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ABSTRACT

Developed by the Campus Laboratory School of the State College at Buffalo, this program description proposes a simulated work environment which could be used to train educable and trainable retardates for hotel/motel aides more effectively and economically than on-the-job training or classroom lecture instruction. The proposed method of instruction is one of using simulation techniques, including gaming, in-basket, and mechanical and multi-media. A conceptualization of the learning process is expressed in a curriculum model which emphasizes a systems analysis approach and consists of behaviorally-based learning experiences. The program contains 18 training modules each lasting 60 minutes and consisting of one video tape, supporting instructional materials, and a simulated work environment for the student. Also discussed is the use of the Critical Path Method in planning and evaluating a curriculum research program. References are included, and sample course units are appended. These procedures could be used as a generalizable curriculum model with other groups in a variety of academic and vocational areas. (SB)

A SIMULATED INSTRUCTIONAL MODEL FOR EDUCATING MENTALLY RETARDED STUDENTS FOR EMPLOYMENT IN THE HOTEL-MOTEL INDUSTRY

Campus Laboratory School
State University College at Buffalo
Buffalo, New York

in cooperation with

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Bureau of Occupational Research
Albany, New York 12224

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by

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FOREWORD

Although simulation has been used extensively by industry and the Armed Forces, its use in educational settings has been more limited. The following study describes a multi-media simulation training model designed to prepare mentally retarded students as hotel motel aides. Despite the specific nature of the suggested training program, the general procedures could be used as a curriculum model in other areas of training. The study also illustrates the use which could be made of the Critical Path Method (CPM) in planning and evaluating a curriculum research program.

The study was completed by Richard J. McCowan, Director, Campus Laboratory School, State University College at Buffalo and M. Duane Mongerson, Assistant Professor, State University College at Buffalo under a grant from the New York State Bureau of Occupational Education Research.

Miss G. Geraldine Dickson, Associate in Education Research, was project manager and coordinated this document for publication.

Educators wishing additional copies should contact the Bureau of Occupational Education Research, Education Building Annex, Room 468, Albany, New York 12224.

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INTRODUCTION

Vocational Education of the Mentally Retarded

Education for the mentally retarded is a crucial social investment. Substantial evidence is available indicating that the retarded can be profitably employed and can contribute to the general society (Baller, Charles, and Miller, 1967). Unfortunately, it is difficult to develop an educational setting which would provide an economical means of individualizing vocational instruction for the retarded.

An additional problem involves the occupational adjustment of adult retardates. Several researchers, including among others Flesher (1956), McKeon (1946), and Bobroff (1956), have noted that failure in a job is often more directly associated with social incompetence than inefficiency. Dunn (1958), observed that public school education should attempt to alleviate this social inadequacy by providing instruction in areas of responsibility, sociability, and social competence.

This report suggests that the use of a simulated work environment could be used to train educable and trainable retardates more effectively and economically than conventional on-the-job and/or classroom lecture techniques. It further suggests that simulation can be used to train retardates in the social skills demanded in a vocation.

Simulation

Simulation has been defined as the "exercise of a flexible imitation of processes and outcomes for the purpose of clarifying or explaining the under-

lying mechanisms involved, (Abelson, 1968). Normally it involves the construction of a model which is a physical or symbolic representation of all or part of a total environment. The model typically refers to a social system, (Dawson, 1962). Simulation has been used longer and more effectively in industry than in education. In Simulation and Gaming: A Symposium, the American Management Association developed a bibliography of approximately 400 books, articles, and papers in the area of simulation, (1961).

Simulation, therefore, is a technique which can be used to examine actual phenomena under controlled conditions. After a model is developed, various aspects of the model can be manipulated and the results of the manipulations can be studied. Individual students are provided with a substitute model which contains the pertinent features of a natural learning situation. Consequently, simulation assumes the tutorial functions of a teacher through the appropriate selection, organization, and manipulation of instructional materials, media, and techniques.

Simulation Techniques

Simulations have varied greatly, but in general can be classified into three broad areas, including 1) gaming, 2) in-basket, and 3) mechanical multimedia.

Gaming: Academic games enable participants to learn through completion. The popular game of Monopoly provides a good example of a simulated game in which the players purchase, sell, and mortgage properties. Abt (1966) observed that a game has four major components involving a contest among adversaries played within certain rules or constraints to achieve a goal or objective. Games include an element of enjoyment. Even war games were probably developed partially for training and partially for pleasure, (Abt, 1966). The United States War College has made extensive use of games including board games and

electronic maneuvers. A strong possibility exists that war games are outgrowths of board games such as chess, (Weiner, 1959). Educational games structure a learning experience within the framework of a realistic environment.

Although it is difficult to control the game effect, certain obvious advantages are evident. Competition often provides motivation and players receive immediate feedback from other participants in life like situations. The cost-effectiveness is relatively high, with the exception of those games which involve a costly hardware component.

Wing (1965) discussed several business and management games which have been used by universities and corporations to train executives. These include Dill's economic games, the IBM Game, and the Univac Game in which competitive business situations are simulated and individual decisions made by the players are subjected to computer analysis. A legislative game (Coleman, 1964) and a high school student "lite game" (Coleman, 1965) have been developed.

The Carnegie Tech management game (Cohen, et. al., 1960) consists of external and internal decision making. The games are developed around a given market in which several teams of players formulate decisions concerning production techniques, marketing procedures and the establishment of prices. The business environment and decision-making process are modeled on the real world. Emphasis is placed on decision making at the upper executive levels.

In-Basket: The University Council for Educational Administration (Hemphill, Griffiths and Fredericksen, 1962) developed a simulation model in the area of educational administration. A community, a school district, and an elementary school called the Whitman School were simulated. Standard administrative situations in which reactions and behaviors could be observed and recorded were developad. The learner is required to examine messages from the in-basket and prepare appropriate responses. Judgement can be evaluated since less trivial messages should be postponed. Each communication requires the learner to provide

information in various areas, such as rules, policies, or events or when presented with a problem, to discover the information required to solve it. For example, the participant may contact others to seek counsel. Earlier in-basket training programs developed by the same organization include Fredericksen, Saunders, and Ward (1957) and Fredericksen (1962). Bessant (1968) described a computer-assisted format which provides feedback to the participants. Gregg (1969) observed that 90 universities and 20,000 students in the United States, Canada, Australia, and England have had experience with the in-basket technique. The technique has been criticised by Erickson (1964) who noted that the nonverbal, covert aspects of administration are not measured.

Mechanical and Multi Media: A variety of mechanical and multi media devices, including computer based programs, have been used for simulation training. Actually, it is difficult to establish a single category in this area, since mechanical computer and multi media aids are often used in the other simulation areas which have been discussed. Wing (1965), for example, developed a computer-based Sumerian Game in which the student assumed the role of the priest-king of a Sumerian City-State of the late fourth millennium. Changing environmental factors are presented by typed information controlled by a computer program. The student is given the responsibility of developing an agricultural program which will adequately feed his subjects. A variety of factors complicate his task, such as population growth, floods, storms, and destruction by rodents. Ultimately, if the student solves the political and natural crises, he can adequately provide for his subjects.

Adams (1962) described the use of dynamic flight simulators. He concluded that prospective pilots obtained experience in 1) dealing with emergencies, 2) testing acquired knowledge and skills, and 3) responding to new situations. Newell and Simon (1961) observed how individuals solved problems and developed

a computer program based on the human problem solving process. Simulation has also been used for training medical students to make diagnoses (Swets, 1964) and to train radar operators in the Sage system (Guetzkow, 1963).

Specific educational simulation programs have also been developed. Cruickshank and Broadbent (1968) used role playing procedures to train "typical" teacher problems. The materials are published in the Teaching Problems Laboratory (TPL) (Cruickshank, Broadbent, and Bubb, 1967). The TPL, which was developed as a simulation device for use in preservice and inservice teacher education programs, recreates the classroom of a fifth grade teacher. It provides descriptive data on a simulated school and school district, cumulative record cards, a curriculum guide, and a faculty handbook, and uses filmed sequences to simulate classroom activities. TPL situations, selected from a study which analyzed problems most frequently encountered by teachers, are presented in filmed or written form.

Kersh (1961) and Twelker (1967) have simulated the classroom setting of Mr. Land's sixth grade class. Mr. Land is the fictitious supervising teacher with whom the student teacher works. Cumulative records are available for each student and 60 different problem sequences have been developed on sound color motion picture film. Depending upon the reaction of the student teacher, alternate class reactions occur on the screen. In this situation, feedback is immediate.

In a recent study, Twelker (1969) described a number of instructional simulations. The Simutech Trainer has been used to train Air Force electronics technicians by using a computer program to control animated schematics, textual and diagrammatic teaching material in a high speed, rapid access televised presentation. The student receives instructions from a simulated operations room through a squawk box. Servicemen at the U.S. Army Ordinance School at the Aberdeen Proving

Ground at Maryland use a Trainer-Tester Simulator which substitutes repair worksheets that list a specific problem, a symptom section, and corrective-action sections. The latter section is concealed by a silver overlay which can be removed by using an eraser. Another military training technique uses a moulage kit which prepares individuals for battle emergencies. Plastic overlays simulate torn flesh, broken bones, severed veins and arteries.

Although the cost of developing comparable simulation units is relatively high compared to gaming, in-basket, and group interactive processes, the effectiveness and the utility seem high. The preceding descriptions are representative examples of the numerous projects which have been conducted.

Use of Simulation with Mentally Retarded Students

A review of the literature did not reveal any systematic attempts to use simulation as a training technique with the MR. Vocational training programs for the retarded typically involve supervised on-the-job work experiences with a minimum amount of deliberate, preplanned activities. Generally the jobs could be classified as unskilled or requiring skills which could readily be acquired in a brief period of time.

Travers (1964) questioned whether realistic instructional programs are superior to simplified representations. He felt that simplified representations contained fewer distracting details and enabled learners to concentrate on the most significant details of a lesson. In discussing this concept, Phillips (1966) noted that it might be inappropriate for a class to take a field trip until the important elements had been presented in a simplified manner. The class would then be able to concentrate on important factors and not be distracted by those which were unimportant.

Despite the relative simplicity of the competencies required for unskilled jobs, MR subjects exhibit far greater learning defects than those of normal

ability. Berkson and Baumeister (1967) and Baumeister and Kellas (1968) showed that the reaction time of MR's was slower and more variable than subjects normal ability. Others (Lillie, 1968; Rosen, Kivitz, and Rosen, 1965) have demonstrated that the motor learning of retardates is significantly inferior to those of normal intelligence. Zeamon and House (1962) concluded that MR's were distractable and had difficulty distinguishing relevant stimuli from irrelevant. These findings indicate that the preparation required for the vocational training of retardates should differ markedly from that received by the general population. The program should include opportunities for extensive reinforcement of essential instructional details presented with a minimum of perceptual distractions within a nonthreatening environment. A simulated work experience seems to offer such an opportunity. Consequently, it could be hypothesized that simulation would enhance the learning potential of MR's particularly in vocational areas.

Definition of Terms

For the purpose of this curriculum model, the following terms are defined.

Critical Path Method: a systems analysis in which learning activities or behavioral tasks are visually sequenced and scheduled to determine the resource limits of each task.

Hotel-Motel Housekeeping Aide (maid): cleans rooms and halls in such establishments as hotels, motels, restaurants, clubs, depots, beauty parlors, and dormitories, performing any combination of the following duties: Sweeps and mops floors, vacuums carpets, dusts furniture, cleans bathroom fixtures, and brushes curtains, draperies, and upholstered furniture, using broom, mop, vacuum cleaner, brushes, sponges, cloths, detergents, polish, and disinfectant solutions, Empties wastebaskets and ashtrays, replenishes towels and soap, and fills restroom dispensing machines. Washes

walls, woodwork, and windows, and polishes brass and chromes. Sorts, counts, folds, marks, or carries linens. Makes beds. Checks wraps and renders personal assistance to patrons. Moves furniture, hangs drapes, rolls carpets, and replaces light globes. May be designated according to type of establishment as Beauty-Parlor Maid, Motel Maid, or according to area cleaned as Chambermaid. (Definition of Wirtz and Goodwin, 1965.)

Mentally Retarded: the following categories will be used to define the term "mentally retarded" (MR).

a) Educable mentally retarded (EMR) - individual I.Q. score ranging from 50 to 75.

b) Trainable mentally retarded (TMR) - individual I.Q. score ranging from 35 to 50.

Simulation: an exercise of a flexible imitation of processes and outcomes for the purpose of clarifying or explaining the underlying mechanisms involved. (Abelson, 1968). Simulation, therefore, creates a model environment which can be used to examine actual phenomena under control.

Major Objectives

The major objectives which were designed for this curriculum model are as follows:

1. Develop in each trainee an awareness of employee - employer relationships and basic working conditions associated with her employment.
2. Provide simulated experiences for each trainee in developing job skills related to motel-hotel housekeeping aide employment.
3. Develop in each trainee sanitary procedures in cleaning bathroom, guest rooms, and closets.

4. Develop an understanding of the need for proper care of tools, materials, and equipment used in cleaning each room.

Minor Behavioral Objectives

The minor instructional objectives are behavioral in nature. Each of the behavioral objectives is derived from one of the three domains of learning, that of the cognitive, affective, and psychomotor. A listing of selected objectives which each student should express in an overt manner follows:

1. Identify six of eight motel/hotels in the community.
2. Demonstrate the proper procedures in scrubbing and waxing a tile floor.
3. List three types of diseases which can be found in a motel/hotel bathroom.
4. Demonstrate the proper procedures in changing bed linens in the guest rooms.
5. Identify the three basic types of materials used in removing spots from carpets.
6. Demonstrate the proper procedures in cleaning bathroom walls.
7. Identify five types of hand operated equipment that can be used by a housekeeping aide.
8. Verbally describe two reasons for the importance of proper dress while on the job.
9. Demonstrate the proper procedures in cleaning a wash basin or sink in the bathroom.
10. Identify two materials which can be used by the housekeeping aide in cleaning windows.
11. Demonstrate the use of carpet sweepers and vacuum machines in cleaning carpets.

12. Identify and correctly demonstrate entering room procedures listed in the appendix.
13. Demonstrate correct procedures and techniques in cleaning windows.
14. List or verbally describe three reasons for the importance of storing, maintaining, and replenishing cleaning supplies.
15. Identify and demonstrate the four procedures in cleaning furniture and/or woodwork in a motel/hotel room.

Additional behavioral objectives should be derived from the curriculum content presented in the appendix.

INSTRUCTIONAL PROGRAM

Essentially the program consists of an instructional system composed of an empirically developed set of learning experiences designed to train mentally retarded students in specific vocational skills. This behaviorally based program is designed to produce specific outcomes with a high degree of reliability. The system enables each student to enter the program at an appropriate stage, progress to higher levels of skill when the preliminary task is learned, and recycle through the series when performance is considered unsatisfactory. Each student should ultimately demonstrate the ability, both under simulated and real experience situations, to accomplish the specified outcomes.

The program proposed in this study is intended as a generalized model from which similar training systems can be developed. Eighteen 60 minute training modules are contained in this system. Each module is a planned instructional unit consisting of one video tape ranging from 5 to 15 minutes in length and supporting instructional materials including slides and transparencies. A simulated work environment will enable the subjects to practice skills and reinforce the specific skills reviewed by the media presentation in each module.

A microteaching technique will be incorporated to enable each student to evaluate his performance of the behavioral tasks learned during the module until he masters the required level of technical proficiency.

Essentially, through a systems approach, this instructional model can be used to organize an occupational training program for MR students. Basically a systems approach attempts to:

1. translate general goals both specific and operational objectives
2. design procedures to accomplish these objectives
3. identify relevant variables
4. develop a model which suggests relationships among these variables
5. implement the model
6. evaluate results in terms of stated objectives (Silvern, 1965)

CPM As An Organizational Tool

The procedures used in the study conform to those developed by Corey (1968), who discussed those principles he considered most important in developing programed instructional units. The theoretical approach to programed instruction can readily be adopted to simulation training.

1. The initial step in a simulated program should be the development of a clear and specific definition of terminal objectives. These should be described in terms of observable and/or measurable behaviors.

2. Preliminary behaviors which lead to terminal behaviors should be analyzed logically and sequenced in a hierarchical order.

3. Each behavior should be based on the objective which immediately precedes it.

4. The program should permit a student to begin at a point appropriate to his level of ability and achievement.

5. Each student should be able to proceed at an independent rate of speed.

6. Students should be actively involved in each step of the program.

7. Immediate evaluation should be conducted and feedback should be given to the student concerning his performance.

8. A continuous evaluation will enable the teacher to make regular modifications in the program.

In developing an instructional prototype, the terminal instructional objective must be specified. In this model, for example, the terminal objective is to train MR students in the skills required to function as a hotel/motel aide. After this is accomplished, each skill required to achieve this objective must be identified. In other words, the instructional program must be analyzed to determine what skills or knowledge are essential or desirable before the learner continues to the next learning phase.

Curriculum theorists have discussed the desirability of organizing learning experiences. Gagne' (1967) proposed that the types of learning could be classified into an eight step hierarchy based on the concept that each successive type of learning is dependent upon the acquiring of the prerequisite skill. Tyler (1967) felt that the actual subject matter should determine the sequencing of instruction. He indicates that behavioral objectives should not be developed to select content, but to develop a learning design in which each phase of the educational program can be evaluated. Gagne' implies that curriculum is a sequence of units arranged so that each segment can be taught as a single act.

The training model suggested in this study could be classified more precisely as a vertical course structure. Briggs (1968) described this structure as one in which a single best fixed sequence could be developed. Consequently,

the first objective should be taught, then the second, the third, and so on with a single competence taught at each level. Unlike a hierarchical structure, vertical structure implies that little or no lateral transfer exists among competencies.

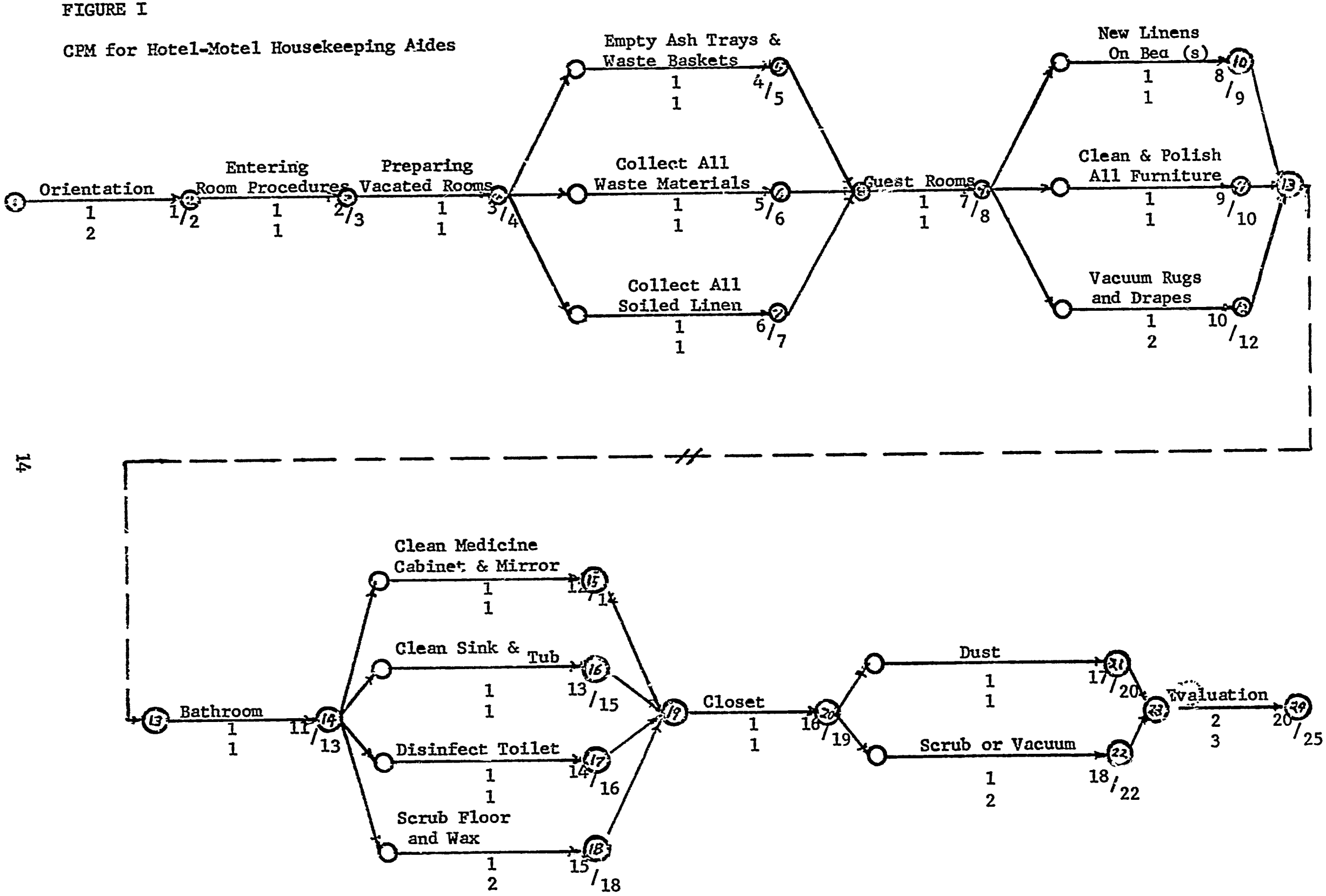
The procedures used in the study will be structured by using the Critical Path Method (CPM). This method provides a visual means of sequencing or scheduling of specific learning activities or tasks for the students.

The Critical Path Method was developed by an operations research group financed by the E. I. duPont de Nemous Company, 1956. By 1960, many construction companies had adopted this new management tool. About the same time, problems evolved in the development of the Navy's Polaris Missile Project (Fleet Ballistic Missile Program). Program Evaluation and Review Technique (Pert) was developed to coordinate the contract work of over 300 companies on the Polaris.

In analyzing and comparing the planning and control systems of CPM and PERT, it should be noted that the graphic presentation of the industrial activities are very similar. However, a significant difference occurs in the estimating of the time scheduling of activities. Mathematically, PERT is more concerned with the statistical probability of the completion of the industrial activity; whereas, CPM, in the construction industry, is based upon past experiences or activities which can be estimated with a reasonable degree of accuracy. (United States Army Ordnance Corps, 1963; Radcliffe, 1967.)

FIGURE I

CPM for Hotel-Motel Housekeeping Aides



Analysis & Implementation

Numerous terms are usually associated with CPM for the purposes of this model only a few of the more pertinent terms are defined. They include:

Activity: a learning task which pupils are expected to accomplish in a given length of time.

Early Start Time: the earliest time an activity or learning task can be begun by the learners.

Float: the time available to complete the learning tasks; difference between early finish time and late finish time.

Late Finish Time: the maximum time in which the learning task should be accomplished by the learners.

Monitoring: the means used by the educator in evaluating the accomplished learning tasks within the computer time intervals.

Node: a circle which represents the beginning or end of the learning task. (Radcliffe and others; 1967)

The graphic representation of the Hotel/Motel and Training network in Figure I serves as the structure for a more elaborate network of simulated learning activities which will be developed and tested during 1969-70.

In order to clarify several questions which might have arisen in examining Figure I, a brief description of two of the simulated learning experiences are as follows:

Figure II

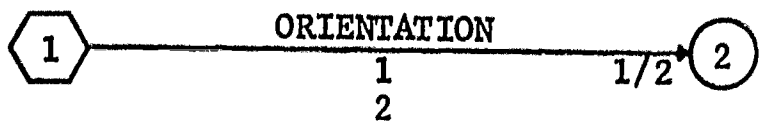


Figure II represents the first day of the training program. The numbers $\frac{1}{2}$ between Nodes 1 and 2 refer to the early start time and late finish time. Below Node 2, the number 1/2 are the cummulative times in sessions in which each session equals

60 minutes of training time. A variety of training experiences will be presented to the students. Specific duties performed by hotel/motel aides in selected hotels and motels in the community are presented via video tape and/or 35 mm slides. Critical incidents pertaining to modes of dress and job behavior should be included as students interact with one another in order to conceptualize specific behavioral objectives associated with their occupation.

Figure III

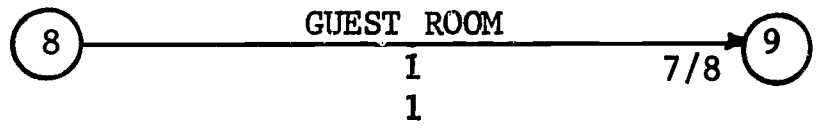


Figure III refers to the trainee's instructional orientation session to the activity entitled Guest Room (s). Specific learning tasks related to cleaning such things as furniture and carpets or changing bed linens are presented through the medium of video tape. In analyzing Figure III, the numbers $\frac{1}{1}$ between Node 8 and 9 represent the minimum and maximum times needed during the orientation period. The figure 7/8 presented below Node 9 pertain to the total instructional sessions needed to complete this segment of the instructional program. A float time of one session or 60 minutes is allocated to Node 9 since the 7 refers to the early completion time or the early start time for the activity entitled New Linens on Bed (s) located between Nodes 9 and 10. The number 8 designates the late finish time for the instructional activities to Node 9. In other words, the numbers 7/8 are really the cummulative times of all nodes to Node 9.

Each of the instructional activities should be monitored or evaluated during the training program. A suggested research design for final analysis of the training program is presented in the following section entitled Statistical Design.

STATISTICAL DESIGN

Recently curriculum theorists have shown greater interest in assessing the effects of educational programs. Efforts have been made to evaluate programs on the basis of whether the participants attain the desired performance criteria. This model program could be evaluated on this basis. The following alternate evaluation design conforms more closely to a traditional experimental model.

Subjects should be matched on the basis of age, sex, race, and I.Q. N matched sets of students could be formed. Subjects from each of these sets should be randomly assigned to one of the treatments described above or the control group. When a significant overall F ratio is observed, each treatment group should be compared to the control by the use of Dunnett's T statistic (Winer, 1962). The basic design could be classified as a randomized block design.

Hypotheses

For each hypothesis formulated for this study, the following differential effects are predicted.

a) Each treatment group which participates in vocational training will exhibit significantly greater gains than the control group (T_3) on each criterion variable.

b) Subjects (S's) participating in SVT will exhibit significantly greater gains on the criterion variables than T_2 (OJT) and T_3 (control).

c) S's in T_2 will exhibit significantly greater gains on each criterion variable than subjects in T_3.

Hypothesis 1: The acquisition of vocational skills as hotel/motel aides will be significantly improved for those S's who participate in vocational training.

Hypothesis 2: The motor skills of S's who participate in vocational training will be significantly improved.

Hypothesis 3: The anxiety level of S's who participate in vocational training will be significantly reduced.

Hypothesis 4: The verbal ability of S's who participate in vocational training will be significantly improved.

Hypothesis 5: The social competence of S's who participate in vocational training will be significantly improved.

Criterion Variables:

The criterion variables under investigation and the instruments suggested to measure them are listed below:

Criterion Variables	Instruments
1. Test of vocabulary and relevant terms	Locally developed achievement test based on curriculum
2. Motor coordination	Lincoln-Oseretsky Motor Development Scale
3. Anxiety	Test Anxiety Scale for Children
4. Specific vocational skills	Behavioral checklist completed by trained observers.
5. Social competence	Syracuse Scales of Social Relations (revised by DeJung, 1966)

Data on the preceding criterion variables will be gathered on a pre and post test basis by trained observers or by individual testing, as appropriate.

Treatment

Treatment 1 (T_1) - Experimental - Simulation

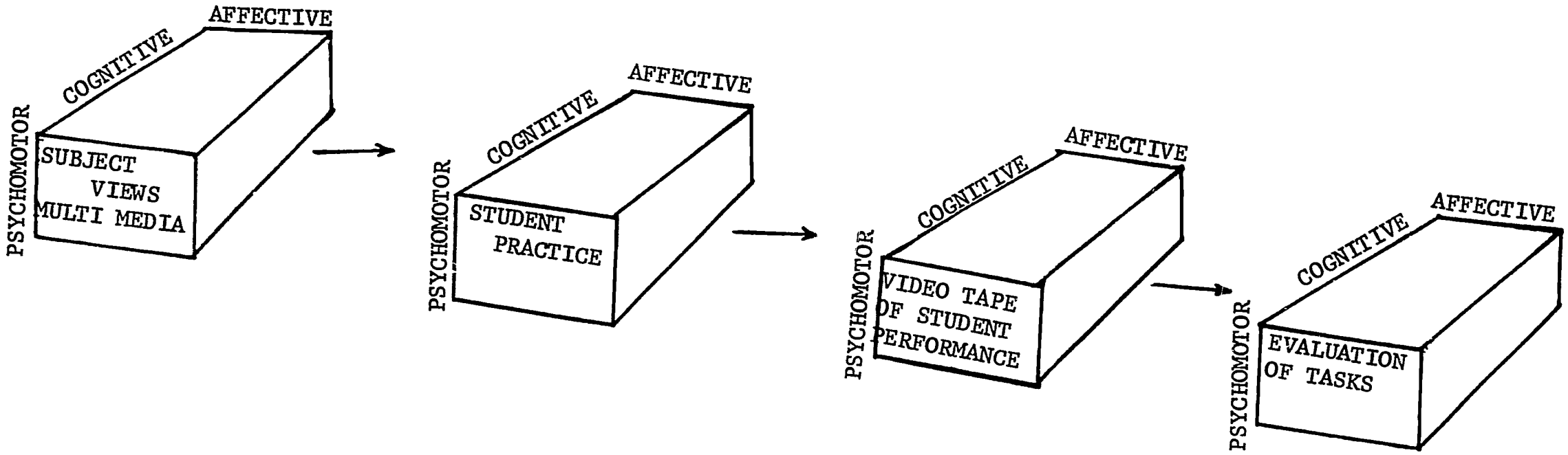
The experimental group (T_1) should utilize simulated training materials derived from specific learning activities identified as hotel/motel housekeeping aides in Appendix 1 and from occupational consultants. The learning activities are sequenced and scheduled in the section entitled "Critical Path Method." A multi-media approach, primarily video taped lessons, supplemented by 35 mm. slides, will be used to present the psychomotor, affective, and cognitive domain learning tasks to the student. For example, in Figure IV, the students may either be presented with a critical incident in the affective domain which may relate to employee relationships or to a video taped psychomotor task which could demon-

Figure IV

LEARNING ACTIVITIES MODEL

FOR

EXPERIMENTAL GROUP (T_1)



strate how a sink should be cleaned. In the case of the psychomotor task, the student will practice cleaning the sink. When he believes he has mastered the task, he will be video taped. If the task performance does not meet stated performance criteria, the subject will be required to repeat the learning cycle. Once the criterion is met, the student will start a new learning activity or task.

Treatment 2 (T_2) - Experimental - On-the-job Training

The on-the-job training group (T_2) will utilize actual hotel or motel rooms during their training program. Related activities will be discussed in the school setting whenever feasible. For example, appropriate dress, job behavior, and other related material can be discussed or verbally described in a classroom. Figure V represents the learning activities model which will be followed by the group. The instructor will demonstrate the psychomotor task (cleaning of a sink) in the motel and the subject will then practice the activity. The instructor will evaluate the student's performance of the task, eg., the subject will repeat the task. In order to control for length of training, no student in either treatment 1 or 2 will repeat the task more than twice.

Treatment 3 (T_3) - Control Group - No Treatment

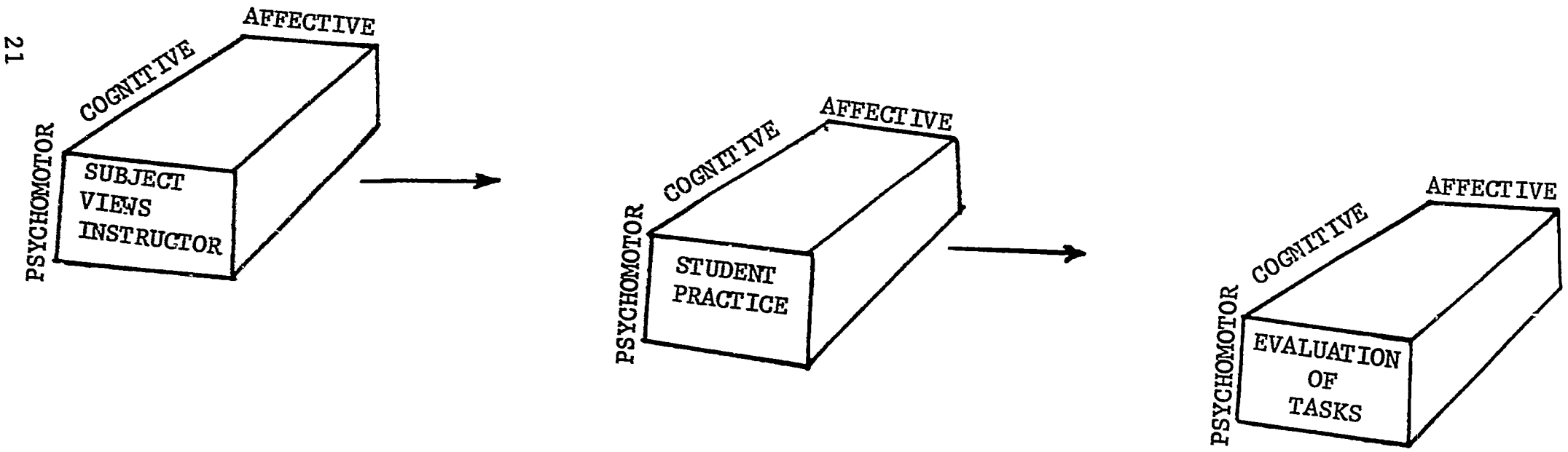
The control group will not participate in either treatment. The group will not receive any vocational training in the area of hotel/motel housekeeping aides. Its only purpose is to provide a criterion against which each of the groups may be compared.

Figure V

LEARNING ACTIVITIES MODEL

FOR

ON-JOB-TRAINING GROUP (T_2)



Summary

This study developed a simulated vocational training model. Although the specific program involved the training of mentally retarded students as hotel/motel aides, the procedures could be used as a generalized curriculum model with other groups in a variety of academic and vocational areas.

The discussion included a brief review of various simulation techniques including 1) gaming, 2) in-basket, and 3) mechanical and multi media. The potential use of simulation training techniques with mentally retarded students was discussed. The total curriculum program was organized by the use of the Critical Path Method (CPM). An evaluation design was also proposed.

APPENDIX I

COURSE UNIT I

ORIENTATION TO THE NATURE AND SCOPE OF THE WORK [1]

Suggested Training Time

6 Hours

Objectives

To orient trainees to the services and work of Hotel and Motel Housekeeping Aides. During this unit, trainees will develop a job philosophy and learn to maintain good working relations with other people.

Course Unit Outline

A. Developing a job philosophy

1. Scope of the work
   a. Knowledge of the hotel or motel house regulations concerning employee procedures
   b. Cleaning rooms and preparing them for new guest occupancy
   c. Types of security procedures to protect guests, and worker honesty, ability to follow instructions, neat appearance, and ability to work swiftly and steadily
2. Value and importance of the work to employer, guests and self
3. Advantages of employment in this field
4. Advancement opportunities

B. Maintaining good working relations

1. Desirable personal qualities - courtesy, cooperation, punctuality, dependability,

C. Basic conditions of employment

1. Typical standards and regulations
2. Wages
   a. Local scale
   b. Tax deductions
3. Social Security
   a. Purposes and benefits
   b. Deductions
4. Insurance and Workman's Compensation
   a. Purposes and benefits
   b. Deductions
5. Labor relations
   a. Hours of work
   b. Industrial standards for women

[1] Reprinted from:

Hotel and Motel Housekeeping Aide (Manpower Development and Training Program), U. S. Dept. of HEW, Office of Education, 1964.

COURSE UNIT II

STARTING THE WORKDAY

Suggested Training Time — 4 Hours

Objectives

To familiarize trainees with ways to start the workday effectively and pleasantly.

Course Unit Outline

A. Dressing for work
   1. Personal hygiene essentials
   2. Good grooming - well-combed hair, clean finger nails, appropriate makeup
   3. Suitable clothing-fresh uniform daily, and appropriate shoes

B. Checking in for work
   1. House rules for starting the day's work-common procedures
      a. Sign in or punch the time-clock
      b. Get room pass key from the housekeeper or linen room
      c. Obtain room report to learn number of vacancies and number of occupied rooms to be made up
      d. Get blanks on which to make work report
      e. Go to linen room to get the amount of linen and supplies needed to make up the double and single rooms on the assigned room report
      f. Arrange supplies neatly on work cart and proceed to section assigned for work

COURSE UNIT III

USE OF EQUIPMENT AND SUPPLIES, AND SAFETY PRECAUTIONS

Suggested Training Time — 8 Hours

Objectives

To develop skills in the use and care of cleaning equipment, materials, and supplies; to learn basic safety practices.

Course Unit Outline

A. Use and care of equipment and supplies
   1. Cleaning equipment
      a. Vacuum cleaner-proper use of attachments and dust removal
      b. Electric or hand brooms-how and where used
      c. Wet and dry mops-how and where used

2. Cleaning and sanitary supplies
   a. Soaps and detergents
   b. Special cleaners
   c. Disinfectants
   d. Other sanitary supplies

B. Safety practices

1. In room
   a. Turn on lights before entering darkened room
   b. Empty wastebaskets by turning upside down over old newspaper
   c. Use care in handling furniture to avoid back strain, splinters, or cuts
   d. Check electric cords to prevent someone from tripping over them

2. In bathroom
   a. Use step stool when hanging shower curtains (NOT edge of tub)
   b. Watch for razor blades

3. Other safety measures
   a. Be alert to broken glass on floors
   b. Use knob when closing door (NOT edge of door)
   c. Do not plug in vacuum or other electric appliances when hands are wet

COURSE UNIT IV

PROCEDURES FOR CLEANING HOTEL AND MOTEL ROOMS

Suggested Training Time — 42 Hours

Objectives

To help trainees develop the skills and knowledge they will need to clean and straighten a hotel or motel room.

Course Unit Outline

A. Major steps in making up a room

1. Entering a room
   a. Check indicator on lock or look for "Do Not Disturb" sign to see if room is occupied
   b. Knock on door with fingers, not keys, if room seems to be vacant
   c. Unlock door, and announce yourself "the maid." If occupant is still in room, withdraw quietly
   d. Fill out room report indicating condition of each room
   e. Report to housekeeper before starting work in the room

2. Prepare vacated rooms for new guests. (Vacated rooms are cleaned and made up first, so that the front office can make them available to new guests.)
   a. Open door wide and keep open until room is finished
   b. Turn on every light to test bulbs and report or replace those burned out
   c. Raise blinds to check if working properly
   d. Open windows or adjust air conditioner according to instructions
   e. Note any damage or missing items on room report
   f. Report any personal articles left by guests

3. Cleaning the room
   a. Empty partly filled glasses in toilet and take to service shelf
   b. Empty ash trays on to dampened newspaper, not into toilet; wipe tray
   c. Empty wastebaskets on to dampened newspapers, check for guest articles in trash, roll up newspaper, put in trash bag on cart
   d. Wipe out wastebasket, and put in fresh bottom liner
   e. Collect and wrap all soiled linen in a sheet and place in soiled linen bag in cart
   f. Make up bed according to procedure required by the supervising housekeeper, and turn mattress on specified days
   g. Clean furniture and woodwork
      (1) Clean and polish all wooden furniture, dust inside of drawers of chest and report any guest belongings, check for extra blanket stored in chest
      (2) Dust telephone and disinfect mouthpiece
      (3) Dust upholstered furniture with a brush or a vacuum attachment
      (4) Wipe venetian blinds, baseboard, door moldings, and window sills with dust cloth or damp cloth

4. Cleaning the bathroom
   a. Clean medicine cabinet, mirror, and light fixtures
   b. Clean soap dish and wash basin using the cleaning materials required by the management
   c. Polish bowl and fixtures with clean, dry cloth
   d. Clean soap and dust from wall tile over tub
   e. Wipe shower curtain or sliding glass doors with damp cloth
   f. Clean rubber bath mat and hang it over edge of tub
   g. Scrub, dry, and polish bathtub
   h. Clean inside of toilet bowl with brush and put in disinfectant
   i. Wash seat and outside of bowl with disinfectant, and apply the paper band indicating sanitary cleaning
   j. Dust inside of door and window sill
   k. Scrub floor, according to house procedures
   l. Replace bath rug if soiled

5. Cleaning the closet
   a. Dust shelf and racks checking on correct number of hangers
   b. Scrub closet floor or if carpeted, use vacuum cleaner
   c. Replace laundry bag

6. Replacing guest supplies
   a. Hang number of fresh towels required for each room, and place fresh bath mat
   b. Replace wrapped soap, sterilized drinking glasses, toilet tissue, or other items supplied by the management
   c. Replace stationery and telephone pads

7. Cleaning the floor
   a. Vacuum the carpet
   b. Clean carefully under furniture and in corners

REFERENCES

Abelson, R. P. "Simulation of social behavior." The Handbook of Social Psychology, Vol. 2 (ed. by G. Lindzky and E. Aronson). Massachusetts: Addison-Wesley Publishing Co., 1968, 274-356.

Abt, C. C. Games for Learning. Cambridge, Massachusetts: Educational Services, Inc. Occasional Paper #7, 1966.

Adams, J. A. "Some considerations in the design and use of flight simulators." (ed. by H. Guetzkow), Simulation in Social Science Readings. Englewood Cliffs, N. J.: Prentice Hall, 1962, 19-37.

American Management Association. Simulation and Gaming: A Symposium. The Association, 1961.

Baller, W. R., Charles, D. and Miller, E. "Mid-life attainment of the mentally retarded: A Longitudinal Study." Genetic Psychology Monographs, 75: 1962, 235-329.

Bandura, A. and Walters, R. H. Social Learning and Personality Development. New York: Holt, Rinehart and Winston, Inc , 1963.

Baumeister, A. and Kellas, G. "Distribution of reaction times of retardates and normals." American Journal of Mental Deficiency, 72: 1968, 715-18.

Berkson, G. and Baumeister, A. "Reaction time variability of mental defectives and normals." American Journal of Mental Deficiency, 72: 1967, 262-66.

Bessant, W. A feedback procedure for simulation of administrative in-basket problems. Paper presented at AERA Symposium on Feedback in Simulation Techniques, New York, 1967.

Bloom, B. S. (Ed.) A Taxonomy of Educational Objectives. Englewood Cliffs: Prentice-Hall, Inc., 1966.

Bobroff, A. "Economic adjustment of 121 adults formerly students in classes for the mental retardates." American Journal of Mental Deficiency, 60: 1956, 525-35.

Boocock, S. S. "The life career game." Personnel and Guidance Journal, 46: 1947, 328-334.

Boocock, S. S. and Schild, E. O. Simulation Games in Learning. Beverly Hills, Calif.: Sage Publications, Inc., 1968.

Briggs, L. J. Sequencing of Instruction in Relation to Hierarchies of Competence. Pittsburgh, Pennsylvania: American Institutes for Research, 1968.

Cohen, K. J. (et al) "The Carnegie Tech management game." The Journal of Business, 33: 1960, 303-2P.

Cohen, K. J. (et al) "The Carnegie Tech management game." (Ed. by H. Guetzkow) Simulation in Social Science: Readings. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1962.

Coleman, J. S. "Collective decisions." Sociological Inquiry, 34: 1961, 166-181.

Coleman, J. S. "The use of electronic computers in the study of social organizations." European Journal of Sociology, 6: 1965, 89-107.

Collins, F. T. Manual Critical Path Techniques for Construction. Berkeley: Know How Publications, 1965.

Cook, D. L. Program Evaluation and Review Technique: Applications in Education, OE-12024, Cooperative Research No. 17, U. S. Government Printing Office, Washington, 1966.

Cooley, W. and Hummel, R. "Systems approaches in guidance." Review of Educational Research, 1969, 39; 251-62.

Corey, S. M. "The nature of instruction." Programmed Instruction, 66th NSSE Yearbook - Part II (Ed. by P. Longe). Chicago, Illinois: The U. of Chicato Press, 1967, 5-27.

Corsini, R. J., Shaw, M. E. and Blake, R. R. Roleplaying in Business and Industry. New York: The Free Press of Glencoe, Inc., 1961.

Cregg, R. T. "Preparation of administrators." Encyclopedia of Educational Research (Ed. by R. L. Ebel). New York: The Macmillan Company, 1969, 993-1004.

Cruickshank, D. R. Simulation: new directions in teacher preparation. Phi Delta Kappan, 48: 1966, 23-24.

Cruickshank, D. R., Broadbent, F. W. and Bubb, R. L. Teaching Problems Laboratory. Chicago: Science Research Associates, Inc., 1967.

Cruickshank, D. R. and Broadbent, R. W. An Investigation to Determine Effects of Simulation Training on Student Teaching Behavior. (unpublished report USOE Cooperative Research Grant S-0798, mimeographed, 21 pp., 1968.)

Culbertson, F. M. "Modification of an emotionally held attitude through role-playing." Journal of Abnormal and Social Psychology, 61: 1956, 256-61.

Dawson, R. E. "Simulation in the social sciences." In H. Guetzkow (ed.) Simulation in Social Science: Readings. Engelwood Cliffs, N. J.: Prentice-Hall, Inc., 1962.

Dunlop, R. S. and Hintergardt, B. C. The Counselor's Week: A Simulation for Counselor Trainees. Scranton, Pennsylvania: International Test-Book Co., 1968.

Dunn, L. "Mentally retarded children." Encyclopedia of Educational Research. (Ed. by C. Harris) New York: The Macmillan Company, 1960, 835-48.

Edwards, A. L. Experimental Design in Psychological Research. New York: Holt, Rinehart and Winston, 1962.

Erickson, D. A. "Dimensions of administrative performance that Hemphill missed: Review of Administrative Performance and Personality: A Study of the Principal in a Simulated Elementary School, by J. Hemphill et al." School Review, 72: 1964, 490-8.

Federal Electric Corporation. A Programmed Introduction to PERT. New York: John Wiley and Sons, Inc., 1963.

Flesher, I. "Needle trades opportunities for the mentally retarded." American Journal of Mental Deficiency, 61: 1953, 463-76.

Frederickson, N., Saunders, D. R. and Wand, B. "The in-basket test." Psychological Monogram, 71: No. 9, 1957.

Frederickson, N. "In-basket tests and factors in administrative performance." Simulation in Social Science: Readings. (Ed. by H. Guetzkow) Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1962.

French, W. Behavioral Goals of General Education in High School. Russell Sage Foundation, 1957.

Gagne, R. M. The Conditions of Learning. New York: Holt, Rinehart and Winston, Inc., 1967.

Guetzkow, H. Simulation in Social Science: Readings. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1962.

Guetzkow, H. (et al) Simulation in International Relations: Developments for Research and Teaching. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963.

Hemphill, J. K., Griffiths, D. E. and Frederickson, N. Administrative Performance and Personality. New York: Teachers College, Columbia, 1962.

Hovland, C. I. "Computer simulation of thinking." American Psychologist, 15: 1960, 687-93.

Janis, I. L. and King, B. T. "The influence of role-playing on opinion change." Journal of Abnormal and Social Psychology, 49: 1954, 211-18.

Kerlinger, F. N. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, Inc., 1964.

Kersh, B. Y. "The classroom simulator: An audio-visual environment for practice teaching." Audio Visual Education, 6: 1961, 447-8.

Lillie, D. "The effects of motor development lessons on mentally retarded children." American Journal of Mental Deficiency, 72: 1968, 803-8.

Loughary, J. W., Friesen, D., and Hurst, R. "Autocoun: a computer based automated counseling simulation system." Personnel and Guidance Journal, 45: 1966, 6-15.

Loughary, J. W. "Systems and simulation in counselor education." Paper presented at the annual meeting of the American Educational Research Association, Chicago, Illinois, 1968.

Mager, R. F. Preparing Objectives for Programmed Instruction. San Francisco: Fearon Publishers, Inc., 1962.

McKeon, R. "Mentally retarded boys in war time." Mental Hygiene, 30: 1946, 47-55.

Moder, J. J. and Phillips, C. R. Project Management with CPM and PERT. New York: Reinhold Publishing Corporation, 1964.

Newell, A. and Simon, H. "Computer simulation of human thinking." Science, 134: 1961, 2011-17.

Orcutt, G. H. "Simulation of economic systems." The American Economic Review, 50: 1960, 893-907.

O'Reilly, R. P. and McCowan, R. J. "A comparison of two learning theories." Child Study Center Bulletin, 5: 1969, 21-29.

Phi Delta Kappa. Simulation Models for Education. Fourth annual Phi Delta Kappa symposium on educational research. Phi Delta Kappa, Inc., 1965.

Phillips, M. G. "Learning materials and their implementation." Review of Educational Research, 36: 1966, 373-9.

Radcliffe, B. M. and others. Critical Path Method. Chicago, Illinois: Cahners Publishing Company, Inc., 1967.

Rosen, M., Kivitz, M. and Rose, B. "Uni-model and cross model 'coding' in the mentally retarded." American Journal of Mental Deficiency, 69: 1965, 666-73.

Shubik, M. "Simulation of the industry and firm." The American Economic Review, 50: 1960, 908-19.

Silvern, L. "Systems analysis and synthesis in training and education." Automated Education Handbook, November, 1965, 1-25.

Stanley, J. C. and Klausmeier, H. J. "Opinion constancy after formal role-playing." Journal of Social Psychology, 46: 1957, 11-18.

Swets, J. A. "Some possible uses of a small computer as a teaching machine." Datamotion, 10: 1964, 33-39.

Travers, R. M. (Ed.) Research and Theory Related to Audiovisual Information Transmission. USOE Interim Report Contract No. 3-20-003. Salt Lake City: Bureau of Educational Research, U. of Utah, 1964.

Tyler, R. W. "Analysis of strengths and weaknesses in current research in science education." Journal of Research in Science Teaching, 5: 1967, 52-63.

Twelker, P. A. "Classroom simulation and teacher preparation." The School Review, 75: 1967, 197-204.

Twelker, P. A. Simulation: An Overview Instructional Simulation: A Research Development and Dissemination Activity. (Ed. by P. A. Twelker) Monmouth, Oregon: Teaching Research Division, Oregon State System of Higher Education, 1967, 1-71.

U. S. Army Ordnance Corps. "PERT-program evaluation review technique." U. S. Army Pamphlet, 85: 1963, 560-1.

Utsey, J., Wallen, C. and Beldin, H. O. "Simulation: a breakthrough in the education of reading teachers." Phi Delta Kappa, 47: 1966, 572-4.

Varenhorst, B. B. "The life career game: practice in decision making." Simulation Games in Learning. (Ed. by S. Boocock and E. Schild) Beverly Hills, California: Sage Publications, Inc., 1968.

Weiner, M. G. An Introduction to War Games. Santa Monica, California: The Rand Corporation, August 17, 1959.

Winer, B. J. Statistical principles in experimental design. New York: McGraw-Hill Book Company, Inc., 1962.

Wing, R. L. Use of Technical Media for Simulating Environments to Provide Individualized Instruction. Cooperative Research Project, 1948. BOCES #1, Westchester County, N. Y., 1965.

Wing, R. L. The Production and Evaluation of Three Computer-Based Economics Games for the Sixth Grade. Cooperative Research Project 2841. BOCES #1, Westchester County, N. Y., 1967.

Wirtz, W. W. and Goodwin, R. C. Dictionary of Occupational Titles. Vol. I-II, Washington, D.C.: U. S. Government Printing Office, 1965.

Zeamon, D., and House, R. "Approach and avoidance in the discrimination learning of retardates." Child Development, 33: 1962, 355-72.