

EVALUATION OF A SANITATION WORKSHOP
FOR FOOD SERVICE EMPLOYEES AT
OKLAHOMA STATE UNIVERSITY

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TABLE OF CONTENTS

	Page
INTRODUCTION	1
OBJECTIVES	3
REVIEW OF LITERATURE	5
Sanitation Training Programs.	5
Management Attitude Toward Sanitation Program	7
The Concept of Evaluation	8
The Need for Evaluation	9
Evaluation Devices.	10
PROCEDURE	14
Presentation of Proposal to RHFS Staff.	15
Development of Evaluation Tools	16
Selection of the Sample	19
Definition of Terms	20
RESULTS AND DISCUSSION	22
Collection of Data.	22
Findings from the Survey.	25
Findings from the Written Test.	34
Findings from the Sanitation Observation Sheets	43
SUMMARY AND CONCLUSIONS.	49
A SELECTED BIBLIOGRAPHY.	52
APPENDICES	55

LIST OF TABLES

Table	Page
I. Position Classification of Full-Time Employees by RHFS Units	26
II. Position Classification of Sample	27
III. Summary of Years Experience of Employees in the RHFS Units	28
IV. Summary of Years in Service of Employees by RHFS.	29
V. Summary of Years of Education of Employees by RHFS Units	30
VI. Summary of the Age of Full-Time Employees by RHFS Units	31
VII. Comparison of the Weighted Mean Age of Full-Time Employees in 1966 with 1967 Studies	33
VIII. Comparison of the Weighted Mean Education of Full-Time Employees in 1966 with 1967 Studies	33
IX. Analysis of Variance for Test Scores.	34
X. Analysis of Variance for Observation Satisfactory	44
XI. Analysis of Variance for Observation Fair	45
XII. Analysis of Variance for Observation Poor	46
XIII. Average Percentage Scores for Each Sanitation Observation Question	47
XIV. Comparison of Percentage Average Scores for Sanitation Observation Sheet by Raters.	48

LIST OF FIGURES

Figure	Page
1. Comparison of Average Test Scores by Job Classification of Those Who Did Attend and Did Not Attend	36
2. Test Score Distribution Between Attendance and Non-Attendance.	37
3. Comparison of Average Test Scores with the Years of Employment.	38
4. Comparison of Average Test Scores with Employees' Years of Education	40
5. Comparison of Average Test Scores by Position Classification and Attendance and Non-Attendance.	41
6. Interaction of Job Classification and Attendance	42

INTRODUCTION

Food sanitation leaders since the early thirties have advocated the inclusion of eating and drinking establishments within the framework of the over-all sanitation program. As a result, there have been many different types of training programs for employees in the food service industry, as well as in other industries. The basic criteria for the inclusion are the public health necessity and the magnitude of the food service industry. The potential health significance of this industry is demonstrated by the fact that (1):

"The food and beverage service industry ranks fourth in size among all industries of the nation. The business of eating and drinking has always been and still is one of the principal occupations of mankind. Americans spend almost \$75 billion annually for food and beverages--consumed both in the home and outside the home. An average of 78 million meals are served daily in the nation's varied types of food and beverage establishments."

The food service industry is a rapidly changing force. Consequently, industrial establishments, factories, food businesses, processing plants--large or small--have adopted systems of sanitation training programs for employees. Goals and objectives were formulated to meet their needs. Informal and formal sanitation training sessions have been utilized to stimulate the employee's awareness and sensitivity to health standards as well as to the importance of sanitation. With the expansion of food service industries and the high cost of labor, it appears that the prolonged efficiency and effectiveness of sanitation programs should

be assessed. One hopeful element of emphasizing the present trend of food and sanitation is a program of evaluation. Evaluation is the key to an on-going program and may result in disclosures of paramount importance and usefulness (2). It may be a way to strengthen continuous efficiency. Such a continuity may give the employees a lasting awareness that the sanitation program of a food service is a "live" one and is a part of the overall objectives of the food service organization.

It must be recognized that the execution of a sanitation program can be expensive in terms of both time and money. It is important that those responsible for personnel supervision know the extent to which the objectives of sanitation training programs are being met in actual practice.

OBJECTIVES

The purpose of this study is to investigate the effectiveness of the sanitation training program previously presented to the Residence Halls Food Service full-time employees at Oklahoma State University. Four months will have elapsed since this intensive one-day training session. Evaluation tools will be formulated and devised. Evaluation of the employees' achievement will be based on the following assumptions: (1) proper instruction and training will produce certain measurable changes in the employees' knowledge and habits; and (2) reasonable valid and objective techniques can be developed to measure such changes. Such evaluation devices if formulated with careful thought and critical planning, Nunnally (3) asserts, will differentiate between different techniques of attainment, could be easily administered, and relatively inexpensive.

The following are the specific objectives of this investigation:

1. A written test concerning sanitation will be administered and completed by Residence Halls Food Service employees under controlled conditions and within a specified period of time. Results will be analyzed to try to estimate the information a food service worker has retained from a formal sanitation training program four months ago.
2. Sanitation observation sheets will be checked over a period of time in the residence halls and will be analyzed. The purpose

of the analysis is to help in evaluating the extent to which the objectives of the sanitation training program are being met in actual practice.

REVIEW OF LITERATURE

Sanitation Training Programs

Food sanitation classes for food service personnel have become increasingly prominent since World War II. Attendance at such classes, now obligatory in many parts of the country, has proved its worth in areas seemingly far removed from food sanitation.

Excellent courses now are held by many health departments. The United States Public Health Service in 1962 published a bulletin "Food Service Bulletin Manual" (4), which describes food service sanitation ordinances and codes. In addition, industry courses, such as Institution Magazine's "Sanitation for Food Service Workers" (5), have been developed to allow management to conduct effective training on its own premises. All these training programs, courses and bulletins are geared toward the importance of sanitation programs for food service personnel.

Richardson (6) states that in other areas of mass feeding and housing routine maintenance crews do not always receive specialized training. Reports indicate that less than 15 percent of the custodians in this country have had special schooling and training for their work. However, such training is now made available.

Many sanitation training programs--formal or informal-- have been planned and presented to food service personnel. Sanitation, as Burner (7) authoritatively defines it, is concerned with the practical application of measures related to health, or conditions of health and uses.

Nevertheless, Di Liello (8) states that a potential hazard to the public exists when unsanitary practices are allowed to exist in food service operations. The development and promotion of effective sanitation practices in food production and handling safeguards public health. Hodge (9) promotes that sound sanitation and safety practices not only safeguard health, but educate by example for the perpetuation of those practices.

Sanitation is a way of life (9). Being a way of life it must come from within the people; it is nourished by knowledge and grows as an obligation and an ideal in human relations.

Stauffer (11) recommends that training programs in sanitation should embody the practices referred to as "hand habits", which may contribute to the contamination of food. Food service workers' awareness of these practices resulted in misleading and misunderstanding of regulations. Nevertheless, provisions of simple rules for good "hand habits" and an emphasis on importance of such rules could help alleviate the poor practices.

One area of sanitation training that may be conducted easily is follow-up sanitation meetings. According to Richardson (12), these meetings will keep alive and further stimulate personnel interest in the formal sanitation program. Materials and information already covered are reviewed and new topics and practices may be introduced to the personnel to enlarge their scope of knowledge about sanitation. This follow-up will help create a realization of the importance of the subject and will foster a continuing learning process. Personnel may be inspired actively to participate in the program by correcting faulty habits and substituting correct procedures.

Management Attitude Toward Sanitation Programs

Sanitation is affected by the same factors which determine the success, or failure, of any other operation, whether such activity be concerned with the production of a product or the discharge of a service.

Such factors are the following: (13)

1. The suitability of the material and equipment used in the operation.
2. The effectiveness and efficiency of the method employed.
3. The degree of exactness with which necessary labor is determined and allocated.
4. The thoroughness and practicality of the training given.
5. The quantity and quality of supervision provided.
6. The objectivity with which the end product or services is inspected and evaluated.

As these are the factors which affect the doing of sanitation work, they too represent the conditions which management must control if a successful program is to be achieved. Evidently, management action is necessary to control rising sanitation costs. Management must set meaningful limits for sanitation to function effectively. Laughlin(14) suggests that a sanitation program should be provided with genuine management support, qualified supervision, well defined objectives and standards, and effective ways to achieve these objectives and standards. Any means or measures prescribed for producing a desired result in sanitation must be evaluated realistically within the overall frame work of the total operation. Skillful, harmonious teamwork and an enthusiastic acceptance of sanitation will provide a good working environment. With knowledge and understanding by management and employees, this way of life will be reflected favorably on the employees

and the public (14).

Stafford (15) asserted that wholesome and sanitary working conditions promote employee job satisfaction. Though job satisfaction does not necessarily guarantee improved performance, it is a generally accepted factor in decreasing employee turnover.

One of the aspects of management control of a sanitation program is the provision of adequate supervision and periodic inspection and evaluation. Supervision to be effective, Burner (7) suggested, must be considered both numerically and qualitatively and concerned exclusively with the function of sanitation. Supervisors adept with technical know-how and knowledge play a vital role in the success of a sanitation program.

The Concept of Evaluation

Various techniques for the appraisal of human behavior have been in use for a long time. However, the idea of evaluation is of recent concern (16). According to one view, evaluation is a basic task of the educator. It is one of four basic tasks which are:

1. To determine the objectives which the course or program should seek to attain.
2. To select learning experiences which will help to bring about the attainment of these objectives.
3. To organize these learning experiences so as to provide continuity and sequence for the students and to help them integrate what might otherwise appear as isolated experience.
4. To determine the extent to which the objectives are being obtained.

The above tasks of evaluation assume that education is a process for changing the behavior patterns of human beings. It is expected

that individuals will acquire new ideas, bring about improvements in their ways of thinking, develop tastes and sensitivities, modify their attitudes, and improve in other ways.

Learning, the outcome of education, means change, says Butterworth (17). The learning process is planned to change behavior of the learner. The educational objectives serve as the basis for developing both learning experiences and evaluation procedures. The process of evaluation reveals the extent to which desirable changes have been achieved. Evaluation tools can help one to discover the road blocks to learning, and to what degree the educator failed to disseminate information (17).

The Need for Evaluation

Determining the rightness of pupils and education for one another requires evaluation. The necessary evaluation of pupils must be both continuous and comprehensive if it is to serve optimally in its major role of the guidance of pupils (18). Therefore, evaluation goes beyond the mechanics of testing and measuring by appraising measurements in the light of preconceived aims and objectives (19). Such a program that measures objectively all possible factors can result in a strong follow-up plan.

To evaluate is "to appraise carefully" and to appraise is to "set a value on". Value is determined by relative "worth, excellence, or importance". The process of evaluating requires judgment of sufficient discriminatory power to compare facts, to perceive their relationship and attributes, and thus to distinguish truth from falsehood (19).

The use of a good evaluation program, according to Eppright et al. (20), will employ tools to test the student's acquisition of knowledge

and the ability to think effectively. Also the evaluation device will give information concerning the development of attitudes and identification of values.

Evaluation Devices

Tests which are used only for specific purposes are one form of evaluation. In planning a test or measuring instrument, the goals or objectives to be measured are decided first. Having defined these objectives, the teacher then decides what type of test will best achieve his purposes. These decisions are usually influenced by the nature of the content, processes, or skills to be measured. Measurement and evaluation are comparatively recent concerns for educators (21). The teacher who wants to measure and evaluate effectively needs to become familiar with many techniques, to know the uses and limitations of each, and to be able to judge whether or not a specific test or technique is worth using--either in a given situation or at all (22).

A good test is a great saver of time and work. In many situations, it is essential to measure progress in learning to determine the extent to which important objectives have been reached by the individual or group. In many other cases, Wood (21) says, it becomes necessary to attempt to predict future attainment.

The place and manner of administering the selected test is of relative importance. The choice of the place for testing, Noll (23) suggested, should provide conditions and facilities necessary to the correct and most satisfactory administration of the test. This increases efficiency of the program and helps to avoid the intrusion of personal preferences.

One type of test that may be utilized in the evaluation program is the true-false test. Although commonly used, the typical true-false test is one of the least satisfactory. Arny (24) states that there are three objections to using this test. First, the statements must be unequivocally right or wrong and there are few statements that can meet this requirement. Second, true-false questions are of limited value since there is apt to be less discrimination in the test. Third, true-false statements are apt to foster guessing. A "correction formula" is usually advocated. Arny (24) suggests the following correction formulas:

- | | |
|--------------------|----------------------------|
| 1. $S = R - W$ | $S = \text{Score}$ |
| 2. $S = R - 1/3 W$ | $R = \text{Right Answers}$ |
| 3. $S = R + 1/2 O$ | $W = \text{Wrong Answers}$ |
| | $O = \text{Omission}$ |

The proponents of true-false tests indicate that:

1. Tests can be scored with an inflexible key.
2. Students can answer more items within a given time than any other type of question, so that a wide sampling is possible.
3. Tests are easy to construct.

The first two statements are correct, but the third one is not, Arny (24) asserts, because good true-false statements are difficult to construct.

There is another factor, according to Arny (24), which makes true-false tests valuable. This type of question has real value in motivating and stimulating discussion, especially if the content is controversial.

Rating sheets are one form of subjective evaluation. The rating sheets or devices Arny (24) says, are likely to be more useful:

1. When descriptions of the desirable standards and the

typical shortcomings of the product or persons to be rated are included,

2. When sufficiently objective so that different judges rating the same product or persons rank them in approximately the same order, and
3. When rating can be done fairly rapidly.

Lundberg and Armatas (25), proponents of rating employee performance, state that workers are better satisfied and are stimulated to higher standards when they know that they are subject to periodic rating. Several methods have been used in attempting to make ratings more precise. One method has been to rate the individual on a number of factors or criteria rather than on one over-all impression. This can be achieved by a check list rating device which can be made up to fit the needs of any department which will require different qualities in their personnel. By giving one point for each item, the rating is simply the total of the items checked.

To be effective, and if ratings are to be used as a means of pointing out deficiencies, frequent administration may be adopted. Wilson, (26) quoting Brisley, states that observations made at random in sufficient numbers yield as accurate results as with continuous measurements. Noll (23) asserts that frequent, short observations distributed over a period of several weeks and falling at different times of the day, are likely to yield a more adequate sample of behavior. Rotating the time of the observation period reduces the probabilities of getting consistently biased samples of behavior.

Written tests and direct observation of behavior have been used successfully as evaluation instruments to measure the effectiveness of health programs. Also, these instruments lend to quantitative treatment

and analysis. According to the literature, it appears that these instruments can be utilized to determine the effectiveness of a one-day Sanitation Training Session.

PROCEDURE

The data for this evaluation of the January, 1967 Sanitation Training Program will be collected from the full-time labor force employed in eight residence halls by the Residence Hall Food Services* at Oklahoma State University**. The RHFS at OSU includes nine of the residence halls on campus (Bennett, Cordell, Murray, Scott-Parker-Wentz, Stout, Willard, Kerr-Drummond, McElroy, and the University Hospital and Clinic). Bennett and Willard Halls are operated on an ala-carte basis, catering to the student residents and the campus public. The University Hospital and Clinic serves meals to student patients and the medical staff. The remainder of the halls in the RHFS are operated on a contract basis, and serve "contract" meals to student residents. The number of students served in the food services varies according to the size and capacity of the residence hall. Bennett Hall serves approximately 1100 men and the campus public; Cordell Hall, 500 men students; Kerr-Drummond Halls, 1400 men and women students; Murray Hall, 400 women residents and a few men students; Stout Hall, 400 women students; McElroy Hall, 250 men athletes; University Hospital, 50-100 men and women student patients and hospital staff; and Willard Hall, 400 women students and the campus public. The total labor force is approximately 500 men and women employees (300 full-time employees and 200 part-time student

*Hereinafter known as RHFS

**Hereinafter known as OSU

employees) (RHFS Personnel Records).

Sanitation to be in action as a part of on-the-job training is one of the objectives of the food services at OSU. A one-day comprehensive Sanitation Training Session was planned and presented on January 3, 1967 to all full-time food service employees in accordance with the over-all objectives of the food services at OSU. Two hundred full-time employees cooperated and attended. The major topics that were presented were divided into three broad categories, namely: (1) communicable diseases; (2) care and handling of equipment; and (3) general housekeeping (this included dishwashing).

Since the Training Session was held during vacation time, part-time student employees were not expected to attend the one-day session and some full-time employees could not attend. Therefore, a Simple Survey Questionnaire will be formulated to determine the samples to be utilized. Questionnaires will be used since these are used extensively for gathering information in research work. Simple questionnaires require less skill to administer, are relatively inexpensive, and can be administered simultaneously to large numbers of people.

Presentation of Proposal to RHFS Staff

Consultations with Mr. Joe Blair, Director of the OSU Residence Hall Food Services, and Mr. Larry Jeffrey, Assistant to the Director of Auxiliary Enterprises of OSU and Assistant to the Director of the OSU Residence Hall Food Services, will enlist cooperation for this project. Permission to involve the RHFS full-time labor force during the Spring Semester of 1967 will be requested. The proposed evaluation will be presented to the managers, dietitians, and food service supervisors

during a regular staff meeting to obtain understanding, support, and cooperation.

A short orientation session with the employees in each residence hall will be planned. The dietitian and manager will be consulted for the schedule for this. The purposes of the study and the techniques to be used will be explained. The fact that employee job performance and identity will be unaffected shall be stressed to motivate active participation and cooperation. Employees will be assured that this program will not be a study of individuals but that results will be analyzed collectively and that questions will be welcomed at any time during the study.

Development of Evaluation Tools

A short survey questionnaire will be formulated for all of the full-time employees now on the payroll (March, 1967). It will be kept as simple as possible (Appendix B). This questionnaire will be used to collect data on the number of presently employed personnel who attended the January, 1967 Sanitation Training Session. Also it will be designed to find out who did not attend the training session. In addition, it will furnish other information concerning the present job classification and length of service of the employees in the Residence Halls Food Services.

The questionnaire will be distributed to all full-time employees in each residence hall food unit. Responses to the questions will be indicated by checking or writing the answer in the blank spaces provided. Time will be arranged so that employees can fill out the questionnaire while on duty. The completed questionnaires from all respondents will be compiled and analyzed. These results will be used to determine the

number of employees who could participate in the present research. In addition, the employee records in each of the RHFS will be consulted to provide information concerning the education, age, and sex of each full-time employee who will be drawn as sample of this study.

After the collection of these questionnaires, two evaluation tools will be developed. The first tool to be developed will be a Written Test (Appendix C). The test questions will be devised by the author to be applicable to all food service personnel, regardless of job classification. The formulated test will be tried by a group of students who have not had any sanitation training and also by other qualified persons for revision and validation. One hundred fifty test questions will be formulated to include all the information that was covered during the training session. A careful scrutiny and revision will be necessary to avoid duplication and inclusion of ambiguous statements.

The revised test will contain a space provided for the employee's name and the residence hall where employed. However, it will be stressed that all names will be coded for anonymity. A sample number space will be included for statistical treatment purposes. Time for administering the test will be arranged with the dietitian and/or manager in each RHFS to fit the working time schedules of the employees. A time will be set when all the employees selected to participate in the study will be available to answer the written test, which will be administered by the author. The author will be present each time to clarify individual questions. It will be emphasized that individual questions may be asked by making a signal silently and the person will be assisted individually. If a large group is involved, the assistance of a dietetic intern may be enlisted.

The second evaluation tool to be formulated will be a Sanitation Observation Sheet (Appendix D). This tool will provide statements concerning personal habits, general appearance and activities of employees in relation to sanitation. An effort will be made to make the observation sheet simple, easy to read and understand, and applicable to all; both male and female employees. Either a manager or dietitian, dietetic intern or supervisor or the author will use this device. Three observations for each employee from each of the RHFS units will be obtained at random within a period of two weeks following the administration of the Written Test. A memorandum will be sent to all managers and dietitians of the RHFS prior to the collection of observations. This will help clarify instructions given on the Observation Sheets. A list of selected employees who will be observed in each hall will be distributed to the manager and/or dietitian of the respective halls. However, the employees selected will not be informed that they are to be observed in their natural pace of work.

Like the Written Test, the development of this device will be formulated through discussion with the managers, dietitians, and dietetic interns. The ranking of each statement will be explained and discussed. The purpose of the Sanitation Observation Sheet will be explained. Questions will be encouraged among the observers regarding the use of the sheet.

The Written Test and Sanitation Observation Sheet to be developed will contain information concerning (1) communicable diseases, (2) bacteria, (3) dishwashing and sanitizing, (4) storage and care of food, (5) work habits, and (6) personal hygiene. Publications to be consulted for information will include "A Guide-Oklahoma School Lunch Sanitation

and Safety" (9), "Food Hygiene-Ashore and Afloat" (29), "The Sanitation Manual-A Guide for Management" (30), and "Food Poisoning and Food Hygiene" (31). Other publications to be referred to are "A Training Course in Sanitation for Food Service Workers" (32), "Food Service and Public Health" (33), "Sanitation for Food Service Establishments-A Guide for On-the-Job Training" (34), and "Food Service in Institutions" (35).

The Written Test and the Sanitation Observation Sheet will be constructed and studied to determine the specific areas that should be stressed. Inclusion of questions and statements will be those relevant to the broad topics that were presented during the one-day comprehensive Sanitation Training Session in January, 1967. Both evaluation tools will be subjected to the scrutiny and evaluation of competent judges before the final test and sanitation observation devices will be completed.

Selection of the Sample

The research sample will be limited to presently employed (March-May, 1967) full-time employees in the RHFS at OSU. The total population will be divided into two major groups which will be compared in this study.

Group I. Attended--those employees who attended the one-day comprehensive Sanitation Training Session and participated with other employees in answering a written test administered thereafter.

Group II. Did Not Attend--those employees presently employed at the RHFS who were not present during the one-day comprehensive Sanitation Training Session or did not participate with the other employees by answering the written test administered following the Training Session.

The two major groups will be sub-divided into sub-groups by position

classification for statistical treatment. Four major classifications of like jobs will compose the sub-groupings. These will be: production, service, dishwashing, and housekeeping and maintenance. Limitations of insufficient funds, time and a heavy class schedule make it impractical to use all the full-time employees, who participated or did not participate in the January, 1967 Sanitation Training Session. As a result, a sample will be drawn at random. Appendix A shows a detailed breakdown of the allocation of the people involved in this study.

Definition of Terms

For statistical reasons and to interpret accurately the results of this study, certain definitions for the entire study were determined as procedural guidelines. The work performed by food service employees in a food service industry is difficult to categorize. Each category may be defined, however, in general terms to include related tasks. A brief definition of each major work category is as follows (27):

Production. All activities directly connected with the preparation of food from the time of delivery from the storeroom to the preparation area until the time it is transported to the service area.

Service. All activities directly connected with the assembling of food on the cafeteria counters, the actual presentation of food to the consumer, and the dishing and serving of food to personnel, customers, and patrons.

Dishwashing. The actual work done in preparation for or operation of the dishmachine; the scraping and washing of dishes, trays, serving and cooking utensils, as well as equipment.

Housekeeping and Maintenance. All the activities that pertain to

the maintenance of cleanliness and order within the kitchen area, dining room, storage rooms, and other related activities, such as: care and proper storage of food, supplies, dishes or utensils and laundry which come into the department.

Food services and cafeterias vary in the ways food is sold to the public. The RHFS at OSU welcome the public, students and guests to purchase food from any of the residence halls. The ways in which one may purchase food are:

Contract Meal Services. This type of meal plan guarantees 20 meals per week for the semester to any of the student residents in the residence halls. The meals are paid for in advance and there are no refunds. The public may purchase meals at stated prices.

Ala Carte Food Services. In this type of meal plan, coupon ticket-type meal books are provided for the students with which they can purchase food by the item. This plan offers a greater selection by purchasing only the items and meals desired. The coupon books may be used only in making purchases of food in the cafeteria or other food services for which the books are issued. This type of meal plan is not limited to coupon books only. The public also may purchase the food items for cash.

RESULTS AND DISCUSSION

The results of this research will be presented and discussed under separate headings designated by the following: findings from the Simple Survey Questionnaire, the Written Test Scores, and the Sanitation Observations.

Collection of Data

The answers from all the respondents of the Simple Survey Questionnaire (Appendix B) were employed in the selection of the sample. One hundred ninety individuals from the total number of 210 full-time employees answered the Questionnaire. From this total (190), a sample of 95 full-time employees was selected at random. Forty percent of the individuals who attended the January Sanitation Training Session and sixty percent of those who did not attend were drawn as a sample from each job classification (see Appendix A). Of this sample, 70 employees "Attended" the January, 1967 Sanitation Training Session and 25 employees "Did Not Attend". However, before the collection of data could be made ten of the employees in the sample were terminated and 21 others failed to report for work for unknown reasons. Therefore, final sample totals recorded were 85 full-time employees who participated in the Written Test and 64 full-time employees who were evaluated by the Sanitation Observation Sheet.

Eight residence halls were involved in the study. To maintain the

anonymity of the residence halls, a number from 1-8 was assigned to each hall. The University Hospital and Clinic which had only five full-time employees was not included in this research.

After careful study of the 150 formulated test questions, the revised Written Test included twenty-five questions which were short, easy to read and easy to understand (Appendix C). The questions were answered by circling one of the two answers--yes or no. The employees were asked to write their names and residence hall where employed in the blank spaces provided, above the perforated line. The directions for answering the test were given by the author before the employees began answering the test. Questions, if asked, were answered.

The Written Test was administered by the author to the selected sample of full-time employees in each of the residence halls food service units. A time was set up in each hall to administer the test under controlled conditions. The employees were allotted a time limit of 7 to 10 minutes to answer the test questions, and two of the selected employees who were unable to read were given an oral administration of the test by the author. It was emphasized to all employees who participated in the study that there was to be no discussion during the test. However, they could ask for help from the author but should not distract the others during the test.

The tests were coded with numbers and small letters individually. To illustrate the individual test scores and maintain the anonymity of the residence halls, each individual of the sample was assigned a number. In coding the tests, following the assigned number a small letter designated attendance "a" or non-attendance "da" to the one-day comprehensive Sanitation Training Session. A second small letter in the code referred

to the position classification (p, s, d, and hm)* of the employee and the number referred to the RHFS where the employee was assigned. For example: John Doe, 3ap4. This indicates that John Doe is third in the sample list of those who "attended" the Sanitation Training Session, whose position classification is "production" and who is assigned at Hall 4. The coded name was written on the blank space provided for sample number. By giving one point for each correct statement, a total of 25 points was possible. The test scores were tabulated and analyzed.

The Sanitation Observation Sheet (Appendix D) was used during a period of two weeks, in May, 1967. It was distributed to the managers and dietitians of each RHFS unit. The purpose and use of the sheet and the number of observations to be collected were explained. A memorandum (Appendix E) was sent to all the managers and dietitians to clarify taking the observations as follows:

1. Three-10 minute individual observations will be made by the dietitian/manager; the supervisor/dietetic intern; and the author.
2. These observations should be completed by May 20th and the observer should schedule a different hour of the day for each observation.
3. More than one employee (as many as can be readily seen from a chosen observation area) may be observed during the same 10 minute observation period.

Three observations were desired for each sample for a period of two weeks at different working times of the day. However, due to the busy schedule of the staff, some were able to complete only two observations. As a result of this, the totals of the observation scores were

*The designation is as follows: production (p); service (s); dish-washing (d); and housekeeping and maintenance (hm).

converted to percentages. A point was given for each item and the score was simply the total of the items checked. Like the test scores, the observations that were collected also were coded. The percentage scores were recorded and analyzed.

Findings from the Survey

In Table I the position classification of all full-time RHFS employees (190) by residence halls is given. Eighty were employed for production, 48 were employed for service, 42 for dishwashing (includes individuals employed for pot and pan washing), 21 for housekeeping (includes maintenance and sanitation crews), and 20 for other jobs (includes those employed as bookkeepers, typists and clerks, cashiers and checkers).

Table II shows the position classifications of the random drawn sample (85) used in this research. Thirty-four individuals were employed in production, 23 for service, 17 for dishwashing, and 11 for housekeeping and maintenance. Twenty individuals employed for other jobs were not included.

An analysis of all full-time RHFS employees (210) revealed interesting facts. The mean of the number of years of employment by position in the RHFS units is delineated in Tables III and IV. The range of years in position classification was from one month to 19 years. Table III shows the mean expressed in years of service of the employees in RHFS, regardless of their position classification. Further analyses indicated that the range in years of service by food service units gave averages of 1.88 to 6.00 years. Four of the food units had new employees

during the time the study was conducted, but apparently the majority of the employees could have attended the one-day comprehensive Sanitation Training Session in January, 1967.

TABLE I
POSITION CLASSIFICATION OF FULL-TIME
EMPLOYEES BY RHFS UNITS

	Residence Halls Food Service Units ¹								Total
	Hall 1	Hall 2	Hall 3	Hall 4	Hall 5	Hall 6	Hall 7	Hall 8	
Production	8	6	7	9	13	6	17	14	80
Service	2	3	4	4	12	11	11	11	48
Dishwashing	4	5	4	4	6	4	4	11	42
Housekeeping and Maintenance	2	2	2	3	3	2	2	4	20
Others ²	2	1	1	3	2	0	7	4	20

¹Number of employees whose employment cards contained information regarding position classification.

²Employees employed as bookkeepers, checkers, cashiers, typists.

Further analysis of all full-time employees' records is presented in Tables V and VI. The data for the analysis was obtained from the individual's employment cards containing information regarding their education and age. Data on the educational level of full-time employees is illustrated in Table V. The mean in education range, expressed in grades, was from the 9th to 11th. The actual range of education completed was from the 3rd grade to the Graduate College of the University. The data in the RHFS office files showed that all food service units had

individuals with from one to 3 years of college education and that one hall had one employee attending Graduate College. Four halls had one to two individuals with vocational and technical training in technical schools (emphasis on food management and bakery production).

TABLE II
POSITION CLASSIFICATION OF SAMPLE

Position	Attended		Did Not Attend	
	No. of Employees	No. of Sample	No. of Employees	No. of Sample
Production	61	23	17	11
Service	38	15	14	8
Dishwashing	29	12	11	5
Housekeeping	13	7	7	4
Total	141	57	49	28

Presented in Table VI is the age range of all-full-time employees expressed in years. Records showed a range of 18 to 68 years with a mean age range of 35.20 to 52.18 years. Four individuals over sixty-five years of age were employed. The policy of the University is to hire such individuals on a yearly basis if they are physically capable of doing the required work (28). The records indicate four of the food service units employed individuals below twenty years of age, but the majority employed were in their early fifties and sixties. It will be noted that the median age range is 30.50 to 56.00 years. The lowest median age range was 30.5 years with an age range of 19 years to 60 years. Generally, new employees are younger in age (under and in the twenties and thirties).

TABLE III
SUMMARY OF YEARS EXPERIENCE OF EMPLOYEES IN THE RHFS UNITS

	Hall							
	1	2	3	4	5	6	7	8
Number of Employees ¹	17	14	18	21	31	10	35	38
Mean Years in Position	3.83	3.14	2.25	5.57	1.32	2.73	1.57	1.27
Range of Years in Present Position ²	2 Mo. to 14 Yr.	1 Yr. to 11 Yr.	1 Mo. to 7 Yr.	8 Mo. to 19 Yr.	1 Mo. to 5 Yr.	1 Mo. to 5 Yr.	1 Mo. to 17 Yr.	1 Mo. to 7 Yr.

¹Number of employees who answered Survey Questionnaire.

²Figures obtained from Survey Questionnaire.

TABLE IV
SUMMARY OF YEARS IN SERVICE OF EMPLOYEES BY RHFS

	Hall							
	1	2	3	4	5	6	7	8
Number of Employees ¹	17	14	18	21	31	10	35	38
Mean Years of Service	5.18	3.64	2.64	6.00	2.12	3.41	2.44	1.88
Range of Years in Service ²	3 Mo. to 1 Yr.	1 Yr. to 11 Yr.	1 Mo. to 8 Yr.	9 Mo. to 19 Yr.	1 Mo. to 18 Yr.	1 Mo. to 12 Yr.	2 Mo. to 17 Yr.	1 Mo. to 14 Yr.

¹Number of employees who answered the Survey Questionnaire.

²Figures obtained from Survey Questionnaire.

TABLE V
SUMMARY OF YEARS OF EDUCATION OF EMPLOYEES BY RHFS UNITS

	Hall							
	1	2	3	4	5	6	7	8
No. of Employees ¹	17	13	16	20	21	13	36	33
Mean Education	9.0	9.2	9.4	10.1	10.7	11.3	10.9	10.9
Median Education	9.5	8.5	10.0	10.2	10.2	12.0	12.0	11.3
Education Range	3rd Grade to 1 Yr. College	5th Grade to 2 Yr. College	7th Grade to 2 Yr. College	6th Grade to 2 Yr. College	4th Grade to 1 Yr. College	8th Grade to 1 Yr. College	7th Grade to 3 Yr. College	5th Grade to Graduate College

¹Number of employees whose employment cards contained information regarding education.

TABLE VI
SUMMARY OF THE AGE OF FULL-TIME EMPLOYEES BY RHFS UNITS

	Hall							
	1	2	3	4	5	6	7	8
Age Range	21-67	20-68	27-60	19-67	18-60	21-64	18-63	19-60
Mean Age	52.18	46.87	46.75	48.50	35.19	45.77	39.16	38.66
Median Age	56.00	52.50	51.50	52.50	30.50	47.00	41.00	41.00
Number of Employees ¹	17	15	16	22	26	13	37	34
Above Employment Age	67	68	--	67;66	--	--	--	--

¹Number of employees whose employment card contained information regarding age.

When median ages for the group, those who attended and those who did not attend the January Training Session, were compared with the number of high school and college graduates employed in each food service unit, analysis shows that two halls with the same lower median age level and almost the same age range and mean age, employ three times as many high school graduates and college students as the other food units. It is evident from Tables V and VI that almost all the residence halls food service units hire younger individuals with higher educational levels.

Comparison of the findings of this research with those of a previous study one year earlier (28), as shown in Table VII, shows that the weighted mean age and the total number of full-time employees was lower in Hoxie's research. However, the previous study involved six food service units with 146 employees, whereas, the present research involved eight food units and 190 employees. Insignificant differences between 1966 and 1967 studies on ages of employees were found. When the weighted mean education level was compared (Table VIII), there was a very insignificant difference between the mean and median education levels in these two studies. There was an increase in years of education which caused the mean education to show +0.0716. A slight decrease in the median education of 0.0005 from Hoxie's study reflected the greater number of employees.

TABLE VII
COMPARISON OF THE WEIGHTED MEAN AGE OF FULL-TIME
EMPLOYEES IN 1966 WITH 1967 STUDIES

	Hoxie (1966)	This Study (1967)
Number of RHFS	6	8
Mean Age	41.77	44.13
Median Age	45.67	46.50
Number of Employees ¹	146	180

¹Number of employees whose employment cards contained information regarding age. Note variance with total number of full-time employees.

TABLE VIII
COMPARISON OF THE WEIGHTED MEAN EDUCATION OF FULL-TIME
EMPLOYEES IN 1966 WITH 1967

	Hoxie (1966)	This Study (1967)
Number of RHFS	6	8
Mean Education	10.2000	10.1916
Median Education	10.50000	10.4995
Number of Employees ¹	138	169

¹Number of employees whose employment cards contained information regarding education.

Findings from the Written Test

The scores of the Written Test were analyzed using the method of fitting constants (36) in a two-way general procedure of classification. Factor A designated job classification and Factor B designated attendance or non-attendance to the January, 1967 Sanitation Training Session.

The analyses of variances of the Written Test between those who attended, "a", the January, 1967 Session and those who did not attend "da" is presented in Table IX.

TABLE IX
ANALYSIS OF VARIANCE FOR TEST SCORES

Source of variation	df	SS	MS	F
Total (corrected)	84	529.1765		
Job Classification (A)	3	11.42868	3.8095	
Attendance (B) (adjusted for A)	1	0.887624	0.887624	
AB Interaction	3	114.8016	38.2672	7.328**
Individuals within Cells	77	402.0586	5.2215	

**Significant ($\alpha < 0.05$)

Results of the analysis of variance showed no statistical significant difference between the attended and non-attended group at the 5 percent level of Type I error. An interaction was revealed in the analysis of variance for the job classification by attendance. A description and possible causes of the interaction follows.

Figure 1 shows the mean scores obtained from each group of the

sample classified by work position. Illustrated in bar graphs, the data shows that the mean scores (on the basis of 25 points) for those who Attended, "a", the January Training Session were as follows: production 20.13; service 19.73; dishwashing 17.50; and housekeeping 20.43. Those who Did Not Attend, "da", the session, however, had mean scores of: production 19.45; service 20.63; dishwashing 16.40; and housekeeping 20.50.

Analysis of the total number of questions answered correctly is presented in Figure 2. Each total score was expressed in percentage to facilitate comparison of scores obtained from the two groups--those who attended and those who did not attend the January Sanitation Session. The data showed that of those who attended, 7 percent answered 23 questions correctly out of a possible total of 25 questions. Of those who did not attend the January Session, however, 25 percent of the individuals were able to answer 22 questions correctly as compared to 12 percent of the employees who attended. These findings were discouraging, so a comparison of the average correct scores (obtained from the two major groups) with the number of years the individuals had worked in the RHFS is shown in Figure 3. There was an increase in the average scores obtained by individuals who attended the January Session, with the exception of three groups (people having worked three and a half, seven, and fourteen years). Of those who did not attend the January Session, 1967, with the exception of two groups (people having worked four and five years), there was a marked decrease in the average scores. Therefore, it appears that the test scores increased as the length of service increased.

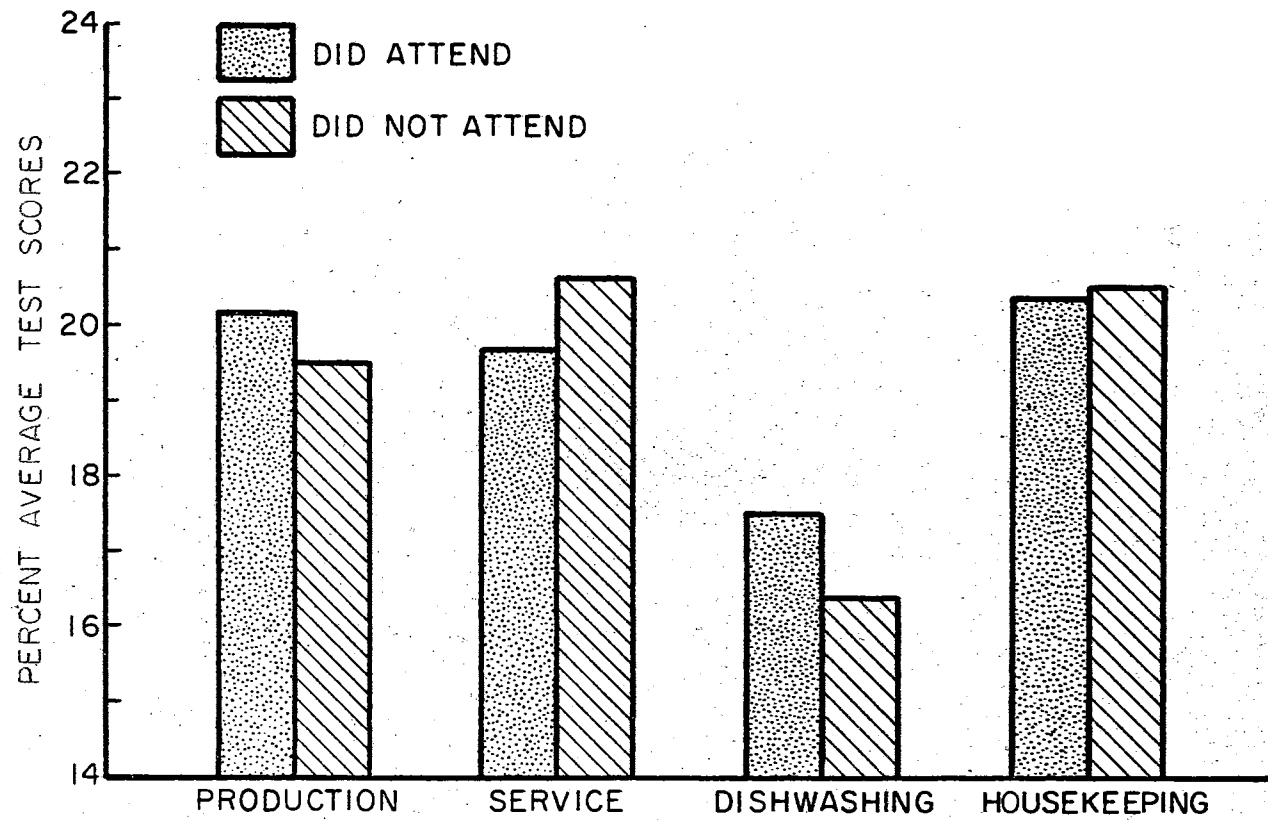


Figure 1. Comparison of Average Test Scores by Job Classification of Those Who Did Attend and Did Not Attend

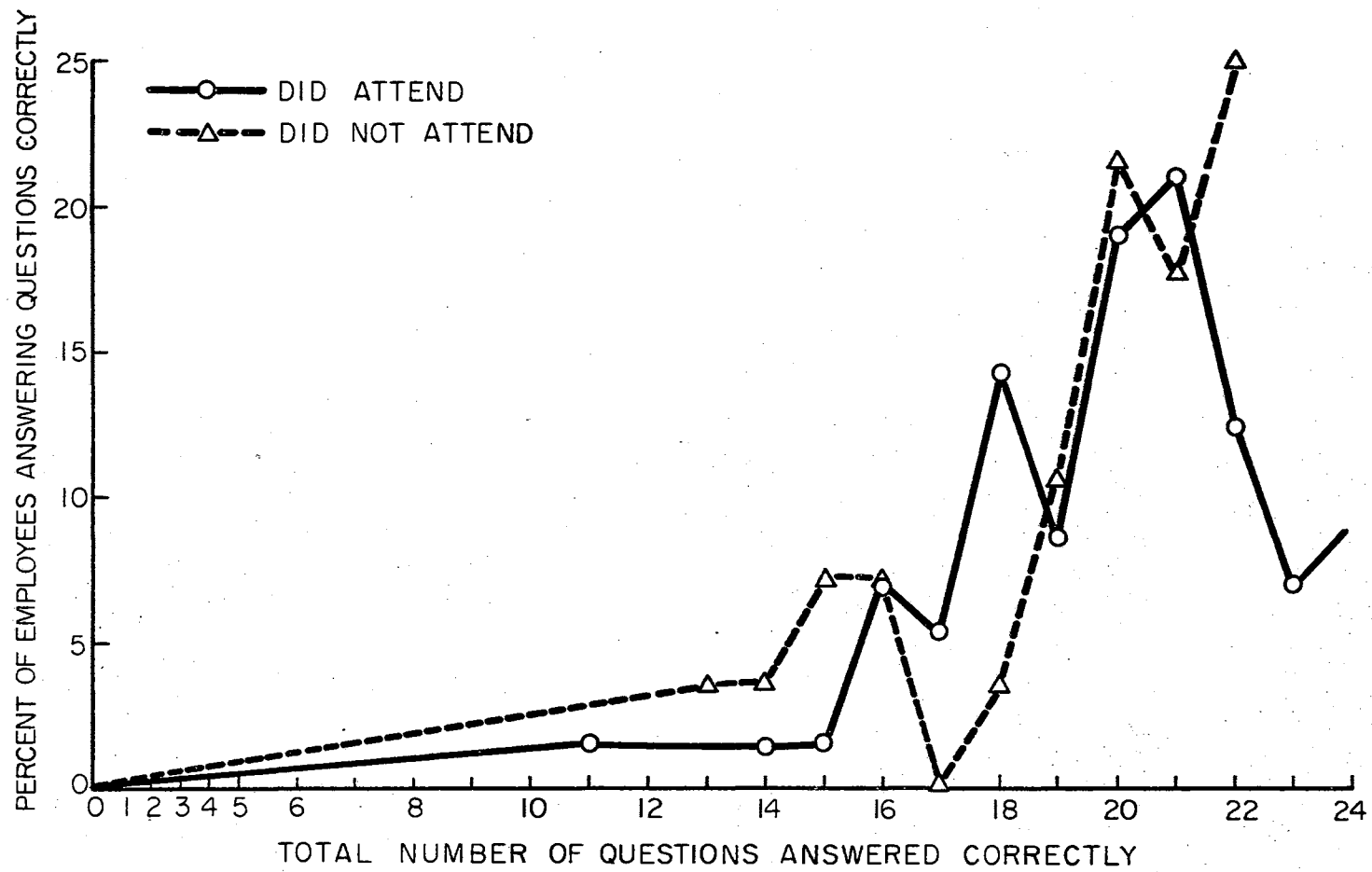


Figure 2. Test Score Distribution Between Attendance and Non-Attendance

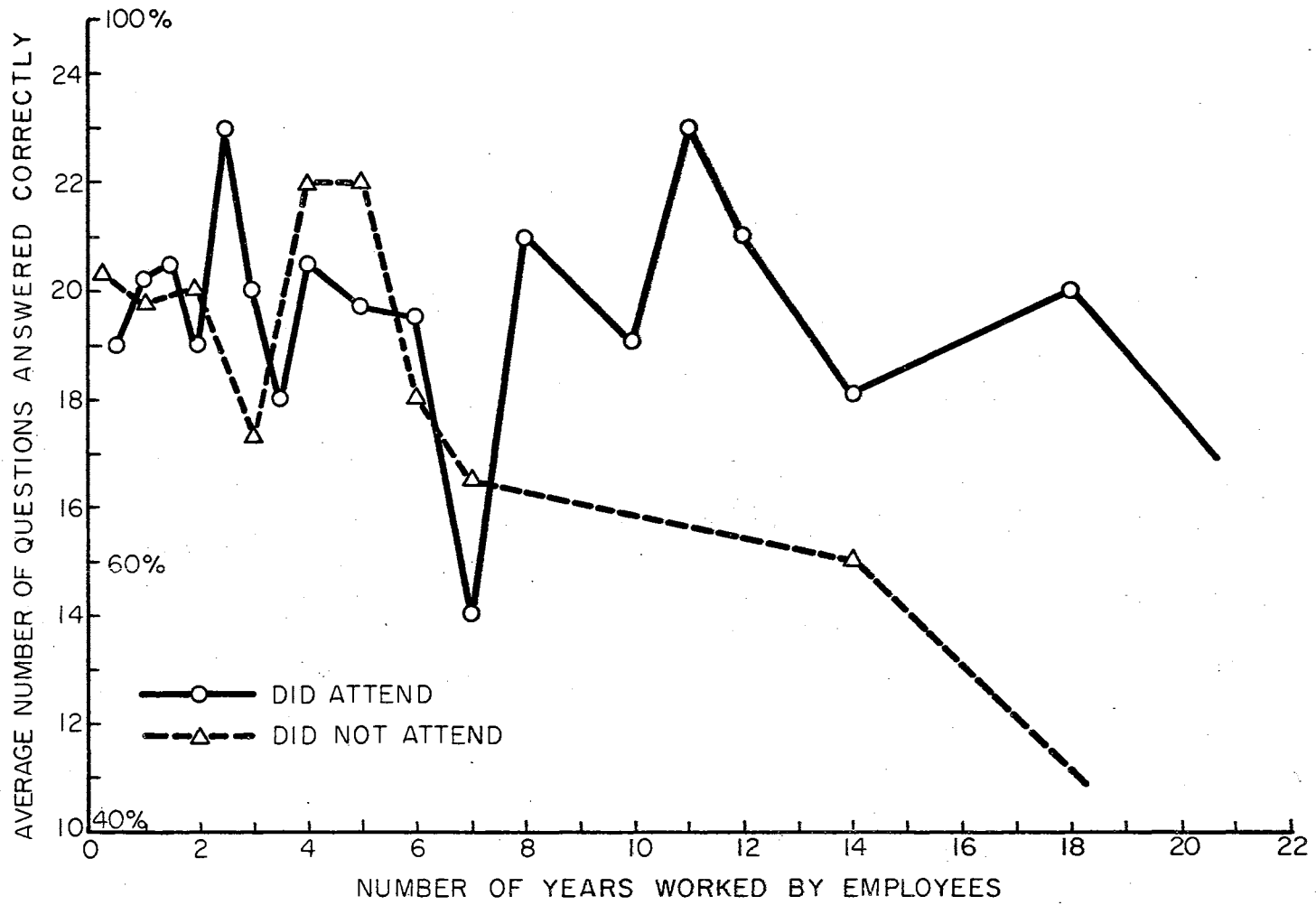


Figure 3. Comparison of Average Test Scores with the Years of Employment

Results of the average test scores in relation to the employees' educational level is presented in Figure 4. Higher average test scores for both groups were noted. Individuals with technical and vocational training beyond the 12th grade and those with 2 years of college education received higher test scores in all instances. Apparently the employees' educational level was related to the average scores obtained on the Written Test.

Graphically shown in Figures 5 and 6 are the interactions of the average test scores within the groups classified by job position. It will be noted that those individuals who attended, classified by position--dishwashing and production, obtained a higher average test score than those who did not attend the January, 1967 Sanitation Training Session. Conversely, those who did not attend, classified by position--service, obtained a higher average test score than those who attended. No significant difference was obtained among those classified in position--housekeeping and maintenance. Based upon these data it is possible that the interaction was influenced by the test score distribution and the size of the sample in each job classification.

Consideration of the analyses of variances computed from the data of this study shows evidence that there is no significant difference between those who attended and those who did not attend the one-day comprehensive Sanitation Training Session. However, there is some evidence that interaction is present within the group classified by position. Inasmuch as this highly significant interaction is present, the study was not designed to obtain the causes for this interaction. Evidently, this would suggest further study.

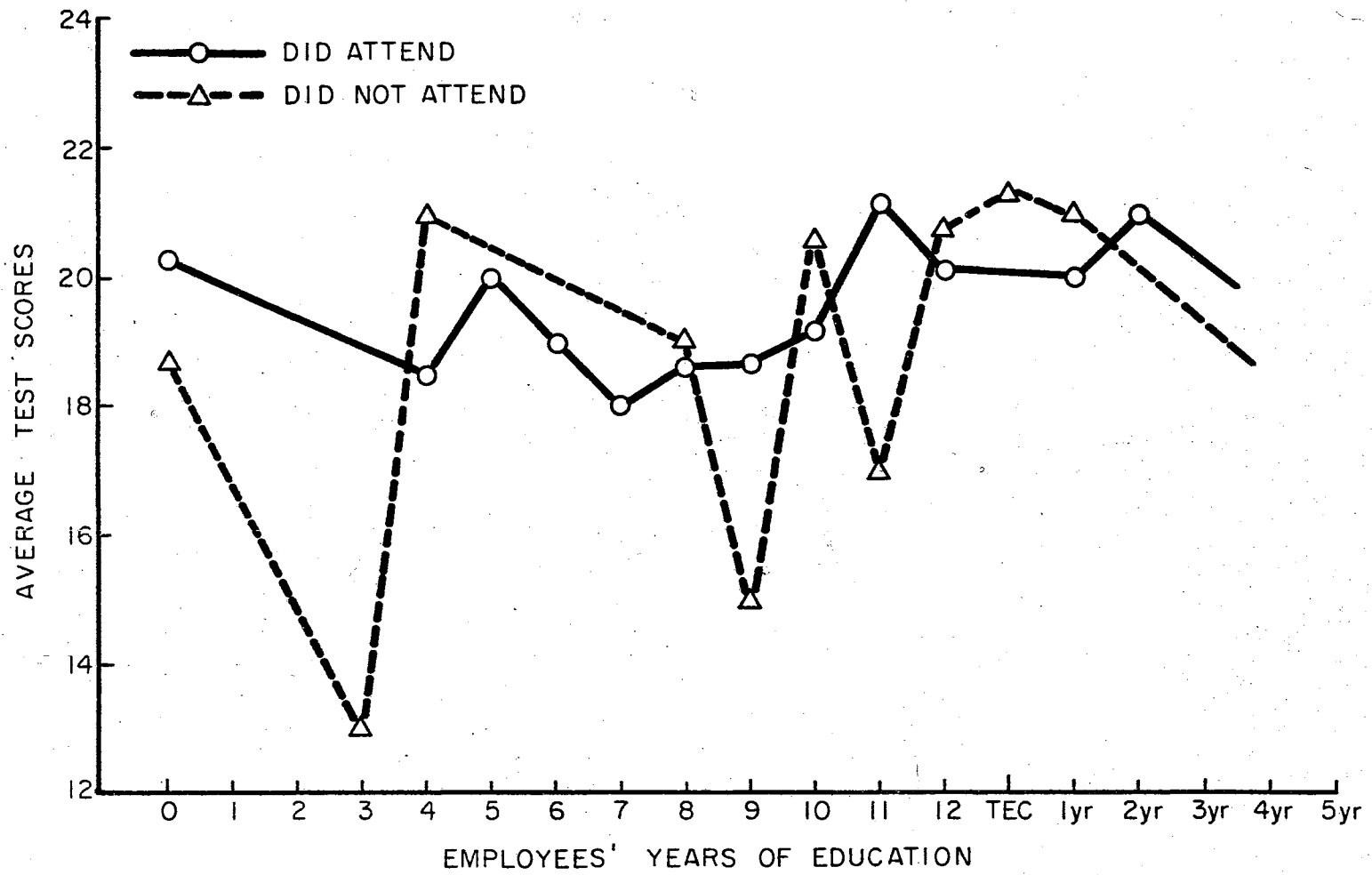


Figure 4. Comparison of Average Test Scores with Employees' Years of Education

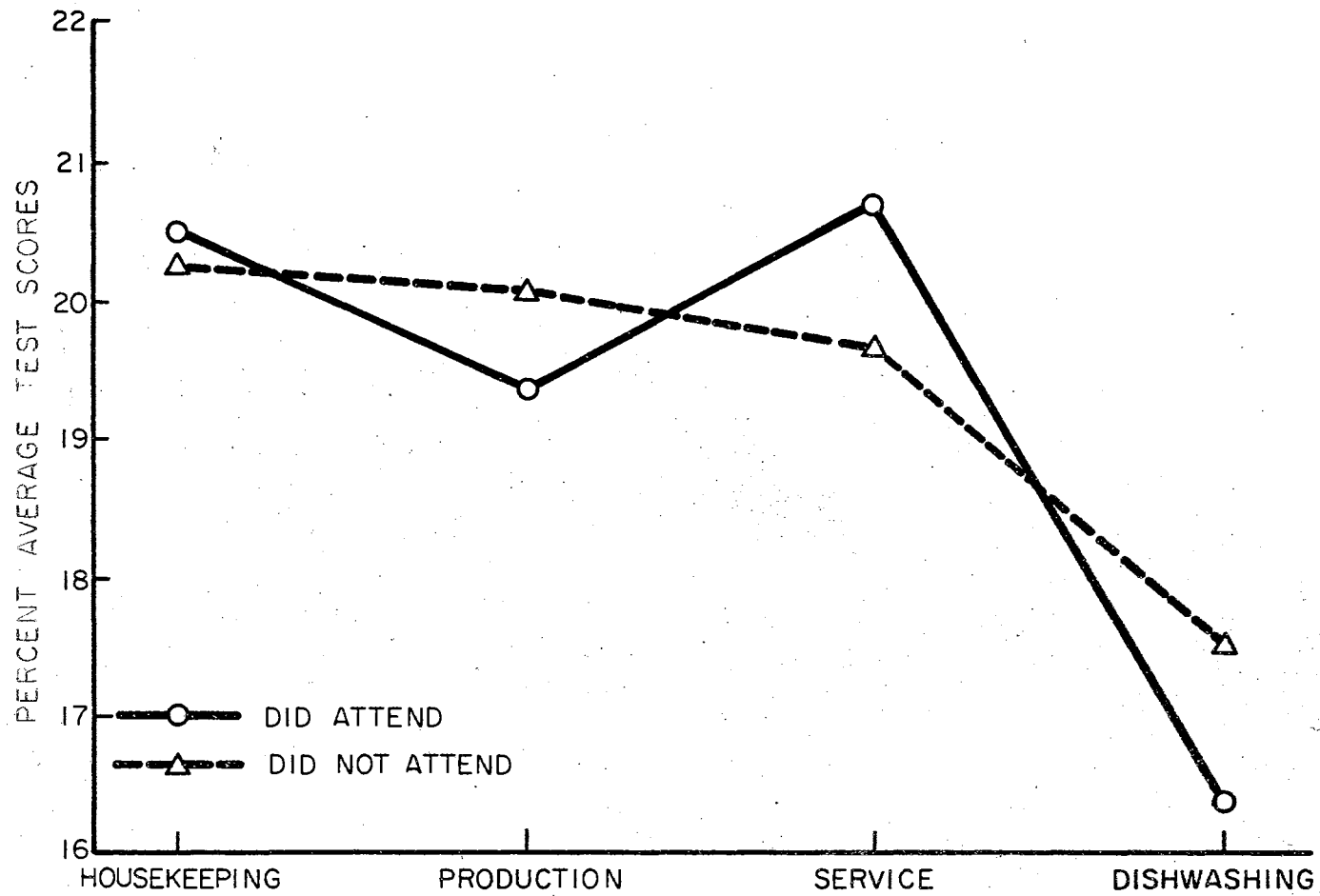


Figure 5. Comparison of Average Test Scores by Position Classification and Attendance and Non-Attendance

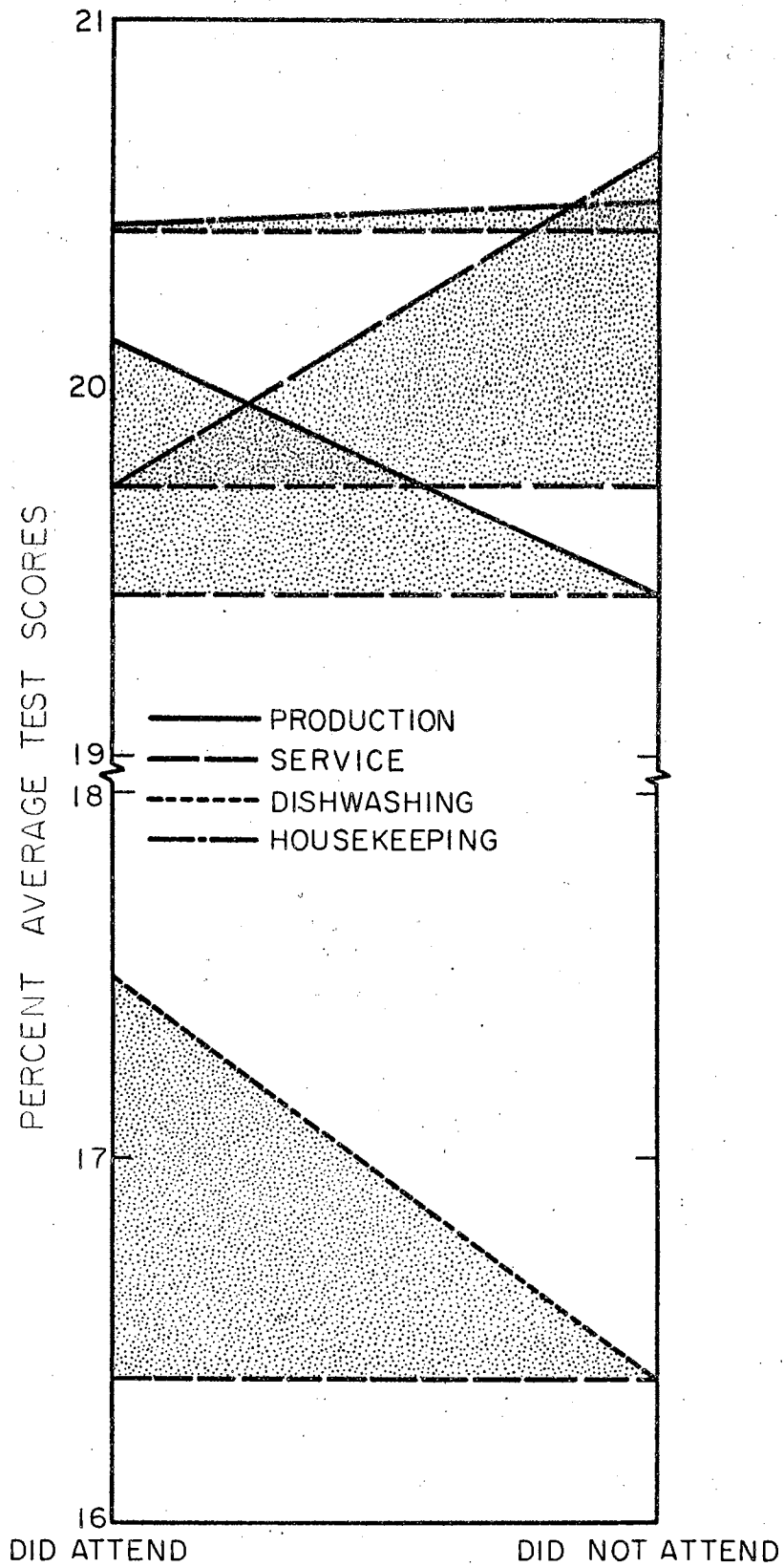


Figure 6. Interaction of Job Classification and Attendance

Findings from the Sanitation Observation Sheets

Sixty-four full-time RHFS employees in the randomly drawn sample were observed from the eight residence halls. From this total, 44 individuals attended and 20 individuals did not attend the one-day Sanitation Training Session in January, 1967. Three food service managers, five dietitians, ten production supervisors, and a dietetic intern assisted the author in the collection of the Sanitation Observation Sheets. Three observations for each individual sample were collected for a period of two weeks--May 5 to May 20, 1967, at many different working hours. A total of 576 observations were anticipated. Of this total, 192 observations were completed by the author. Due probably to the heavy schedule of the staff, the anticipated total was not completed, but 536 Sanitation Observation Sheets were collected and recorded.

Like the Written Test, the Sanitation Observation Sheets were coded (Appendix D). By giving a point for each category in each statement, the number of points received was the total score for each sample. Because of the variation in the number of observations collected for each sample, the total score for each category was expressed in percentage for statistical treatment and analysis. During the analysis of the Sanitation Observation Sheets, it was observed that when particular Production Supervisors had completed the observations a satisfactory score had been assigned in the majority of observations. Evidently the scores completed by some of the supervisors showed bias on the part of some raters. These observations were considered unreliable and therefore were eliminated from the evaluation. Thus, only 500 observations were recorded and analyzed.

The analyses of variances of the Sanitation Observation Sheets for each category between "a" and "da" are shown in Tables X-XII. The Type I error for the analyses of variances was set at $\alpha 0.05$ level. No statistically significant difference between the two groups--"a" and "da" was revealed in the analyses for each category. Therefore, it appears that the employees' performance and habits in relation to sanitation were the same for the two groups classified by position. This would seem to indicate that although the "da" employees did not attend the one-day Sanitation Training Session they tended to or were trained to use correct sanitary procedures in their natural pace of work.

TABLE X
ANALYSIS OF VARIANCE FOR OBSERVATION
SATISFACTORY

Source of variation	df	SS	MS	F
Total (corrected)	63	27,033.9845		
Job Classification (A)	3	3,462.3178	1,154.1059	
Attendance (B) (adjusted for A)	1	66.42192	66.42192	
AB Interaction	3	1,583.4953	527.8318	1.34 ^{**}
Individuals within Cells	56	21,921.7495	391.4598	

^{**}Insignificant ($\alpha < 0.05$)

The average percentage scores for each statement or question are shown in Table XIII. Fair and poor categories were combined as "unsatisfactory" due to the small number of individuals in the "poor" category. There was less variation between the percentage scores for satisfactory

and unsatisfactory categories. Statement numbers 2, 5, and 8 showed the greatest differences of +1.5335, +2.4730, and +1.7115, respectively. These variations were probably due to the fact that the employees were aware of these requirements (see Table XIII and Appendix D).

TABLE XI
ANALYSIS OF VARIANCE FOR OBSERVATION
FAIR

Source of variation	df	SS	MS	F
Total (corrected)	63	13,706.7765		
Job Classification (A)	3	2,505.3491		
Attendance (B) (adjusted for A)	1	9.3222	9.3222	
AB Interaction	3	754.7332	251.5777	1.35**
Individuals within Cells	56	10,437.3720	186.3816	

**Insignificant ($\alpha < 0.05$)

Comparison of the percentage average scores for Raters A* and C* is presented in Table XIV. Raters A gave higher scores for satisfactory and lower scores for unsatisfactory for both groups. There was less variation for satisfactory scores for both groups among the raters. A great difference was revealed for the unsatisfactory category for both groups of sample observed. Raters A gave lower scores than Rater C. Although variations were observed among the raters in giving unsatisfactory scores, it was difficult to determine whether the scores were biased.

*Raters A--the designation for all staff members

**Rater C--the designation for the author

Due to the small sample size, correlation between the test scores and the observation scores was impractical.

TABLE XII
ANALYSIS OF VARIANCE FOR OBSERVATION
POOR

Source of variation	df	SS	MS	F
Total (corrected)	63	4,841.23		
Job Classification (A)	3	188.5233		
Attendance (B) (adjusted for A)	1	10.59571	10.59571	
AB Interaction	3	358.693	119.5643	1.56**
Individuals within Cells	56	4,283.418	76.4896	

**Insignificant ($\alpha < 0.05$)

TABLE XIII
AVERAGE PERCENTAGE SCORES FOR EACH SANITATION
OBSERVATION QUESTION

Questions	Satisfactory	Unsatisfactory
1	1.5309	1.3502
2	2.2061	0.6726
3	1.8657	1.0261
4	1.5402	1.3508
5	2.7139	0.2409
6	1.6089	1.2827
7	1.6860	1.1901
8	2.3013	0.5898
9	1.0458	1.8460
10	1.7330	1.1600

TABLE XIV
 COMPARISON OF PERCENTAGE AVERAGE SCORES FOR
 SANITATION OBSERVATION SHEET BY RATERS

Questions	Satisfactory		Unsatisfactory	
	A	C	A	C
1	1.4854	1.5765	1.2690	1.4314
2	2.3018	2.1104	0.4478	0.8975
3	1.8192	1.9122	0.9315	1.1207
4	1.6818	1.3987	1.0677	1.6340
5	2.8362	2.5916	0.0406	0.4413
6	1.9128	1.3051	0.8379	1.7276
7	1.9307	1.4414	0.8201	1.5601
8	2.2903	2.3124	0.4592	0.7204
9	1.5669	0.5247	1.1839	2.5082
10	1.8753	1.5908	0.8779	1.4421

SUMMARY AND CONCLUSIONS

This study was an attempt to investigate the effectiveness of the Sanitation Training Program presented to the full-time employees of the RHFS at OSU in January, 1967.

Evaluation of the employees' achievement was based upon the assumptions that: (1) proper instruction and training were given to produce certain measurable changes; and (2) reasonably valid and objective techniques could measure such changes.

A Survey Questionnaire was used to categorize the samples according to attendance and non-attendance to the January, 1967 Sanitation Session and job position classification. A random sample was drawn from each group classified by position. Data were collected by means of a Written Test and Sanitation Observation Sheets.

As a result of this limited study, it would appear that the written test and sanitation observation data are of little value in determining the effectiveness of the sanitation program for the food service employees at OSU, or that the one-day session had no effect on the sanitation program. In comparing the test scores and sanitation observation scores of those who attended and those who did not attend, there were no statistically significant differences. However, there were differences in two factors--educational level and the length of employees' service. Even so, when one examines the data further, there are no apparent practical differences.

The position classification for this study seemed to be satisfactory in obtaining the representative sample of the total population. The possible exception is whether serving food on the counter and also working in the kitchen area should be included under "food production" or "food service". A number of employees served on the counter and also did general cooking. Some attention should be given to the amount of diversification of activities within each classification.

To conduct an evaluation of employees' performance and habits in relation to sanitation, the author feels that consistent, unbiased evaluation is essential. The observations were conducted for only two weeks, but were in addition to regular routines. Cooperation and interest of all the personnel concerned were maximum.

Since there were many variables which could have influenced the results obtained, future investigations would seem to be worthwhile. With a larger sample it should be possible to obtain better estimates which would have smaller variations. Further study with the use of more effective techniques for evaluation may be necessary because of interactions found within the groups that did and did not attend the Training Session. Also, the interaction in the position classification could perhaps be clarified.

It would be interesting to undertake further study on sanitation training programs interwoven with evaluation techniques for rating food service employees. The value of performance reports on a continuous basis could be a systematic way of reviewing food service problems and could also pinpoint areas where improvement is necessary. Further, a short, weekly session on sanitation over a long period of time could be an effective means of broadening the understanding and the capability

of the entire personnel and staff. Also, as time went on, informative current materials could be incorporated into each training session. Such sessions could include full-time and part-time food service employees, dietitians, managers, and production supervisors.

The suggestions given above are supported by a current study reported in the August, 1967, Hospitals, J. A. H. A. (37) which was conducted for a period of two years. Using a self-inspection technique interwoven with an intensive sanitation training course, the findings reported by Koren and Blake (37) show that the total sanitation score has risen from 74 percent in 1964 to 91 percent in 1966. Evidently, by combining these approaches, a food sanitation program can be created which ultimately will raise the level of sanitation within an institution.

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APPENDICES

APPENDIX A

ALLOCATION OF EMPLOYEES INVOLVED

	Hall 1		Hall 2		Hall 3		Hall 4		Hall 5		Hall 6		Hall 7		Hall 8		Total		Grand Total
	"a"	"da"	"a"	"da"	"a"	"da"	"a"	"da"	"a"	"da"	"a"	"da"	"a"	"da"	"a"	"da"	"a"	"da"	"a" + "da"
<u>Production</u>																			
No. of Employees	7	3	5	0	6	1	8	0	7	7	4	1	12	3	12	2	61	17	78
No. of Employees in Sample	2	3	3	0	2	1	4	0	3	5	2	0	4	1	3	1	23	11	34
<u>Service</u>																			
No. of Employees	2	0	1	3	3	1	3	3	9	2	3	1	9	2	8	2	38	14	52
No. of Employees in Sample	2	0	1	3	0	0	2	2	2	1	2	0	4	1	2	1	15	8	23
<u>Dishwashing</u>																			
No. of Employees	3	1	3	1	3	0	3	1	2	3	3	1	2	4	10	1	29	11	40
No. of Employees in Sample	1	1	1	1	1	0	1	0	1	1	2	0	2	2	3	0	12	5	17
<u>Housekeeping and Maintenance</u>																			
No. of Employees	1	1	3	1	3	0	2	0	0	2	0	0	0	2	4	0	13	7	20
No. of Employees in Sample	0	1	1	1	2	0	2	0	0	0	0	0	0	2	2	0	7	4	11
<u>Total</u>																			
No. of Employees	13	5	10	5	15	2	16	4	18	14	9	3	23	11	34	5	141	49	190
No. of Employees in Sample	5	5	6	5	5	1	9	2	6	6	6	0	10	6	10	2	57	28	85

"a"--Those who attended the January, 1967 Sanitation Training Session.

"da"--Those who did not attend the January, 1967 Sanitation Training Session.

APPENDIX B

SURVEY QUESTIONNAIRE

INSTRUCTIONS: Answer each question by a check (✓) or a word.

Employed at _____ Residence Hall

Name _____

_____ Year(s) in Residence Hall Food Services at OSU.

_____ Position occupied.

_____ Year(s) in this particular position.

YES

NO

Attended Sanitation Training Program last
January 3, 1967.

Participated with other employees by answering
a test after the program.

APPENDIX C

NAME _____

RESIDENCE HALL _____

Sample No. 3ap4

A SANITATION TRAINING EVALUATION TEST

INSTRUCTION: Carefully read each statement and circle the correct answer: X if the statement is correct
O if the statement is wrong.

- | <u>YES</u> | <u>NO</u> | |
|------------|-----------|---|
| X | O | 1. Sanitation is the responsibility of every person who works in a food service unit. |
| X | O | 2. One of the ways bacteria can move from dirty dishes or utensils to clean dishes is by the touch of hands. |
| X | O | 3. All bacteria are harmful and can cause disease. |
| X | O | 4. A food service worker maintains good personal habits of cleanliness when preparing and serving food. |
| X | O | 5. The protection of the students is the only concern and reason for practicing sanitary procedures. |
| X | O | 6. Pack hot foods compactly and uncovered in deep containers to be refrigerated. |
| X | O | 7. Cooked foods should be held at room temperature no longer than one hour. |
| X | O | 8. Covering cleaned utensils for $\frac{1}{2}$ minute or more with clean, hot water which is at least 180° F is correct sanitizing. |
| X | O | 9. One way of contaminating food is by unguarded coughs and sneezes. |
| X | O | 10. Hands should be washed only when they are soiled. |

APPENDIX C (continued)

<u>YES</u>	<u>NO</u>	
X	O	11. Equipment used for handling uncooked poultry can be re-used without washing.
X	O	12. Bacteria are killed at temperatures below 60° F.
X	O	13. A combination of detergent-sanitizer, when used in measured amounts, will not kill bacteria.
X	O	14. Bacteria cannot get into food from cuts, burns, or sores on hands.
X	O	15. All custards, cream fillings, and ground or diced protein foods must be kept at a temperature of 160° F.
X	O	16. All left-over foods, which have been frozen, then thawed and allowed to stand at room temperature, may be refrozen.
X	O	17. Food service employees should wear properly a hair net (women) or cap (men) while working on the job.
X	O	18. The hair may be fixed while serving or preparing food.
X	O	19. A clean "tasting spoon" is necessary when checking the food in the kitchen and on the service line.
X	O	20. Sweeping the floors should be done during periods when the least amount of food is exposed.
X	O	21. The procedure for dishwashing is pre-wash--wash--rinse--sanitize at 180° F.
X	O	22. All garbage and refuse are potential breeding places of disease-producing germs and disease-bearing insects and serve as a food supply for rodents.
X	O	23. Dirty dishes and silverware should be handled as carefully as clean ones.
X	O	24. Garbage containers should be washed with hot water and detergent and rinsed with clean hot water daily just like any other service utensils.
X	O	25. Bacteria have life which begins at 40° F and ends at 140° F.

APPENDIX D

NAME _____

RESIDENCE HALL _____

 SAMPLE NO. 3ap4

A SANITATION OBSERVATION SHEET

Observation No. _____

Rater _____

Date _____

INSTRUCTIONS: Check the category which best describes the employee. Observe each employee for not less than 15 minutes at a distance of 10 feet.

POOR	FAIR	SATISFACTORY	
_____	_____	_____	1. Consistently maintains a clean, orderly work area.
_____	_____	_____	2. Properly wears a hair net (women), a cap (men), over neatly combed hair.
_____	_____	_____	3. Hands are kept away from mouth.
_____	_____	_____	4. Hands are kept away from face and hair.
_____	_____	_____	5. Is free from skin breaks, burns, or cuts and other infections of the hands.
_____	_____	_____	6. Is tidy, neat and well groomed.
_____	_____	_____	7. Wears a clean uniform and apron and is conscious of his appearance.
_____	_____	_____	8. Keeps fingernails short, clean, and without nail polish.
_____	_____	_____	9. Displays ability to follow sanitary procedures when using tools or equipment employed in performing the job.
_____	_____	_____	10. Wears smooth and clean hose (women), socks (men) and clean shoes, in good repair.

APPENDIX E

May 5, 1967

To: Residence Hall Food Service Staff

From: Mary Leidigh and Salve Reusi

There seems to be confusion about the observations to be done in connection with the Sanitation Follow-up which Miss Reusi is conducting in some cafeterias.

For clarification three-10 minute individual observations will be made by each of the following:

1. the dietitian/manager,
2. the supervisor/dietetic intern,
3. and Miss Reusi.

These observations should be completed by May 20 and the observer should schedule a different hour of the day for each observation.

More than one employee (as many as can be readily seen from a chosen observation area) may be observed during the same 10 minute observation period.

Should there be ways we can help you, do not hesitate to ask us. We appreciate your cooperation and your time.

MEL:bw

VITA

Salve Regina Reusi

Candidate for the Degree of

Master of Science

Thesis: EVALUATION OF A SANITATION WORKSHOP FOR FOOD SERVICE EMPLOYEES
AT OKLAHOMA STATE UNIVERSITY

Major Field: Food, Nutrition and Institution Administration

Biographical:

Personal Data: Born September 7, 1935, in Saban, Oas, Albay,
Philippines, the daughter of Silveria Rosal and Olimpio Reusi.

Education: Attended grade school in Saban, Oas, Albay, Philippines;
graduated from the Republic Academy Secondary School, Guino-
batan, Albay, Philippines, in 1953; received the Bachelor of
Science degree with a major in Foods and Nutrition from the
Philippine Women's University, Manila, Philippines, in Novem-
ber, 1963; completed the requirements for Administrative Dietet-
ic Internship from Oklahoma State University, in January, 1967;
completed the requirements for the Master of Science degree in
January, 1968.

Professional experience: Nutritionist, Garnet Restaurant, Makati,
Rizal, Philippines, 1964; on-the-job training for production
supervisor at Stouffer's Food Corporation, Skokie, Illinois
from June, 1965 to January, 1966; was production supervisor,
Cordell Dining Hall, Oklahoma State University, Spring, 1967;
graduate assistant nutritionist, Department of Family Relations
and Child Development and assistant laboratory instructor, Food,
Nutrition and Institution Administration at Oklahoma State Uni-
versity, Fall, 1967.

Professional activities: Member of Philippine Association of
Nutrition; Philippine Association of University Women; Okla-
homa Dietetic Association; American Dietetic Association;
Grant-in-Aid, Altrusa International Foundation, 1967; and PEO
International Peace Fund, 1967.