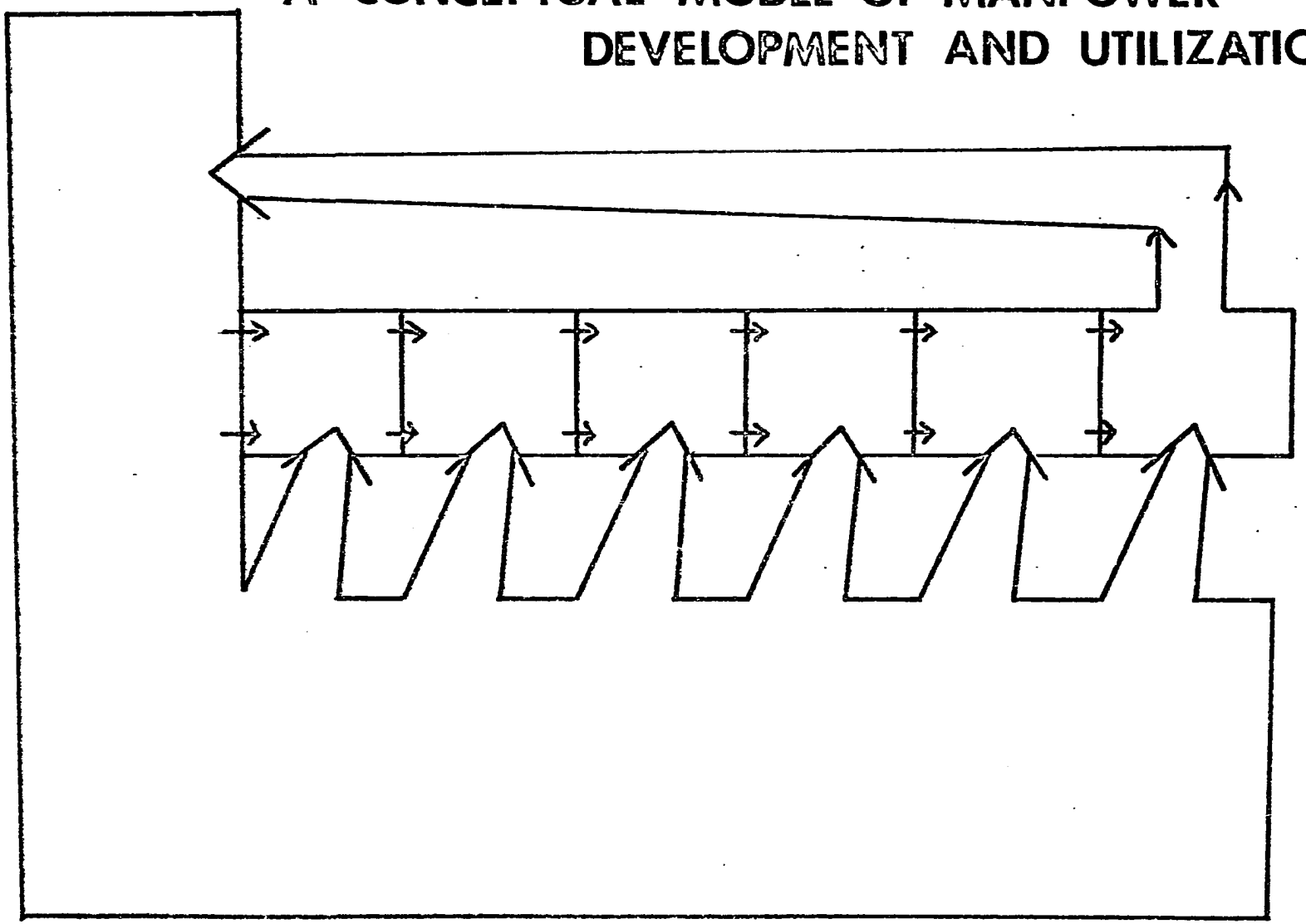
2. List the six parts of a Task Analysis Data Sheet and the four parts of a task statement.

3. List three reasons which make Decision-Making and Skill Information important to development and utilization of personnel.

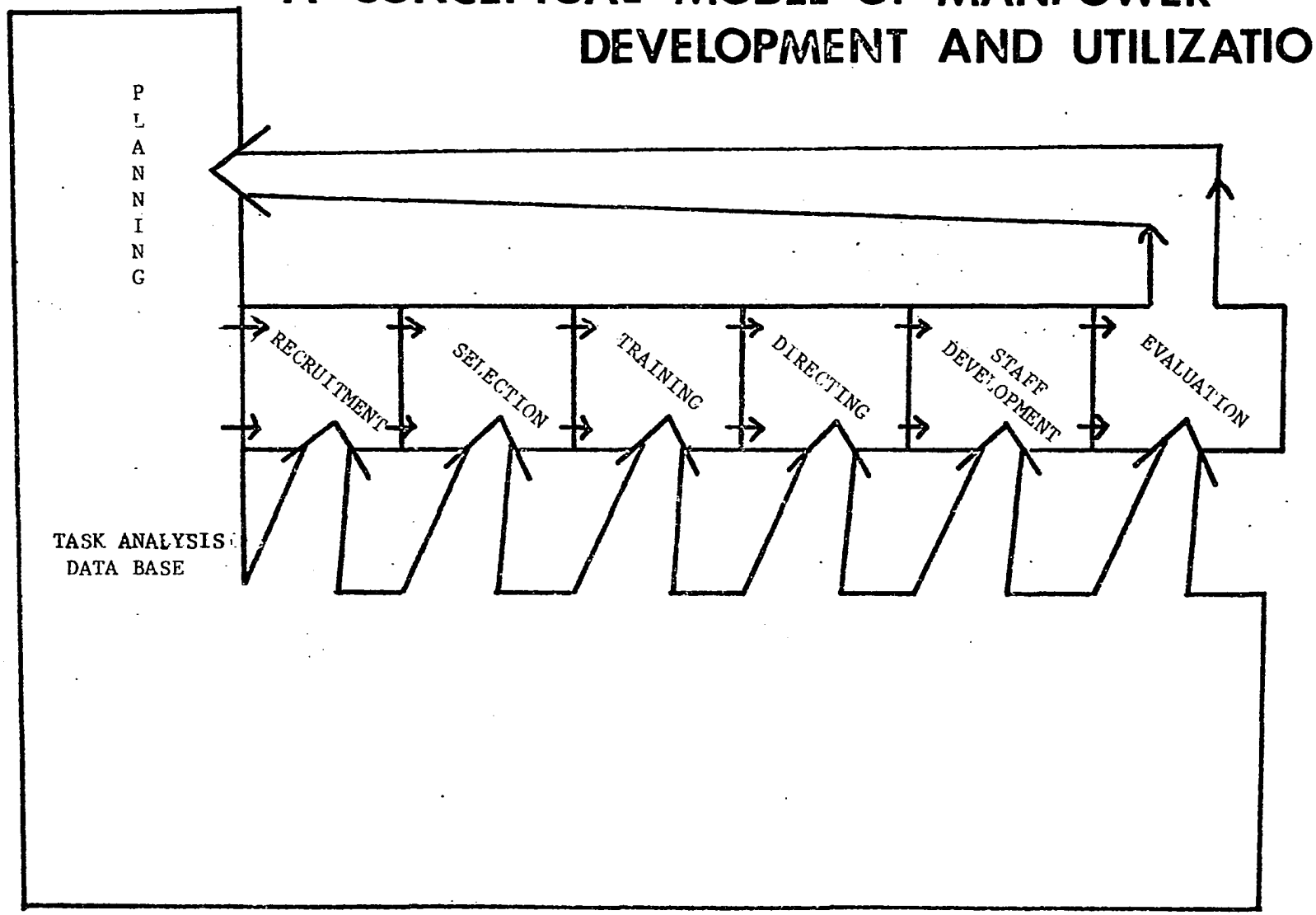
4. List five or more factors that should be considered in the design or re-design of family planning jobs.

5. List and describe the three major parts of a task based job description and describe one use for each part.

A CONCEPTUAL MODEL OF MANPOWER DEVELOPMENT AND UTILIZATION



A CONCEPTUAL MODEL OF MANPOWER DEVELOPMENT AND UTILIZATION



NAMES OF ACTIVITIES TYPED ONTO SLIPS OF PAPER (½" x 2") AND USED IN CONCEPTUAL MODEL INSTRUCTIONAL UNIT

Develop Curriculum

Screen Applicants

Reconstruct Jobs

Interpret Appraisal Information

Interview Applicants

Forecast Manpower Requirements

Give Assignments

Career Counseling

Identify Career Lattices

Orient New Employees

Monitor Performance

Evaluate Training Effectiveness

Administer Rewards

Set Standards

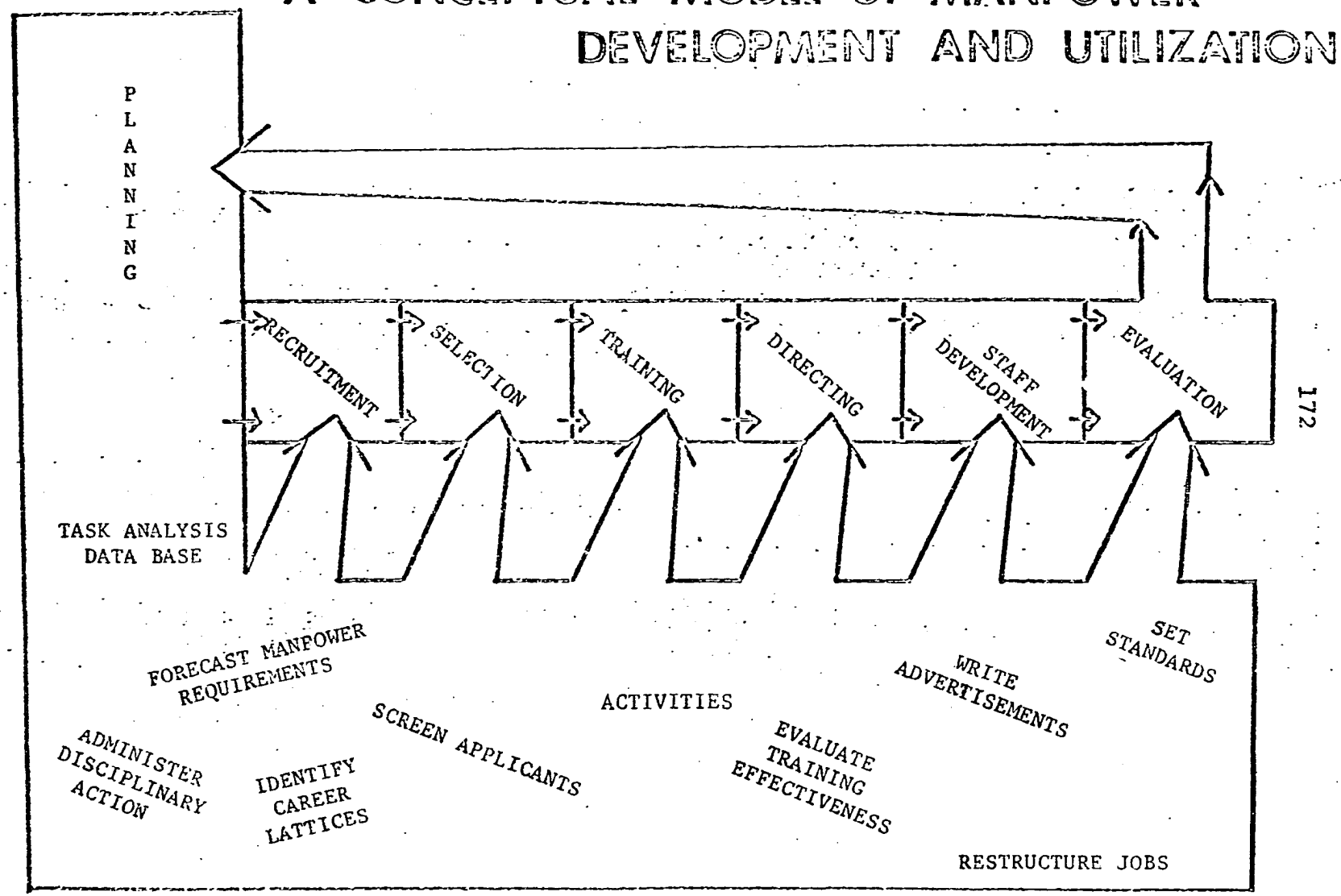
Identify Training Needs

Maintain Evaluation Records

Write Advertisements

Administer Disciplinary Action

A CONCEPTUAL MODEL OF MANPOWER DEVELOPMENT AND UTILIZATION



SELECTED
SUPERVISORY ACTIVITIES
CLASSIFIED BY MANPOWER
DEVELOPMENT AND UTILIZATION FUNCTION

MANPOWER PLANNING

Forecast Personnel Needs
Design Jobs
Set Job Requirements
Compose Job Descriptions
Design Staffing Patterns
Design Career Lattices
Design Curriculum Lattices
Schedule Work Assignments

RECRUITMENT

Identify Manpower Resources
Advertise Jobs
Screen Applicants

SELECTION

Interview Applicants
Compare Applicants
Interpret Appraisal Information
Formulate Hiring Decision

TRAINING

Identify Training Needs
Develop Curriculum
Develop Curriculum Lattices
Orient New Employees
Train Employees
Evaluate Training Effectiveness

DIRECTING

Give Assignments
Administer Rewards
Discipline Employees
Evaluate Grievances
Manage Interpersonal Differences
Suggest Problem Solutions

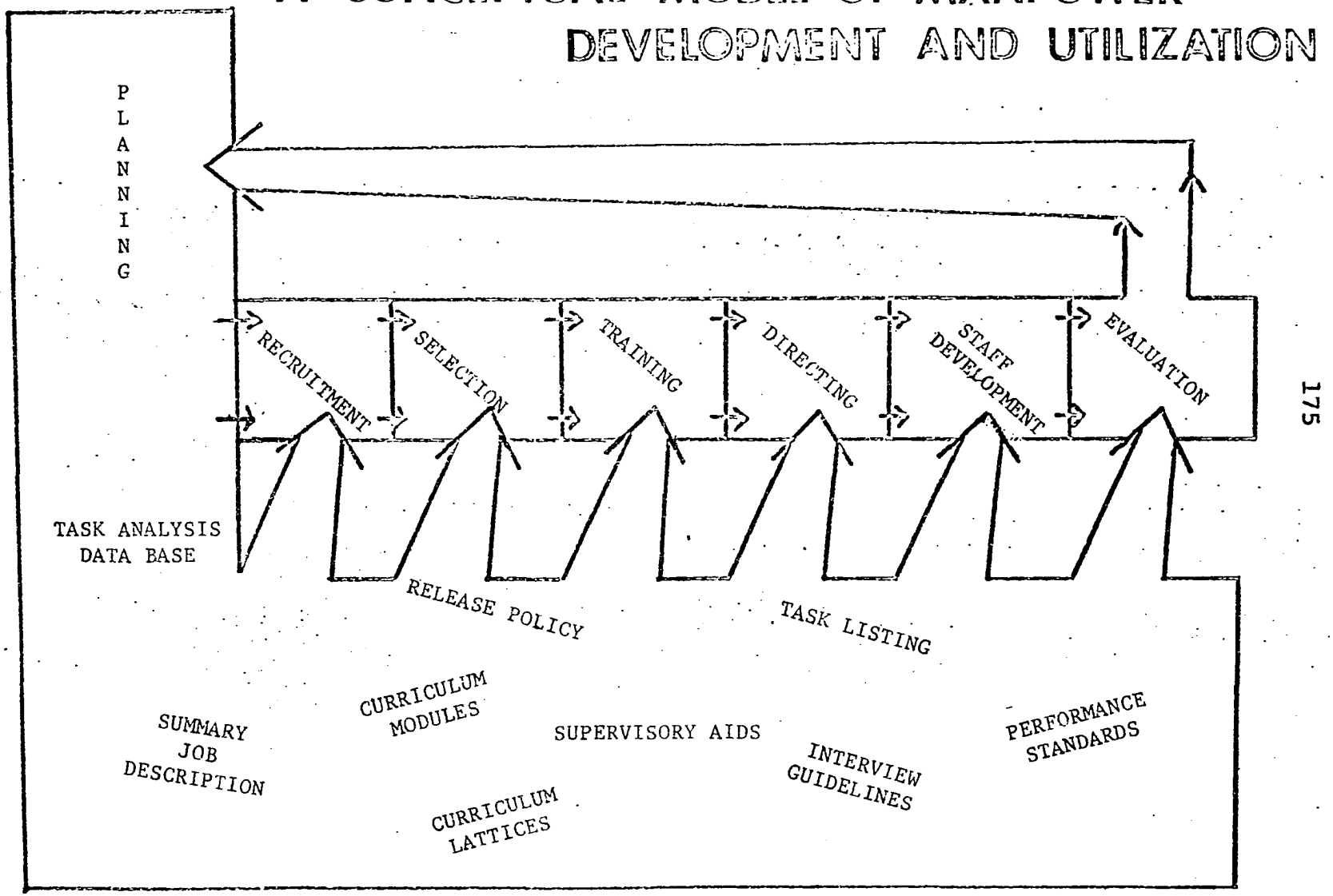
STAFF DEVELOPMENT

Assess Capabilities
Provide Career Counseling
Monitor Growth
Restructure Jobs

EVALUATION

Set Standards
Monitor Performance
Maintain Evaluation Records
Interpret Evaluation Information
Assign Performance Ratings

A CONCEPTUAL MODEL OF MANPOWER DEVELOPMENT AND UTILIZATION



SELECTED SUPERVISORY AIDS CLASSIFIED BY MANPOWER DEVELOPMENT AND UTILIZATION FUNCTION

MANPOWER PLANNING

Task Listing
Job Design Procedure
Skill Requirement Profile
Employee Skill Information
Manpower Forecasting Procedures

RECRUITMENT

Summary Job Description
Sample Advertisements
Screening Interview Guidelines

SELECTION

Task Listing
Skill Requirement Information
Interview Guidelines
Group Selection Procedures
Job Based Proficiency Examinations
Decision Models

TRAINING

Needs Assessment Procedures
Curriculum Lattices
Curriculum Modules
Trainee Selection Instruments

DIRECTING

Task Listing
Grievance Procedures
Disciplinary Policy
Disciplinary Procedures
Counseling Skills
Wage and Salary Scale
Performance Standards

STAFF DEVELOPMENT

Career Lattices
Curriculum Lattices
Release Procedures
Proficiency Tests
Career Counseling Skills
Promotion Policy
Employee Skill Information

EVALUATION

Performance Standards
Employee Evaluation Instruments
Procedures for Analyzing Performance Problems
Counseling Procedures and Skills

EXPLANATION OF THE TASK ANALYSIS DATA SHEET

The Task Analysis Data Sheet is the source document from which other task analysis data files are constructed. Currently, the format of the data sheet is being revised to make it more perceptually satisfying and to facilitate acceptance and ease of use of task analysis technology. There are six major sections of the Task Analysis Data Sheet. They are as follows:

IDENTIFYING DATA

TASK STATEMENT

PERFORMANCE STANDARDS

TOOLS/MATERIALS/WORK AIDS

TRAINING CONTENT

KIND AND LEVEL OF SKILLS

TASK ANALYSIS DATA
Instructional Services Division
Family Health, Inc.

Function: Service Delivery
Sub-Function: Diagnosis Task No. BW50
Activity: Obtaining Specimen Date: 1-27-72

"One-Liner" Task Statement Summary:
Draws capillary blood sample to test for anemia.

Task Statement:
Cleanses finger, explains procedure to patient, notes any physical indications of fear, reassures, calms patient, punctures finger with sterile lancet, fills capillary tube with blood, seals tube with clay, inserts tube in numbered tray, writes corresponding number on patient's route slip in order to obtain blood specimen to be used in testing for anemia.

Performance Standards:
1. Sensitivity to fear of patient.
2. Fewer than ___% of patients complain of treatment.
3. Fewer than ___% of patients refuse to cooperate.
4. Between ___ and ___ samples obtained per hour.
5. Fewer than ___% of pipettes are broken while handling.
6. Fewer than ___% of patients are lanced more than once.
7. Fewer than ___% of pipettes are filled incorrectly.

Training Content:
1. Terminology.
2. Reason for HCT test.
3. Relationship of task to other tasks and workers.
4. Observation and practice of the task.
5. Observation and awareness of physical symptoms of patient nervousness.
6. Specific procedures for the task.

Tools/Aids/Materials:
1. Spongette.
2. Gauze square.
3. Blood lancet.
4. Capillary tubes (2).
5. Seal-ease tray.
6. Pencil or pen.

Functional and Educational Scales

WI	Data	%	People	%	Things	%	Reas.	Math.	Lang.	Grade
2	2	5	3C	40	2A	55	2	1	2	3

TASK ANALYSIS DATA
Instructional Services Division
Family Health, Inc.

Function:	Service Delivery	
Sub-Function:	Patient Recruitment	Task No. JT15
Activity:	Appointing	Date: 1/27/72

"One-Liner" Task Statement Summary:
Visits patient in home to persuade patient to keep appointment.

Task Statement:
Visits in home of patient, talks with, listens to, informs patient regarding importance of the post-partal examination, reminds of appointment, clarifies information/questions, using listed teaching aids for instruction as appropriate, having outreach information card available as a resource in order to encourage and persuade patient to keep post-partal appointment.

Performance Standards:
1. Courtesy, friendliness, tact, warmth, sensitivity.
2. Accuracy of information given to patient.
3. Completeness, thoroughness in presenting information.
4. Fewer than ___% of patients complain of worker's attitude.
5. Fewer than ___% of patients complain of lack of understanding of worker's speech or information given.
6. Fewer than ___% fail to keep post-partal appointments.
7. Persuasiveness.

Training Content:
1. Importance of "attitudes" in working with patients.
2. How to talk with others effectively and how to listen.
3. How to communicate ideas to patients.
4. Agency guidelines related to the home visit situation.
5. Importance of post-partal visit to the patient.
6. Use of tools, materials, aids.
7. Use and purpose of outreach card.
8. What situations may exist in home that may influence patient's reaction to the visit, and how to deal with this.

Tools/Aids/Materials:

1. Outreach information card.
2. Pelvic model.
3. Pamphlets provided by agency.
4. Charts, diagrams.

Functional and Educational Scales

WI	Data	%	People	%	Things	%	Reas.	Math.	Lang.	Grade
3	3B	30	3A	60	1A	10	3	1	4	3

TASK ANALYSIS DATA
Instructional Services Division
Family Health, Inc.

Function: Manpower Management
Sub-Function: Manpower Planning Task No. JT17
Activity: Date: 1-27-72

"One-Liner" task Statement Summary:
Reassigns personnel to provide adequate staffing.

Task Statement:
Evaluates effect of absent employee on clinic activity, considers alternate solutions, reassigns tasks to distribute work load, calls off-duty personnel as necessary, using clinic schedule, personnel schedule, and task assignments in order to provide adequate clinic staffing when absenteeism occurs.

Performance Standards:
1. Courtesy when giving assignments.
2. Firmness in giving assignments.
3. Thoroughness in reassignment of tasks.
4. Accuracy in reassignments.
5. Less than ___% of time do co-workers complain that clinic is inadequately staffed.
6. Less than ___% of co-workers complain of discourtesy on part of worker.

Training Content:
1. What constitutes "adequate" staffing.
2. Agency guidelines related to staffing, off-duty personnel, overtime, etc.
3. Clinic schedules, number of personnel working, telephone numbers of off-duty personnel.
4. Tasks to be done, number of persons needed to perform given tasks.
5. Clinic operation.

Tools/Aids/Materials:
1. Clinic schedule.
2. Personnel schedule.
3. Task assignments.
4. Knowledge of each worker's capacity and quality of work.

Functional and Educational Scales

WI	Data	%	People	%	Things	%	Reas.	Math.	Lang.	Grade
4	5B	40	5	50	1A	10	4	1	3	6

TASK ANALYSIS DATA
Instructional Services Division
Family Health, Inc.

Function: Logistics
Sub-Function: Inventory Task No. BW77
Activity: Date: 1-27-72

"One-Liner" Task Statement Summary:
Inventories exam room stock to maintain exam room stock.

Task Statement:
Observes, counts, compares supplies in exam room with prescribed stock list, determines and records deficiencies, listing each item, description or size, and number needed on stock withdrawal form, in order to maintain exam room supply stock.

Performance Standards:
1. Assignment is completed within ___ minutes.
2. No complaints that supplies are not available in exam room.
3. Fewer than ___% of counts/comparisons result in incorrect figures.

Training Content:
1. Supply list form.
2. Names, stock numbers and other identifying information about supplies.
3. Addition and subtraction of whole numbers.
4. Where supplies are kept in exam rooms.
5. Where and how to record needed supplies on Stock Withdrawal Form.

Tools/Aids/Materials;
1. Speculums.
2. Sheets.
3. Gowns.
4. Pills
5. Diaphragms, etc.
6. Prescribed list of supplies for exam room.
7. Stock withdrawal Form.
8. Pencil or pen.

Functional and Educational Scales

WI	Data	%	People	%	Things	%	Reas.	Math.	Lang.	Grade
2	3A	50	1A	5	1A	45	2	1	2	2

THE JOB TASK
INFORMATION FOR DEVELOPMENT AND UTILIZATION
OF
FAMILY PLANNING PERSONNEL

Forms of Task Statements

Examples of each of the two forms of task statements are shown below. Please read the examples.

FULL TASK STATEMENT	Cleanses finger, explains procedure to patient, notes any physical indications of fear, reassures, calms patient, punctures finger with sterile lancet, fills capillary tube with blood, seals tube with clay, inserts tube in numbered tray, writes corresponding number on patient's route slip, in order to obtain blood specimen to be used for testing for anemia.
ONE LINER	Draws capillary blood sample to test for anemia.

Elements of Task Statements (Exercise)

Action Part Object Part Output Part Materials Used

Greets patient, explains procedure to patient, notes any physical indication of fear, reassures, calms patient, selects arm and vein from which to draw blood, applies tourniquet to inflate vein, instructs patient to make fist, selects point for insertion, decides if necessary to mark point of insertion, swabs with alcohol, checks needle, inserts needle with quick jab, draws blood into vacutainer(s) in amount specified, seals container, removes needle and tourniquet, swabs puncture with alcohol, may apply cotton or band aid, labels samples

and writes prescribed entry in chart, may arrange for other medical personnel to obtain sample if unable to obtain sample because of difficulty in finding vein, in order to obtain blood sample.

SKILL AND DECISION-MAKING REQUIREMENTS OF FAMILY PLANNING TASKS

TASK SCALING EXERCISE

When any worker performs a task he both follows prescription and exercises discretion. The end result or outcome of task performance is usually prescribed. The means to accomplish the end, the procedure, tools and materials, are often prescribed. The worker, in performing any task, exercises discretion. Decisions are made as to how the task will be accomplished, or how personal experiences and knowledge will be applied.

The WORKER INSTRUCTIONS scale represents a range of discretion/prescription. The scale descriptor Level 1 would apply to tasks with the least discretion and most prescription. Level 8 would be the opposite, representing tasks with most discretion and least prescription.

Read the WORKER INSTRUCTIONS scale, first comparing Levels 1 and 8 to establish a feel for the range of skill and then read the descriptors 2 through 7. Next, briefly read the task statements on the bottom of this page. Try to get a feel for the prescription/discretion ratio as each task is read. Then reread the first task for detail. Note the activities, procedures, tools and materials which are prescribed. Identify the discretion, or leeway, which the worker would execute in performance of the task. Scan the scale descriptors (1-8), locate the appropriate descriptor and record the number of the level by the task statement. Repeat for each statement until all have been scaled.

TASKS TO BE SCALED

1. Scans patient charts for "flags," determines those which have been obviated and should be removed, following verbal instructions and using routine prescribed criteria, removes and slips together, gives to designated co-worker, in order to update patient records. ____

2. Talks with, reassures patient, inserts, adjusts vaginal speculum, observes cervix for absence of abnormalities, passes uterine sound into cervic canal, noting axis and depth, using vulsellum to exert traction if necessary, evaluates uterine

characteristics, selects IUD size, using manufacturer's recommendations and professional experience, positions, inserts loaded IUD inserter into cervical os, passing gently to indicated depth, pushes plunger in, exercising care regarding pressure, withdraws inserter, cuts thread to prescribed length, removes inserter and speculum, in order to initiate patient's contraceptive method. ____

3. Evaluates effect of absent employee on clinic activity, considers alternate solutions, reassigns tasks to distribute work load, calls off-duty personnel if necessary, using clinic schedule, personnel schedule, and task assignments, in order to provide adequate staffing when absenteeism occurs. ____

SCALE OF WORKER INSTRUCTIONS[a]

This scale represents the degree of freedom a worker has to choose the nature and quality of outcomes of the task and how the task should be performed.

LEVEL	DEFINITION
1	Inputs, outputs, procedures, tools and equipment are well specified. Worker has little or no leeway in deciding how he will perform the task. Performance standards are rigidly set and outputs are usually measured in short time units, i.e., minutes or hours.
2	Inputs, outputs, procedures, tools and equipment are fixed, but worker has some leeway in deciding how he can perform the task. Worker may refer to several sources of information to select methods of procedure. Time to complete a particular service or output is specified but may vary up to several hours. Guidelines and performance standards are well defined.
3	The expected output or service is well defined but worker has considerable freedom to select procedures from a limited range of alternatives. Guidelines for performing the task and the level of quality are specified.
4	The expected output or service is specified in the assignment (i.e., memo, request of supervisor) but worker is expected to select the means to perform the task from a limited range of alternatives. There is a well defined minimum level of quality for the output but worker has some choice over the standards within the known guidelines.

[a]Copyright 1970 by W. E. Upjohn Institute for Employment Research.

5	The objective or output is specified in the assignment (i.e., memo, request of supervisor) but worker is expected to choose the methods for the task out of a broad range of alternatives using broad guidelines for the job. There is a loosely defined minimum level of quality for the task but he has latitude in his choice of standards in reaching or exceeding the minimum.
6	Objectives and outputs are broadly specified but within these limits worker has some leeway in determining direction of outcomes. As in 5, worker is expected to select procedures from a broad range of alternatives. There are minimum performance standards but he has considerable leeway in setting criteria for reaching or exceeding these.
7	Broad or long range goals are set for the jobs or organization or the discipline of the field worker is expected to choose courses of action from unspecified alternatives to accomplish long range goals. Worker must create specific methods, guidelines and performance standards using the policies and objectives of the organization.
8	Worker has complete freedom or power to decide the direction or outcomes of the job or organization. Individual determines the policies and procedures for the outputs and creates the guidelines and quality standards for its performance.

CHECKLIST TO IDENTIFY TASK DISTRIBUTION BY JOB TITLE

Respondent _____ Date _____

Title _____

Clinic _____ Dept. _____

The purpose of this checklist is to identify the tasks which are currently performed in each of the specific job titles indicated at the top left of the following pages. The tasks to be considered in this checklist are grouped according to a Function, Subfunction, and Activity classification system which is indicated by a series of headings. Before beginning to fill in the checklist scan the headings to become familiar with the overall scheme of task organization. Note the four Function headings on pages 2, 4, 7, and 12 which are indicated by a single asterisk (*). Nested within each Function are several Subfunction headings, indicated by double asterisks (**); and, nested within some of the Subfunctions are Activity headings, indicated by triple asterisks (***).

Scan a few task statements within each category heading to become familiar with the categories and the range of task statements included. Note that each statement "one liner" has two parts, separated by the word "to." The part preceding the "to" is an action phrase, and the part following the "to" indicates the outcome or purpose of doing the action.

Each job title being surveyed is assigned a column to the left of the statements. When this checklist has been completed, each column will indicate all tasks which are performed by any one or more of the persons under your supervision who hold a given title.

Read each task statement "one liner." noting the actions and purpose parts. For each job title, for which the task is considered a part of the job, mark an "x" in that column on the same line as the task. An "x" should be placed in a job title column if the task is (1) a regular or routine assignment of the worker; or (2) is primarily for planned or emergency backup of a co-worker, or scheduled leaves of absence.

Note: Some tasks may be marked for more than one title, and many tasks may not be included in any title which is listed. For any task about which you have a question, or don't understand, seek help from the analyst assisting you.

JOB TITLES RESPONDENT TITLE _____

TASK DISTRIBUTION BY JOB TITLE

	TASK STATEMENT "ONE LINER"
_____	DISCUSSES WORKER PERFORMANCE TO DECIDE VALIDITY OF RPTS
_____	REVIEWS EVALUATION TO DETERMINE EMPLOYEE ACCEPTABILITY
_____	WRITES REASONS TO JUSTIFY NOT RECOMMENDING SALARY RAISE
_____	WEIGHS EVALUATIONS TO MAKE TERMINATION DECISION
_____	REVIEWS EVALUATION TO DISCUSS WITH EMPLOYEE
_____	COUNSELS EMPLOYEE TO ENSURE AWARENESS OF EVAL RESULTS
_____	* SERVICE DELIVERY
_____	**RECRUITMENT
_____	***PREPARING
_____	FILLS IN OUTREACH CARD TO INITIATE PATIENT CONTACT
_____	SORTS RECORDS ON ADDRESS TO ORGANIZE BY GEOGRAPHIC AREA
_____	***LOCATING
_____	CONFERS WITH NEIGHBORHOOD SOURCES TO LOCATE PATIENT
_____	TELEPHONES BEFORE VISIT TO DETERMINE IF PERSON IS HOME
_____	*** ASSESSING
_____	TALKS WITH PATIENT TO DETERMINE ELIGIBILITY FOR SERVICE
_____	TELLS POTENTIAL PATIENT HOW TO BE ELIGIBLE FOR SERVICES
_____	CONFERS W. POTENTIAL PATIENT TO CLARIFY CLINIC PROGRAM
_____	INTERVIEWS TEENAGER TO SCREEN FOR CONTRA-CEPTIVE SERVICE
_____	ASSESSES ELIGIB CARD TO SCREEN NEW PATIENT FOR SERVICE
_____	*** INFORMING
_____	CONFERS W. POSTPARTUM PATIENT TO INVITE USE OF SERVICES
_____	VISITS PATIENT AT HOME TO PERSUADE TO KEEP APPOINTMENT
_____	HOLDS MTG TO INCREASE PARTICIPATION IN CLINIC SERVICES

_____	*** APPOINTING
_____	CONFERS WITH POSTPARTUM PATIENT TO GIVE CLINIC APPT
_____	TELEPHONES POTENTIAL PATIENT TO SCHEDULE CLINIC APPT
_____	PHONES WORKER IN CLINIC TO REPORT APPTS GIVEN
_____	** COORDINATION
_____	*** INTAKE
_____	ASKS, COMPARES NAME TO INSURE PATIENT AND CHART MATCH
_____	ASKS PATIENT NAME/ADDRESS TO ASSURE RIGHT CARD PULLED
_____	ASKS PATIENT CURRENT ADDRESS TO MAINTAIN CORRECT RECORD
_____	ASSIGNS NEW IDENTIFICATION NO. TO IDENTIFY NEW PATIENT
_____	FILLS IN REQUEST FORM TO RE-ACTIVATE PATIENT FILE
_____	ASKS QUES, WRITES ANSWERS TO RECORD IDENTIFYING INFO
_____	INTERVIEWS PATIENT TO RECORD INFO FOR WELFARE DEPT LOG
_____	COPIES INFORMATION TO INITIATE PATIENT ROUTE SLIP
_____	PLACES CHART IN RACK TO MAKE AVAILABLE FOR USE
_____	*** ROUTING
_____	DIRECTS PATIENTS TO ASSEMBLE IN WAITING ROOM
_____	INFORMS PATIENT TO DIRECT TO PROPER PLACE FOR NEXT ACTV
_____	ESCORTS PATIENT TO EXAM ROOM TO READY FOR PHYSICAL EXAM
_____	ESCORTS PATIENT TO NEXT CLINIC ACTIVITY TO MAINTAIN FLO
_____	DIRECTS PATIENTS TO ROUTE TO CLASSROOM
_____	SENDS PATIENT TO CLERK TO RETURN CHART TO CLERK
_____	*** GIVING INSTRUCTIONS
_____	EXPLAINS CLINIC VISIT TO PUT PATIENT AT EASE
_____	EXPLAINS CONSENT FORM TO OBTAIN PATIENT SIGNATURE
_____	GIVES INSTRUCTIONS TO PATIENT TO OBTAIN URINE SAMPLE

FUNCTION, SUBFUNCTION and ACTIVITY CATEGORIES

FOR FAMILY PLANNING SERVICE DELIVERY SYSTEM

x. Function
x.x. Subfunction
x.x.x Activity

1. Organization Management

- 1.1 Planning
  - 1.1.1 Identifying Needs
  - 1.1.2 Fund Raising
  - 1.1.3 Budgeting
  - 1.1.4 Programming
- 1.2 Organizing
  - 1.2.1 Delineating Organizational Relationships
  - 1.2.2 Developing Organizational Relationships
- 1.3 Evaluating
  - 1.3.1 Establishing Standards
  - 1.3.2 Monitoring Operations
  - 1.3.3 Interpreting Results
- 1.4 Administrative Support
  - 1.4.1 Ordering
  - 1.4.2 Assembling
  - 1.4.3 Quality Control
  - 1.4.4 Filing
  - 1.4.5 Distributing
  - 1.4.6 Operating

2. Manpower Management

- 2.1 Planning
- 2.2 Recruitment
- 2.3 Selection
- 2.4 Training
  - 2.4.1 Developing
  - 2.4.2 Delivering
  - 2.4.3 Evaluating
- 2.5 Directing
  - 2.5.1 Scheduling
  - 2.5.2 Assigning
  - 2.5.3 Motivating
  - 2.5.4 Informing
  - 2.5.5 Managing Differences
  - 2.5.6 Problem Solving
- 2.6 Evaluation

3. Service Delivery

- 3.1 Recruitment
  - 3.1.1 Preparing
  - 3.1.2 Locating
  - 3.1.3 Assessing
  - 3.1.4 Informing
  - 3.1.5 Appointing
- 3.2 Coordination
  - 3.2.1 Intake
  - 3.2.2 Routing
  - 3.2.3 Giving Instructions
  - 3.2.4 Supporting
  - 3.2.5 Referring
  - 3.2.6 Exchanging Information
- 3.3 Diagnosis
  - 3.3.1 History Taking
  - 3.3.2 Testing
  - 3.3.3 Examining
- 3.4 Treatment
- 3.5 Dispensing
- 3.6 Education
  - 3.6.1 Scheduling
  - 3.6.2 Developing
  - 3.6.3 Delivering
- 3.7 Patient Maintenance
  - 3.7.1 Flagging/Monitoring
  - 3.7.2 Quality Control
  - 3.7.3 Storing
  - 3.7.4 Assembling
  - 3.7.5 Re-appointing
  - 3.7.6 Updating
  - 3.7.7 Closure

4. Logistic Support

- 4.1 Ordering
- 4.2 Receiving
- 4.3 Inventory
- 4.4 Distributing
- 4.5 Assembling
- 4.6 Operating
- 4.7 Maintaining

Task Analysis and Job Design Project
Instructional Services Division, The Family Health Foundation
New Orleans, Louisiana

FAMILY HEALTH, INC.

Summary Job Description

Position: PARISH CLERK

Organization Management. Clerk assumes responsibility for accurate completion, typing, and flow of records, forms, and reports, acting under the direct supervision of the nurse.

She serves in an administrative supporting position by organizing and maintaining files of accurate, complete records and reports and making them readily available for administrative decisions and/or program operations.

Manpower Management. Shares in the management of manpower in cases where there may be more than one clerk, to assure adequate personnel coverage for clinic operations. Also assists in this way by developing relationships with co-workers in other areas of the state, which may ultimately affect organization of personnel and/or the supply system.

Service Delivery. Supports the delivery of health services to the patients by recruiting, informing, maintaining, and coordinating of the patient and her records within the system, as has been predetermined by the program. This entails a comfortable rapport with the patient in explaining program requirements and procedures for scheduling purposes.

Is actively involved in maintenance of patients in the program by typing and sending letters to the patient to assure that she is informed and reminded of her appointments. Also, by flagging records to indicate needs for further treatment.

Becomes involved in supporting the process of diagnosis of the patient by recording follow-up information on patients, in order to provide a complete medical record.

Logistics Support. Clerk is responsible to the nurse for requisitioning, receiving, and inventorying supplies and cash fund from the centralized supply department.

The clerk assembles and prepares correspondence and pap slides to be mailed.

Qualifications

Position: PARISH CLERK

General Qualifications

Data: Ability to compile, compute and collate information pertaining to patients, such as weekly statistical report of clinic activities. Ability to post sociological and appointment information and to evaluate data with reference to program guidelines to determine steps of patient follow-up.

People: Ability to relate to and anticipate needs of supervisor, co-workers, and patients, such as to help put a patient at ease, who has a problem with her appointment or a fear of what will happen in the clinic.

Things: Ability to operate equipment such as typewriter, copy machine, adding machine, telephone, and other office equipment. Ability to file and sequence records and reports, according to a predetermined arrangement.

Worker Instructions: Although most tasks are performed according to specified procedures, using designated materials and office equipment, many tasks allow the worker considerable freedom in deciding how and when to complete the required output, using data and materials. Some tasks challenge the worker to develop skills necessary for advancing in position, requiring the worker to work out ways of getting the assignment done, including deciding on sequence of operations, selecting materials and work aids, and locating information necessary to complete the assignment. The worker may set up these procedures for others to carry out.

Reasoning: Knowledge of workings of statewide records system and ability to apply these principles to the handling of a problem concerning a patient's record, or handling of administrative records. Ability to interpret and apply instructions from several different sources; written and oral.

Math: Ability to make arithmetic calculations involving fractions, decimals and percentages for statistical reports.

Language: Ability to take and transcribe dictation (not necessarily in shorthand), make appointments, sort, route, and file mail, records, and reports properly, according to subject, location, or numbers.

Write routine memos and letters according to standard procedures and format.

Understand written and oral instructions, such as a records manual, and instructions from a staff meeting or workshop.

Specific Qualifications

Should have one year secretarial or business course or the equivalent in experience. Requires familiarity with records systems, typing, filing and operating office equipment.

Tasks Performed by Parish Clerk

Tasks listed according to Function; Subfunction

1. Organization Management

Evaluating/Controlling

Completes, signs time report to record hours worked.

Completes long distance telephone register to notify accounting of long distance calls.

Writes narrative report to describe operational status.

Obtains signature to validate record.

Administrative Support

Transcribes patient ID information of forms to feed into data system.

Tallies appointments kept/not kept to summarize clinic participation.

Computes, fills in form to request payment to clinic physician.

Obtains information to complete patient's record.

Types Travel Expense Form to request reimbursement for travel.

Copies brief data to make available for use.

Gathers, tallies data to prepare for statistical report.

Addresses envelope to prepare material for mailing.

Transcribes from several sources to consolidate information.

Files correspondence to maintain file.

Transcribes data onto a number of different forms to disperse information.

Addresses package to prepare for mailing.

Copies data from records to formulate specific listing.

Matches card and slide to ensure data pertaining to patient.

Pulls records from file to assemble records for use.

Removes appointment slips to prepare charts for filing,

Inserts, fastens record in folder to maintain patient chart.

Files patient chart on ID number to maintain file.

Files in chronological order to keep appointment file.

Compares, matches sheets to combine related records.

Sorts records by codes to separate into categories.

Inserts blank forms in folder to initiate record file.

Carries, delivers papers to maintain record flow.

Imprint sheet with rubber stamp to identify record.

Separates perforated forms to distribute record copies.

Compiles, calculates data, to provide statistical report.

Checks statistical calculations to ensure correct report.

Reads, marks errors to maintain integrity of records.

Reads form to assure completeness of record.

Scans form for blanks to ensure form completion.

Reads, corrects errors to maintain record integrity.

Operates typewriter to prepare correspondence.

Operates typewriter to produce report.

Operates typewriter to fill in form.

2. Manpower Management

Directing

Discusses delayed lab results to expedite lab results.

Reassigns personnel to provide adequate staffing.

3. Service Delivery

Patient Recruitment

Matches request to openings to assign appointment.

Copies, explains appointment card to inform patient of appointment.

Selects, records time slot to schedule appointment.

Talks with patient to determine eligibility for services.

Patient Coordination

Interviews patient to record information for welfare department log.

Fills in appointment sheets to have for use in each clinic.

Asks questions, writes answers to record identifying information.

Posts brief data to record patient status.

Copies identifying information to identify patient's record.

Assigns ID no. to identify new patient.

Copies information to initiate patient route slip.

Copies information into Pap log to record unsatisfactory tests.

Gives instructions to patient to obtain urine sample.

Diagnosis

Interviews patient to determine if patient needs to see physician.

Writes letter, requests information to complete patient's records.

Writes exam results to provide patient record.

Patient Maintenance

Fills in form letter to remind patient of appointment.

Fills in form to initiate file closure on inactive patient.

Fills in form to initiate flag mechanism for patient service.

Contacts patient by mail to schedule for appointment.

Telephones before visiting to determine if person is home.

4. Logistic Support

Order

Types supply requisition form to order supplies.

Writes memo to justify requisition for non-standard items.

Inventory

Completes petty cash voucher to record petty cash transaction.

Updates Inventory Ledger Sheets to account for supplies.

Fills in monthly inventory form to provide Accounting with record.

Inventories supplies to list supplies in stock.

Assemble

Packages Pap slides and cards to prepare for mailing.

Packages boxes Pap slides to prepare slides for mailing.

Collects Pap slides to assemble for mailing.

APPENDIX E

TASK STATEMENTS USED IN SIMULATION GAME

Task Number	Task Statement
Physician Tasks	
01	Talks with, reassures patient, observes breasts for visible asymmetry, surface irregularities, and discharge, positions patient on exam table, using pillow when needed, systematically palpates all breast quadrants, noting any abnormalities, feels lymph nodes, noting any enlargement of glands, watches patient for signs of tenderness, records observations, in order to perform breast examination. Observes, palpates breasts to perform breast exam.
02	Talks with, reassures patient, inserts and secures speculum, using natural lubrication only, cleans cervix with sponge if necessary, applies, rotates cerviscraper, collecting mucus sample, removes, applies cerviscraper to glass slide, spreads sample smear, using prescribed method, applies fixative to sample slide (may hand cerviscraper to assistant for preparing slide), collapses and removes speculum, records service on patient's chart, in order to obtain Pap smear specimen for pathologist. Scrapes cervix to obtain Pap smear specimen.
03	Discusses with co-worker drug stock quantity on hand, personal experience with the drug, professional recommendations and agency policy on drug purchase and use in order to assist with final drug purchase decision.

Discusses drugs to assist with drug purchase decision.

04 Talks with, reassures patient (placed in lithotomy position), inserts, secures lubricated speculum, grasps, gently pulls IUD threads, withdraws IUD from uterus, removes, discards IUD, observes vagina for signs of infection, lesions, etc., collapses, removes speculum, records observations and service performed on patient's chart, in order to discontinue contraceptive use.
Removes IUD to discontinue contraceptive use.

05 Talks with, reassures patient (prepositioned on exam table), spreads, observes genitalia, noting any visible skin inflamation or lesions, leukorrheal discharge, swelling, or anatomical abnormalities, "milks" urethra and Skene's glands, noting any masses, tenderness or exudate, records exam observations in patient's chart, in order to perform examination of genitalia.
Observes, palpates genitalia to perform exam.

06 Reads, studies, evaluates pelvic x-ray of patient whose IUD strings were not visible, using viewbox, notes presence or abscence of IUD within uterus, records findings on patient's chart, in order to determine IUD retention/explusion.
Evaluates pelvic x-ray to determine IUD location.

07 Considers source of request, type of information requested, and agency policy on relinquishing medical information, decides if requested information may be divulged, if no, writes letter stating reasons,

if yes, reads, summarizes patient record, writes medical history summary on request of physician, Public Welfare Department, or insurance company, routes for typing, in order to relay requested medical information.
Writes medical history summary to relay requested information.

08 Talks to, reassures, relaxes patient (pre-positioned on exam table), inserts lubricated, gloved fingers into vagina, places other hand on abdomen, feels cervix, palpates and manipulates uterus, palpates adnexa organs, noting position, size, and shape, mobility, consistency, and any surface irregularities of each organ in turn, removes fingers, noting if digital contact caused bleeding, records observations, in order to perform bimanual pelvic examination.
Palpates organs to perform bimanual pelvic exam.

09 Talks with nervous or young patient, touches (e.g., hand, shoulder, knee), empathizes with, reassures patient before and/or during exam, getting patient used to being touched, may help patient to relax by encouraging to breathe evenly, telling where to place hands, etc., in order to relax patient for medical examination.
Talks with, touches patient to relax patient for exam.

10 Talks with, gives patient instructions to call clinic for appointment if medical problem persists, and/or to go to hospital emergency room if medical problem becomes acute, describes symptoms to be aware of, when applicable, in order to provide for continued patient treatment.

Gives patient instructions to provide continued treatment.

11 Talks with, reassures patient, inserts, adjusts vaginal speculum, observes cervix for absence of abnormalities, passes uterine sound into cervical canal, noting axis and depth, using vulsellum to exert traction if necessary, evaluates uterine characteristics, selects IUD size, using manufacturer's recommendations and professional experience, positions, inserts loaded IUD inserter into cervical os, passing gently to indicated depth, pushes plunger in, exercising care regarding pressure, withdraws inserter, cuts thread to prescribed length, removes inserter and speculum, in order to initiate patient's contraceptive method.
Selects, inserts IUD to initiate contraceptive method.

12 Explains, demonstrates breast examination to patient, has her duplicate procedure, informs what to feel for and what to do if abnormality is found, encourages patient to examine breasts monthly, gives booklet to patient, in order to teach self-examination of breasts.
Instructs patient to teach breast self-examination.

13 Explains, demonstrates the function and use of the diaphragm and its insertion with emphasis on proper lubrication of diaphragm and proper insertion, describes how to test for proper placement, using finger, in order to teach effective diaphragm use.
Explains diaphragm function to teach diaphragm use.

14 Determines, using gloved fingers, cervix size and length of anterior vaginal wall (depth), selects appropriate fitting ring, inserts, fits ring around cervix, checks fit, notes ring size if proper fit, if doesn't fit, repeats selection and fitting until proper size is determined, records size on patient's chart, in order to determine size of diaphragm to be given to patient.
Fits cervix with ring to determine diaphragm size.

15 Examines, palpates abdomen, notes firmness of muscles, scars, masses or protrusions, notes any tenderness or signs of pain, questions, listens to patient for additional information, records observations, in order to detect abdominal abnormalities.
Examines patient to detect abdominal abnormalities.

16 Responds to request for consultation concerning postpartum patient who has unusual symptoms, listens to, questions co-worker who interviewed and/or examined patient, reads patient's medical records, noting any previous occurrence of same symptoms, recalls previous, similar cases from professional experience or journal articles, compares similarities with present case, decides if sufficient information exists to enable satisfactory diagnosis, in order to decide on need for additional diagnosis.
Analyzes medical information to decide need for additional diagnosis.

17 Recalls observations made during exam, considers patient's medical record, analyzes information,

considers alternate treatments/ medications, and prescriptions written for previous similar cases, prescribes medications/ treatments for existing abnormal conditions, decides dosage quantity and frequency, explains, gives instructions to patient, writes prescription, and, if worker has the authority, signs signature, in order to relieve medical symptoms.

Prescribes treatment/medicine to relieve medical symptoms.

Nurse Tasks

18 Greets patient, receives chart and referral slip, reads diagnosis of medical examiner, recommended treatment and requested referral, explains to patient the reason for referral, may counsel and reassure patient upon own discretion, reads aloud patient's name, address, and phone number, asks if correct, determines eligibility for other community health services, using patient's welfare eligibility card if available, contacts agency for verification if necessary, fills out referral intake form, gives patient instructions for obtaining appointment, in order to refer patient to community resources.

Informs, refers patient to provide specialized care.

19 Talks with, reassures, relaxes patient (placed in lithotomy position), spreads labia, inserts, spreads, and secures lubricated speculum, adjusts lamp if necessary, looks for, confirms presence of IUD strings, observes cervix, noting any abnormalities, releases, collapses, slowly withdraws speculum, noting characteristics of

vaginal mucosa and vaginal discharge, records findings, arranges for further diagnosis if strings are not visible or if abnormal vaginal conditions exist, in order to perform IUD string check.
Inserts speculum, observes, to perform IUD string check.

20 Greets patient, explains procedure to patient, notes any physical indication of fear, reassures, calms patient, selects arm and vein from which to draw blood, applies tourniquet, instructs patient to make fist, selects point for insertion, swabs with alcohol, checks needle, inserts needle with quick jab, draws blood into vacutainer(s) in amount specified, seals container, removes needle and tourniquet, swabs puncture with alcohol, may apply cotton or band aid, labels samples and writes prescribed entry in chart, may arrange for other medical personnel to obtain sample if unable to obtain because of difficulty in finding vein, in order to obtain blood sample.
Performs venapuncture to obtain blood sample.

21 Compares, matches urine sample label to patient's slip or chart, dips Clinistix into urine sample, observes, compares resulting colors of stix to manufacturer's chart for each test (sugar, acetone, and albumen contents), records positive results as plus (+) or negative results as zero (0), in order to screen urine sample for excess amounts of components.
Tests urine sample to screen for excess of components.

22 Locates and removes from patient charts all records which are not

to be filed with chart (e.g., appointment card, route slip), following prescribed procedure, placing removed records in respective files, in order to prepare charts for filing.
Removes appointment slips to prepare charts for filing.

23 Greets patient sent by co-worker, talks with patient concerning fears or minor problems involving contraceptive method chosen or used, asks questions, listens to patient, determines if patient understands correct use of method, explains normal physical reactions to the method, helps the patient adapt to the method by giving patient instructions and clarifying its use, emphasizes benefits of the method, refers patient to co-worker for further diagnosis/counseling if necessary, in order to reassure patient.
Counsels patient about chosen method to reassure patient.

24 Introduces self to patients in classroom, explains, presents information on reproduction and family planning, using curriculum guide, demonstrates materials and methods, asks for, answers questions, in order to inform patients of contraceptive methods.
Presents information to inform patients about contraceptive methods.

25 Escorts patient to the next clinic activity, identified from route slip or by mentally referring to clinic flow chart, may briefly inform patient of what to expect, considering signs of uneasiness and using discretion in deciding extent of explanation, may carry and deliver chart to co-worker, in order to maintain patient flow.

Escorts patient to next clinic activity to maintain flow.

26 Anticipates need for, assembles necessary instruments and materials in exam room, maintaining prescribed aseptic conditions and using knowledge of clinic schedule/patient chart to determine service to be provided, hands appropriate materials/instruments to co-worker upon instructions or gestures, mentally using written procedure for IUD insertion to anticipate needs, in order to assist with an IUD insertion.
Hands instruments to co-worker to assist in IUD insertion.

27 Cleanses finger, explains procedure to patient, notes any physical indications of fear, reassures, calms patient, punctures finger with sterile lancet, fills capillary tube with blood, seals tube with clay, inserts tube in numbered tray, writes corresponding number on patient's route slip, directs patient to next service, in order to obtain blood specimen to be used in testing for anemia.
Draws capillary blood sample to test for anemia.

28 Considers known contraindications to using a proposed method of treatment, questions, listens to patient concerning details of previous medical and family history, allergies, home/work environment, personal preferences, etc., reads, searches patient's medical record, records relevant findings and decisions, in order to identify possible contraindications to medication/treatment.
Questions patient, reads record to identify contraindications.

29 Receives urine samples assembled by co-worker (or individual sample from patient), places Gravindex antiserum on slide, adds drop of urine, using pipette, thoroughly mixes urine and antiserum with applicator stick, rocks slide gently for designated time, adds specified amount of antigen solution after thoroughly shaking vial, mixes well with applicator stick, spreads solution over entire slide, rocks slide slowly and gently, observes for agglutination (jelling), records result as positive (+) or negative (-) on chart, disposes of materials, in order to determine if patient is pregnant.
Performs urine sample test to determine if patient is pregnant.

30 Positions step stool, gives instructions to, assists patient to sit on edge of examining table, lie back, place feet in stirrups, drapes patient with sheet, in order to prepare for examination.
Positions patient on table to prepare for examination.

31 Listens to, questions patient regarding problem with contraceptive method, compares stated signs and symptoms with specified contraindications to method that patient presently is using, recommends method change if deemed advisable, records recommendations on patient's chart, in order to determine need for method change.
Discusses problem with patient to determine need for method change.

32 Talks with, reassures, asks patient if she has noted any change in breast size or shape, any discharge from and/or change in nipple, listens to patient's comments,

records any pertinent information, in order to prepare for breast examination.

33 Tells patient to roll up sleeve, applies sphygomanometer cuff, inflates, reads pressures using stethoscope, compares readings with medically established normal ranges and with previous readings for the patient if available, referring to charts if necessary, records data, repeating procedure and/or arranging for further diagnosis if readings appear abnormal, follows prescribed procedures to remove cuff, in order to identify problem patient.
Measures, assesses blood pressure to identify problem patient.

Clinic Assistant Tasks

34 Scans chart of patient in clinic for "revisit" or "supply" appointment, reads, assesses results of any lab tests and recorded vital signs, noting any significant changes and/or deviations from the expected, talks with, listens to, questions patient, screens responses for signs and symptoms of contraceptive-related problems, analyzes findings, using discretion as to need to refer patient for further examination, records information on patient's record, in order to evaluate patient's contraceptive regime and health since last clinic.
Questions patient to evaluate health and contraceptive regime.

35 Briefs medical examiner on next patient to be seen, using route slip, patient's record, and/or hospital record as resource for information, informs of type of

patient (annual, initial, problem) and the method patient is using or desires to use, in order to provide co-worker with pertinent information concerning patient's status, medical history and contraceptive method.
Talks with medical examiner to brief on next patient.

36 Tells patient to remove shoes and to stand on balance scale, adjusts weights so that scale balances, reads, records weight on patient's chart, if visit is patient's first, measures height and records, if revisit patient, compares present weight to that recorded during previous visit, obtains difference by subtracting, records resulting weight change as ___ lbs. gained or ___ lbs. lost (or "none" for no change), in order to obtain information for use in diagnosing patient's state of health.
Weighs patient to record weight on patient chart.

37 Enters exam room after patient leaves, before next patient enters, removes used paper from exam table, throws paper and any used sponges, swabs, and other disposable items in waste container, wipes secretion stains from table, using anti-bacterial solution, puts clean paper on exam table, in order to ready exam room for use.
Cleans exam table, replaces sheet to ready room for use.

38 Greets, briefly explains need for information, reads question, paraphrasing if necessary, questions patient, listens to answers, rephrasing answers if necessary, writes answers in appropriate place on Initial Form or Revisit Form, using patient's clinic and

hospital records if applicable, in order to record identifying information on forms.
Asks questions, writes answers to record identifying information.

39 Locates, obtains, assembles requested quantities of supplies from stock room, using withdrawal slip previously filled out by self or co-worker, places slip in box provided, in order to maintain stock of supplies in work area.
Withdraws supplies from stock to maintain work area.

40 Talks to, tells patient to undress and put on gown, telling patient how much to remove and where to hang clothes, in order to prepare for examination.
Instructs patient to put on gown to prepare for exam.

41 Observes, counts quantities of supplies in stock, records quantities on inventory form, recording item description if necessary, in order to provide inventory list of supplies in stock.
Inventories supplies in stock to list supplies.

42 Reads active clinic file cards at end of month, compares, matches with referral forms returned by referral agency, telephones patients referred to GYN clinic (for whom no referral form has been received), identifies self and explains reason for calling, asks if appointment was kept, if not, asks patient reason for missing appointment, encourages patient to arrange and keep a second appointment, may offer to assist patient in obtaining appointment, records actions taken on

patient's card, in order to ascertain if patient kept GYN appointment.
Telephones referral patient to ascertain if appointment kept.

43 Scrubs, rinses, places medical instruments in special solution, using prescribed sequence of solutions for each type of instrument, discards used solutions, mixes fresh solutions following prescribed procedures, cleans work area, in order to have adequate supply of sterile instruments.
Cleans medical instruments to have an adequate supply.

44 Confers with, informs patient-mother of care and attention provided in nursery, reassures mother her child will be well cared for, may show nursery facilities, listens to any described special needs of the child, if child has any obvious signs of childhood diseases (e.g., measles), requests advice of medical co-worker before allowing child in nursery, in order to enable mother to attend clinic.
Explains available nursery care to reassure patient-mother.

45 Copies patient's name and identification number from route slip to a slip of paper, fastens slip to a sterile bottle using a rubber band, in order to label urine sample bottle.
Copies patient's name and ID to label urine sample bottle.

APPENDIX F

CODING GUIDE FOR SUBJECT BACKGROUND AND TASK ALLOCATION DATA CARD

Cols. 1-4 Subject Identification Information

Col. 1 Treatment Condition in which Subject Participated

Code	Condition
0	Control
1	Level One
2	Level Two

Cols. 2-3 Serial Number of Subject within Treatment Condition

Code	Meaning
01-99	Number assigned to subject

Col. 4 Sequence and Date of Administration of the Game in which Subject Participated

Code	Sequence and Date
1	First Administration 7/13/72
2	Second Administration 11/13/72
3	Third Administration 11/20/72
4	Fourth Administration 11/30/72
5	Fifth Administration 1/15/73
6	Sixth Administration 2/8/73

Col. 5 Blank

Cols. 6-9 State in which Subject Works

Code	State
AR01	Arkansas
IL02	Illinois
IN03	Indiana
LA04	Louisiana
MS05	Mississippi
NC06	North Carolina
OK07	Oklahoma
OR08	Oregon
SC09	South Carolina
TN10	Tennessee
TX11	Texas

Col. 10 Blank

Col. 11 Age Category Indicated by Subject

Code	Category
1	Under 21
2	21-30
3	31-40
4	41-50
5	51-60
6	Over 60

Col. 12 Blank

Col. 13 Sex of Subject

Code	Sex
1	Female
2	Male

Col. 14 Blank

Col. 15 Job Title Category which Most Closely Approximates the Job Title of the Job Currently Held by Subject

Code	Job Title Category
1	Director/Administrator
2	Assistant Director/Administrator
3	Supervisor
4	Health Educator
5	Family Planning Nurse
6	Outreach Worker
7	Other

Col. 16 Blank

Col. 17 Amount of Experience in a Program that Delivers Family Planning Services

Code	Amount
0	None
1	1-6 months
2	7-12 months
3	13-18 months
4	19-24 months

Code	Amount
5	25-30 months
6	More than 30 months
7	No Entry

Col. 18 Blank

Cols. 19-36 Per cent of Time Spent in Programmatic Activities

Columns	Code*	Programmatic Activities
19-20	00-99	Patient Recruitment
21-22	00-99	Medical Services
23-24	00-99	Patient Education
25-26	00-99	Social Services
27-28	00-99	Personnel Supervision
29-30	00-99	Program Management
31-32	00-99	Patient Records
33-34	00-99	Staff Training
35-36	00-99	Other

* Code a response of 100 per cent as 98 and code inappropriate entries as 99.

Col. 37 Blank

Cols. 38-39 Two Programmatic Activities in which Subject has had most Job Experience

Code	Programmatic Activity
0	No Entry or More than Two Entries
1	Patient Recruitment

Code	Programmatic Activity
2	Medical Services
3	Patient Education
4	Social Service
5	Personnel Supervision
6	Program Management
7	Patient Records
8	Staff Training
9	Other

Col. 40 Blank

Col. 41 Years of Education--Highest Grade Completed

Code	Highest Grade
1	1-11
2	12
3	13
4	14
5	15
6	16
7	17
8	18
9	19
0	20 or more

Col. 42 Blank

Col. 43 Degree, License, Certificate or Diploma Reported that Reflects the Highest Level of Education or Training Completed by Subject

Code	Level
0	No post high school training or education
1	Associate degree, diploma or certificate indicating post high school training or education
2	Bachelor degree
3	Master degree
4	Doctoral degree

Col. 44 Blank

Col. 45 Highest Level of Education or Training Completed by Subject Classified by Health Occupation Field

Code	Health Occupation Field
1	Administration
2	Health Education
3	Natural Sciences
4	Nursing and Related Services
5	Social Sciences
6	Social Work
7	Non-Health Occupation Fields
8	No specific occupational training or education reported
9	Medicine and Osteopathy

Cols. 46-47 Blank

Cols. 48-55 Results of Allocation of Physician Tasks

Columns	Code	Entry
48-49	00-17	No. tasks left in job
50	Blank	
51-52	00-17	No. tasks allocated to nurse
53	Blank	
54-55	00-17	No. tasks allocated to assistant

Cols. 56-57 Blank

Cols. 58-65 Results of Allocation of Nurse Tasks

Columns	Code	Entry
58-59	00-16	No. tasks left in job
60	Blank	
61-62	00-16	No. tasks allocated to physician
63	Blank	
64-65	00-16	No. tasks allocated to assistant

Cols. 66-67 Blank

Cols. 68-75 Results of Allocation of Clinic Assistant Tasks

Columns	Code	Entry
68-69	00-12	No. tasks left in job
70	Blank	
71-72	00-12	No. tasks allocated to physician

	Columns	Code	Entry
	73	Blank	
	74-75	00-12	No. tasks allocated to nurse
Cols. 76-80	Blank		

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0031	OK07	4	1	1	6	0005050020500515 00	00	5	1	7	02	08	07	04	00	12	11	00	01
0041	OK07	4	1	1	6	0510100510102015 15	00	2	1	4	06	10	01	08	00	08	11	00	01
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