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DEVELOPMENT AND COMPARISON OF TWO FORMS OF INSTRUCTION  
FOR TRAINING FOOD SERVICE WORKERS IN SANITATION

by

SHARON ANNE VONEUW SCHARF

B.A., Humboldt State College  
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## INTRODUCTION

Sanitation may be defined as the absence of disease-producing substances. Good sanitation practices should be a primary concern of every food service worker.

Training to improve the sanitary handling of food is needed to reduce the increase in incidence of foodborne illnesses. In 1960, 198 foodborne or waterborne outbreaks involving well over 9,000 cases were reported, the majority of these being ascribed to foods other than milk or water (Longree, 1967).

Training in sanitation should start the first day of employment, before the worker begins his job. The training program needs to be easily understood and interesting if the worker is to benefit from it. Avery (1969) stated that employees who understand what good sanitation is and why its practice must be a way of life for all good food service operations, usually are stable and contented in their work.

At the K-State Union Food Service, sanitation training programs are presented by the Kansas State University Environmental Health and Safety Section of Student Health about four times a year. More programs would be presented if a time could be found when all workers could be present. Many part-time employees do not benefit from the programs because they are not presented at a convenient time. For this reason, the presence of student employees at a sanitation presentation is a rarity.

The first sanitation program is presented each year to K-State Union Food Service workers approximately a month after resuming operation of the food service in the fall. New workers, hired after the first presentation, do not benefit from sanitation training until another session can be worked



into the food service schedule, about four months later.

The program presented by Student Health consists of a movie with sound, or a slide presentation. Both Holle (1969) and Carter (1963) investigated programmed instruction as a means of presenting sanitation training programs and found that food service workers reacted favorably to this type of presentation. A programmed text could be presented to each employee at a time that best fit into his work schedule and could be given to each new employee when hired.

The purpose of this study was to develop an orientation program on sanitation for food service workers, using a programmed text and a lecture-transparencies presentation, and to compare the two forms of instruction for training new food service workers at the K-State Union Food Service.

#### REVIEW OF LITERATURE

Americans are eating out at an increasing rate, according to Doyon (1970), due to several factors: increased employment in business and metropolitan centers, distance from job to home, increased employment of women, and mobility of the population. In a recent year, over 540,000 food and beverage establishments in this country served more than 78 million meals daily.

This trend has made the food and beverage industry fourth in size among all the nation's industries (HEW, 1969). Nearly three million people are employed in these operations with approximately 75,000 new workers needed yearly to fill newly created jobs.

Many food service employees are aware of and apply effective sanitation practices; however, many workers do not appreciate the need for these practices

(HEW, 1969). Evidence of this can be found by observing the work habits of food service employees. A high turnover rate has been a long recognized problem of the food service industry. New people enter the field temporarily to fill existing vacancies, but leave when employment more desirable to them becomes available. This is particularly true of younger people. "These new employees are generally unaware of the principles of food protection." (HEW, 1969). Woodburn (1967) found that secondary education on food control in the home is practically non-existent and that current textbooks for high school students generally neglect this aspect of food preparation.

When an outbreak of a foodborne illness occurs in an institutional dining facility, industrial plant cafeteria or in connection with group food services such as church or lodge banquets, it usually is identified and quickly tied in with the offending organism and factors that led to the incident (NRA, 1964). The restaurant, however, has a clientele that scatters to many points of employment or activity, to separate dwellings, and to different doctors; thus, the pattern of a foodborne illness outbreak seldom takes forms. Generally, the restaurateur is unaware of the problem, and the customers, rather than bringing their illness to the operator's attention, do not return to the establishment.

The National Restaurant Association (1964) stressed the importance of taking stringent steps to insure adequate employee hygiene, proper food handling, and efficient restaurant sanitation. These steps are necessary for the protection of both customers and employees and to obviate loss of patronage.

#### Foodborne Illnesses

The number of foodborne illnesses last reported nationally was second

only to those having respiratory illness, according to the Cooperative Extension Service of Kansas State University (1969). The number of cases of Staphylococcal food poisoning and of Salmonella infections have, fortunately, been decreasing. West, et al. (1966) pointed out that foodborne illness is listed as a major problem by the U.S. Public Health Service.

### Sanitation Program

People involved in handling food are guardians of the public health. "The 'human element' continues to be the single most important factor in the control of foodborne illness." (HEW, 1969)

Taggart (1967) asserted that properly cleaned food-contact surfaces, a suitably sanitary environment and healthy food handlers trained to protect food against contamination were basic for a good sanitation program. He proclaimed that visual cleanliness was not enough.

Management often does not realize that poor sanitary conditions exist. The responsibility for sanitation is delegated and it is assumed the duties are performed. Inge (1969) emphasized that an establishment must have the backing of management to have a sound sanitation program.

Management must insist on a good sanitation program, according to Holm (1967), and in doing so, must budget properly for it. It should take an active part in the program, setting a good example, and show the importance of it. Too often, when asked what his duties are, an employee will not mention sanitation duties. He feels these are unimportant duties to be done only if there is some excess time (Avery, 1969).

Ehle (1966) suggested that a sanitary approach can be started with the "well-scrubbed look." Both the employees and the food service need to be included in the "look."

Clothing worn by workers should always be clean and pressed, according to Smith (1967). Its wear should be limited to the building to avoid contamination at home or on the way to work. Employees should be encouraged to maintain neat hairstyles and wear caps or hair restraints. "Beards were found more resistant to cleaning away bacteria than a clean shaven face in a study by Barbeito, Mathers, and Taylor." (Anon., 1971)

Doyon (1970) stated that effective handwashing may be the most important single control measure in combatting bacterial infections. The U.S. Public Health Service advises food handlers to wash hands before work and after any interruption. No one with an infected finger or other discharging wound should handle food or dishes. Employees, he continued, should be encouraged to wash their hands for their own protection as well as for the protection of others.

Maintenance workers are a serious problem in personnel sanitation, according to Smith (1967). These employees move through the operation and are involved in many types of work. They are rarely seen washing their hands before working on equipment which may be in direct contact with food or dishes.

All dirt, dust, and grease must be banished from the food service, in both the kitchen and the dining room. Ehle (1966) explained that a list of areas to be cleaned, including tables, chairs, fixtures, walls, floors, and ceilings, should be posted with employees assigned to each area. The supervisor should make frequent checks to see that these assignments are being carried out. Keeping the kitchen open for public inspection will keep employees on their toes (Richards, 1966).

The ideal objective of a food service sanitation program should be a combination of the physical human elements, giving personnel the best available

tools with which to work, and upgrading their abilities and morale to enable them to do a better job (Hospitality, 1969).

### Training

One of the best tools to give employees is knowledge by means of an effective training program in sanitation (Bass and Vaughn, 1969). Brandt (1969) stated that training is a means to an end, which should form the start of a training program. The purpose of a sanitation training program is to (1) protect food against infections, (2) insure wholesomeness of food, and (3) meet consumer expectations (HEW, 1962).

Bass and Vaughn (1969) emphasized that discussion of training without considering the learning process is meaningless. They defined learning as a relatively permanent change in behavior that occurs as a result of practice or experience.

In the learning process, attention must be sought and interest developed before personal involvement, which is crucial in the total learning pattern, can begin (Craig, 1971). The learner's confidence must be won, he must decide he is capable of learning what is to be taught and he has to want to learn. Once these four qualities are obtained, learning, either mental or physical, can occur. A person must receive some satisfaction from what he has learned, if he is to seek more knowledge.

One of the biggest jobs in a sanitation training program is the motivation of the workers to want to learn and want to follow through with what they have learned. Many employees involved in "sanitation" jobs (dishwashers, pot and pan washers, bus boys) believe that their jobs are unimportant to the food service or are looked down upon by the other employees. They must be made

aware of what can happen if they do not take care and pride in their job, that they are protecting the health of the customers and fellow employees as well as the reputation of the organization (NRA, 1964). Training these employees as a team, to do more than one job, raises their morale (Hospitality, 1969).

Abrahamson (1963) suggested that "sanitation" employees are not the only workers who need motivation. All workers should be aware that sanitation is an important part of their work responsibility. Richards (1966) found that employees need to be trained so well in sanitation practices that they will practice them instinctively and will perform them automatically during rush periods. Improper habits, if permitted, will be obvious when the employee is under the stress of a peak period.

Well-trained employees tend to be more satisfied in their jobs (Hospitality, 1969). Effective training reduces labor turnover and absenteeism. Good sanitation practices, taught and performed, tend to decrease illness, thus absenteeism, among employees.

The trainer must be well-versed in the subject he is teaching according to Taggart (1967). He must be prepared to teach the subject and must know how to teach if the training program is to be a success. The trainer must have self-confidence and understand his workmen to be effective. "Helping people to help themselves is an important aspect of any educational effort." (Craig, 1971)

Once a need for training has been established, the critical question becomes, "how is the content to be taught and by whom?" (Bass and Vaughn, 1969)

## Programmed Instruction

Labor is the food service industry's largest single expenditure; therefore, effective training is essential (Sumbingo, et al., 1969). With a shortage of good instructors, insufficient time for supervisory personnel to train employees, and a lack of supervisors who are experienced in teaching and effective work methods, programmed instruction is being investigated as a means of training food service workers.

Basic Principles of a Program are identified by Drekman (1968) as:

Step by step buildup: A program is organized into clearly defined portions called frames. Each frame may range from several pages to the smallest step in a multiplication exercise. Frames are built one upon the other in steps of increasing complexity. The programmer must find the optimum step-size by testing his frames, as they are written, among his intended audience.

Active response: After studying one frame, the student must respond in some way. Therefore, the student is actively participating in the program, by pushing an answer button, or filling in a blank.

Feedback: The student is told whether his answer is right or wrong immediately, thus, is reinforced immediately. Most programs are written so it is easy to produce the correct answer, thus producing positive reinforcement, which is desirable in learning. The programmer must keep in mind that negative reinforcement (a wrong answer) is undesirable, and should be careful in construction of the program not to bring about undesirable effects.

Programmed instruction allows the student to work at his own pace, which permits more latitude for individual differences in learning than conventional methods (Hedlund, 1967).

Training programs may be presented by a teaching machine or a text. Cather (1967) pointed out, however, that due to the initial cost of the machine, the text is the less costly of the two media, thus more popular.

Preparation of a Program: (Zeitlein, 1970, Gardner, 1967, Downing, 1965) A training program, particularly programmed instruction, is only as good as the thought and preparation that goes into it.

First, the training task must be analyzed. The information should be broken down into small tasks to assure a correct response, but large enough to eliminate boredom.

Training objectives must be specified. These objectives should form the outline for the writing of the final performance test.

Course prerequisites should be specified. A program design needs to be determined and a suitable media selected to fit the situation.

The test and teaching frames can be written. When frames are completed, individual tryouts on these frames should be conducted. The program can then be revised, if necessary, and validated through a field test by a group.

Program writing is an art and a difficult, time consuming task that should not be taken lightly. It often is difficult to separate "nice to know" from "must know."

Gardner (1967) considers it essential that the programmer is aware of how people learn and how to employ appropriate instructional methods. The program must stimulate the intended learner and must gain his acceptance. "The better a program is constructed, the less the utility of attributes." (Whitlock, 1967)

Cather (1967) suggested that programmed instruction is not the panacea of training. It is successful in the basic and fundamental training and useful in familiarization and refresher courses but will not replace the instructor.

A programmed textbook containing colored photographs and detailed step-by-step instructions of two food service tasks was developed and evaluated



by Sumbingco (1967). Learning evaluations of the eleven residence hall food service employees participating in the program were favorable and after a month, the subjects had either improved or retained their original learning scores. The employees' attitudes were favorable toward the text.

Apley (1968) tested audio-visual programs on setting an individual place cover for a banquet and serving the banquet dinner plate, rolls and coffee at the K-State Union. The sixteen food service employees reacted favorably to the training and showed acceptable retention of the information presented after one day, one week, and two weeks.

A slide program for preparing a flight-type dishwashing machine for use was developed by Kahl (1968). Ten subjects were allowed to try out each step on the machine while viewing the slides. The other ten viewed the slides in a room away from the machine, and answered questions in an accompanying booklet. The group who worked with the machine while viewing the slides performed significantly better than the other group, but required more of the trainer's time.

Holle (1969) tested one unit of a sanitation program on 34 high school homemaking students using two methods of training, an individual slide study and a group lecture. The training program was effective using either method of instruction; however, the individual slide study required less of the trainer's time.

Two self-instructing programs for a college level quantity food preparation course were developed and their effectiveness compared by Hilton (1971). One group studied a Task-unit type of presentation on the preparation of baking powder biscuits and one group studied a slide and tape program on the same subject. There was no significant difference between the perfor-

mances of the two groups.

Kiang (1970) developed a linear type program for teaching protein metabolism to nursing students and tested it against a reading assignment on the same subject. Students in the programmed instruction group received a significantly higher score than those with the reading assignment.

### PROCEDURE

A basic sanitation lecture was written to introduce a basic knowledge of sanitary methods to new food service employees of the K-State Union Food Service on the first day of their employment. (Appendix A)

#### Selection of Subject Matter

Subject matter for the programs was found in literature prepared by the U.S. Department of Health, Education, and Welfare (1969), the National Restaurant Association (1964), Washington State Department of Health (1964), the Cooperative Extension Service of Kansas State University (1969), and Richardson (1969). Specific areas of sanitation were selected according to the needs of the K-State Union Food Service. These areas included: (1) an introduction to the food service, including a justification for the training program, (2) personal hygiene, and (3) care and handling of food and equipment.

Programmed Text: (Group A) The lecture was divided into short sections, or frames, with care taken not to intersect two subjects. (Appendix B) Multiple choice question(s) were written for each frame.

The text was compiled with a frame of information at the top of a page and a multiple choice question(s) concerning the previous frame at the bottom

of the page. The correct answer(s) was given on the following page. The employee was instructed to proceed to the next frame if the question(s) was answered correctly or to go back three pages and review that frame if the question(s) was answered incorrectly.

The programmed text was then reviewed and approved by a member of the College of Education faculty and members of the Institutional Management faculty.

Lecture-transparencies Presentation: (Group B) Possibilities for transparencies to accompany the lecture were sketched. Twenty-seven were chosen and drawn free-hand with felt-tip pens of various colors on sheets of red, blue, green, yellow and white acetate. The transparencies were reviewed and approved by members of the Institutional Management faculty. (Appendix C)

#### Evaluation Instruments

One examination was written for both presentations, using multiple choice questions selected from the programmed text. (Appendix D) A possible 31 points was attainable on the examination.

This examination was then expanded to three versions by rearranging the order of the questions and the order of responses. The three versions served as a pre-test, an examination to directly follow the presentation, and a post test, without the problem of variables.

#### Selection of Subjects

All new American employees of the K-State Union Food Service were selected for the training program. Two foreign employees (Brazil and Nigeria)

who displayed excellent speaking abilities in English were also chosen. The group included classified personnel, college students, and high school students. A total of 30 new employees participated in the training program. Information about the subjects was obtained from their employment applications. (Appendix E)

### Investigation

Subjects were divided into two groups. The balancing factors used in the division were classification, age, sex, education, and in the case of university student employees, major (home economics vs. non-home economics).

Both groups received a pre-test on the first day of their employment. Each subject in Group A was presented the programmed text and the examination immediately after, on his second day of employment. Each was instructed in the use of the text and was given as much time as he required to complete the text before being submitted to the examination. This presentation took approximately two minutes of the supervisor's time, and between 15 to 35 minutes of the employee's time.

A lecture-transparencies presentation was given to each subject of Group B on the second day of his employment. Each was given an opportunity to ask questions during the presentation and was given the examination directly following the training. This presentation required between 15 to 20 minutes of the employee's as well as the supervisor's time. Seldom were more than one or two employees available for the lecture at the same time, due to the variation in work schedules.

Approximately three weeks after the training session, each subject was given a post test. The time lapse varied with employees who did not work a regular schedule each week, but were on an "as needed" basis.

### Statistical Analysis

The data were analyzed for initial gain, retention of knowledge, and overall gain, by the Kansas State University Statistical Laboratory. (Appendix F) In each case the hypothesis tested was that the samples were from the same statistical population. The Smirnov two sample test was used because there was no reason to believe that the data were normally distributed. Moreover, the Smirnov test is a powerful two sample test.

### RESULTS AND DISCUSSION

Initial gains (the difference between the pre-test and examination scores) ranged from -1 to +10 for Group A, with an average of +4.5. (Table 1) Group B had initial gains ranging from -2 to +8, with an average of 3.5. The majority of subjects demonstrated a positive initial gain, regardless of the type of training received. No significant change in initial knowledge between the two methods of training was evident.

Table 1. Initial gain in test scores between pre-test and examination scores.

Subject No.	Program A <sup>1</sup>			:	Subject No.	Program B <sup>2</sup>		
	Pre-test Score	Exam Score	Initial Gain <sup>3</sup>			Pre-test Score	Exam Score	Initial Gain <sup>3</sup>
1	27	29	+2		1	27	29	+2
2	22	30	+8		2	24	29	+5
3	27	31	+4		3	23	28	+5
4	25	31	+6		4	30	30	0
5	26	30	+4		5	21	24	+3
6	25	29	+4		6	27	29	+2
7	29	31	+2		7	27	30	+3
8	24	31	+7		8	30	28	-2
9	26	31	+5		9	25	30	+5
10	27	30	+3		10	23	30	+7
11	24	29	+5		11	23	30	+7
12	21	31	+10		12	25	30	+5
13	25	30	+5		13	29	28	-1
14	26	25	-1		14	20	28	+8
15	26	30	+4					
16	27	31	+4					
Averages			+4.5					+3.5

<sup>1</sup>Program A--Programmed Text.

<sup>2</sup>Program B--Lecture-Transparencies Presentation.

<sup>3</sup>Initial gain in test scores was not significant between programs.

Retention scores (the difference between the examination and the post test scores) for Group A ranged from -4 to +1, with an average of -.688.

(Table 2) Group B had retention scores ranging from -1 to +5, with an average of +.643. There was no significant difference in retention of knowledge between the two types of training.

Table 2. Retention of information as indicated by the difference between the examination and post test scores.

Subject No.	Program A <sup>1</sup>			:	Subject No.	Program B <sup>2</sup>		
	Exam Score	Post Test Score	Retention <sup>3</sup>			Exam Score	Post Test Score	Retention <sup>3</sup>
1	29	30	+1		1	29	31	+2
2	30	31	+1		2	29	30	+1
3	31	30	-1		3	28	27	-1
4	31	31	0		4	30	30	0
5	30	31	+1		5	24	29	+5
6	29	27	-2		6	29	29	0
7	31	30	-1		7	30	31	+1
8	31	30	-1		8	28	28	0
9	31	27	-4		9	30	31	+1
10	30	31	+1		10	30	29	-1
11	29	29	0		11	30	29	-1
12	31	29	-2		12	30	30	0
13	30	28	-2		13	28	29	+1
14	25	24	-1		14	28	29	+1
15	30	29	-1					
16	31	30	-1					
Averages			-1.688					+1.643

<sup>1</sup>Program A--Programmed Text.

<sup>2</sup>Program B--Lecture-Transparencies Presentation.

<sup>3</sup>Retention of knowledge was not significant between programs.

Overall gain scores (the difference between the pre-test and post test scores) for Group A ranged from -2 to +9, with an average of +3.75. (Table 3) Group B had overall gain scores ranging from -2 to +9, with an average of +4.143. The majority of subjects demonstrated a positive overall gain score, regardless of the type of training they received. There was no significant difference in the overall gain of knowledge between the two presentations.

Table 3. Overall gains in test scores between pre-test and post test scores.

Subject No.	Program A <sup>1</sup>		Overall Gain <sup>3</sup>	:	Subject No.	Program B <sup>2</sup>		Overall Gain <sup>3</sup>
	Pre-test Score	Post Test Score				Pre-test Score	Post Test Score	
1	27	30	+3		1	27	31	+4
2	22	31	+9		2	24	30	+5
3	27	30	+3		3	23	27	+4
4	25	31	+6		4	30	30	0
5	26	31	+5		5	21	29	+8
6	25	27	+2		6	27	29	+2
7	29	30	+1		7	27	31	+4
8	24	30	+6		8	30	28	-2
9	26	27	+1		9	25	31	+6
10	27	31	+4		10	23	29	+6
11	24	29	+5		11	23	29	+6
12	21	29	+8		12	25	30	+5
13	25	28	+3		13	29	29	0
14	26	24	-2		14	20	29	+9
15	26	29	+3					
16	27	30	+3					
Average			+3.75					+4.143

<sup>1</sup>Program A--Programmed Text.

<sup>2</sup>Program B--Lecture-Transparencies Presentation

<sup>3</sup>Overall gain in scores was not significant between programs.

The above-average pre-test scores indicate that the test was overly simple. The high education level of the classified employees (two with Masters degrees, two with Bachelors degrees, three with two years of college, and one with a high school diploma) may have had an elevating effect on the pre-test scores also.

#### Employee Reactions

Subjects were given an opportunity on the examination immediately



following the training session to express their reactions to the training.

Group A. General reaction to the programmed text ranged from an unenthusiastic "it was okay" to an overall liking of this type of training. Only one subject found it boring, and one stated it wasn't needed. Most who mentioned previous knowledge of the information included in the presentation also stated that it was a good reminder to refresher. One subject stated she had not received any training, the conclusion being that after being left to read the text, she did not bother to do so, which is a possible drawback to this type of training.

Group B. The subjects seemed more enthusiastic toward the presentation than the subjects of Group A. Several remarked favorably toward the transparencies, as a means of reinforcement. Enough interest was generated for several subjects to suggest a tour of the food service after the presentation. About half of the subjects mentioned that the material was basic (or easy) but necessary, essential and a good review for anyone working in a food service.

### Summary

Sanitation training is needed in every food service to reduce incidence of foodborne illnesses. It should be started on the first day of employment, before the worker starts his job.

Difficulty in finding a time for the training and a qualified instructor has forced management to search for new ways of training that would be more adaptable to their situation. Programmed instruction is one of the alternatives being explored.

The purpose of this study was to compare a programmed text with a

lecture-transparencies presentation on basic sanitation.

Thirty new employees of the K-State Union Food Service served as subjects. They were given a pre-test on their first day of work. On the second day, they were subjected to one of the presentations and then an examination. Their reactions to the presentation were requested at this time. Three weeks later, they were given a post test.

Test scores showed no significant differences between the programmed text and the lecture-transparencies presentation in initial learning, retention of material learned, or in overall learning of basic sanitation material.

#### CONCLUSIONS AND RECOMMENDATIONS

A lecture-transparencies presentation and a programmed text were both effective in training new employees of the K-State Union Food Service in basic sanitation. Test scores indicated that either type of presentation would be successful in the training of new employees.

Both types of training have advantages. The programmed text required less of the supervisor's time than the lecture-transparencies presentation, and required no special room or equipment. It was more practical as only one or two employees were available to train at one time. The lecture-transparencies presentation required a dark room and the use of an overhead projector, but it allowed for a more "personal touch." Employees were able to ask questions during the training and the supervisor could stress important points by the tone of his voice.

Further study on the use of the programmed text is recommended for supplementary sanitation training of K-State Union Food Service employees,

including custodial employees. The programmed text is more adaptable to the work situation at the K-State Union than is the lecture-transparencies presentation. Drawings to accompany the programmed text should also be explored.

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## APPENDIX A



Transparency No. 1

The K-State Union Food Service welcomes you as a new employee. We hope you will enjoy being a member of the food service team.

Our food service has the important role of feeding many of the students, faculty, staff, and guests of Kansas State University. It is our primary objective to serve these customers safe, attractive, appetizing, and nutritious food in a pleasant surrounding to which they will wish to return. We need the help of each member of our team to accomplish this objective.

To assure safe food, there are certain rules of sanitation which must be followed. This short presentation of basic sanitation will be followed by a short examination. Do not worry about the results of the examination. They will in no way affect your job. They are to help me decide on the best type of presentation for future food service employees. Your help will strengthen our food service team.

Transparency No. 2

Regular visits to the doctor and the dentist are a check on the status of personal health. Often these visits will enable the doctor or dentist to detect symptoms of a disease or disorder before it does damage.

Transparency No. 3

A visit to the doctor is in order when illness is suspected or obvious. A cold, sore throat, dripping nose, boil, infected sore or cut, or diarrhea are reasons not to work. These disorders are sources of disease-producing organisms, commonly known as germs, and are dangerous to work with as they

can contaminate the food and equipment. If unable to work, an employee should call his supervisor at the K-State Union Food Service.

#### Transparency No. 4

Every worker at the K-State Union Food Service is required to have a yearly food handler's examination at the Kansas State University LaFene Student Health Center. This examination will only take about 15 minutes, and will assure all of us that you are in good health and safe to handle food served to our customers and fellow employees. Your supervisor will give you the necessary information and tell you when to go to the LaFene Student Health Center for your examination.

#### Transparency No. 5

Clean, neat uniforms are not only sanitary, but can make a favorable impression on our customers. The K-State Union Food Service will provide you with a clean uniform and apron, or bus jacket. These should be worn for two days, unless they become soiled on the first day.

#### Transparency No. 6

The evening food production manager will issue a uniform locker through which you will receive your clean uniform or bus jacket. There is a one dollar deposit for the key to this locker.

#### Transparency No. 7

Your uniform or bus jacket must be stored in your uniform locker. It must not be worn outside the K-State Union. We provide the uniforms and

bus jackets so your work clothing will be sanitary. It may become very unsanitary wearing it to and from work.

Transparency No. 8

Many germs live on your hair. Therefore, hair should be kept out of the food, and off the equipment and utensils the food will be in direct contact with. Not only is hair unsanitary, but it is very distasteful looking if found in your food.

Transparency No. 9

The average person loses as many as 80 hairs a day.

Transparency No. 10

For these reasons, hair nets must be worn by all female employees to prevent hair from touching the food or surfaces which will be in direct contact with food. Men, with longer hair styles, must wear a cap or net for the same reasons. This is a rule of the State Board of Health and is strongly endorsed by the K-State Union Food Service and the President's Campus Sanitation Committee.

Transparency No. 11

Your hands can be your worst enemies if you don't take proper care of them. They can contaminate your food and the food of many others.

Transparency No. 12

Sneezing or coughing in someone's face is bad manners. It is not

only rude, but the little droplets of spray thrown out from sneezing or coughing may contain any number of disease-producing organisms of the respiratory tract. These droplets falling on another person, or his food, is undesirable.

Transparency No. 13

Likewise, good "sanitary" manners require washing our hands after sneezing or coughing into them or into a handkerchief held by them, before handling another person's food, or the equipment used to prepare or serve the food.

Transparency No. 14

For these reasons, scratching your head, picking at your nose, or wiping your mouth with your hand is also bad "sanitary" manners. Germs are everywhere, and we don't want to contaminate the food or equipment in any way.

Transparency No. 15

Smoking cigarettes is a very good way to contaminate your hands. You touch the tip of the cigarette which has been in your mouth and has saliva on it. Cigarette smoking is not permitted in any preparation or serving area, nor in the dishroom, hallways or storage areas.

Hands should be washed before beginning work, after each visit to the toilet, after handling soiled equipment or utensils, after smoking, after sneezing or coughing, and before preparing or serving food, or handling clean utensils or equipment.

Transparency No. 16

Just getting your hands wet in lukewarm water does not mean they are washed. You must wet them thoroughly with hot water, apply a generous amount of soap, and rub--not just the palms, but in between your fingers and across the backs of your hands. They must be thoroughly rinsed in hot water and dried with paper towels provided above each hand sink.

Transparency No. 17

You can recontaminate your hands by drying them with a soiled towel, or by touching stair rails, doors, your hair or face, or any other unsanitary surface on your way back to your work station.

Transparency No. 18

We've been talking a lot about hands. They aren't the only important part of you when sanitation is concerned.

Germs live all over our bodies. This is the reason we take baths--to remove the germs and soil harboring the germs. If germs are allowed to grow on our bodies, we develop an offensive odor. Even if we take a bath every night, we need to use deodorant every day so this offensive odor does not develop. This odor makes us unpleasant to be around--for the other workers--and for the customers. We don't want the customers to think our dining area is an unpleasant place to visit.

Transparency No. 19

Your hair is another haven for germs. This is why we wear hair nets. We should always keep our hair clean and in a neat, trim style--this includes

both men and women. Ribbons and scarves should not be worn while working.

Transparency No. 20

Fingernails are a good place for germs to collect and multiply. The longer the nails are, the more room for the germs. Nails should be kept short and cleaned daily.

Transparency No. 21

You should brush your teeth daily before reporting to work. Brushing your teeth daily helps prevent tooth decay and bad breath. Tooth decay is costly. Bad breath is offensive to any person you talk to.

Transparency No. 22

You are expected to provide comfortable shoes. These should be kept clean and in good repair, so you will be neat from head to toe.

Transparency No. 23

Jewelry should be kept to a minimum. Wedding rings and watches are acceptable. Excessive jewelry is obstructive to your work. Jewelry is unsanitary due to the many corners and crevices which may harbor soil and germs.

Make-up should be used sparingly. Our customers expect neat, clean workers to prepare and serve their food. Let's show them we meet their expectations. Even if you don't work where the customers can see you, think of how many people you see when you eat in the dining room or walk to the restroom.

Transparency No. 24

Now that we have you safe, sanitary, and in clean uniforms, we still need some help in keeping our food, equipment, and supplies safe and sanitary.

When you wash your hands, be sure that you are using a hand sink. We also have sinks in which vegetables, fruits and meats are prepared, and we have sinks in which utensils and equipment are cleaned. Organisms washed off the hands can contaminate the sink and later can be transferred to the food, utensils, or equipment cleaned in the sink.

Transparency No. 25

We need to be careful when we handle equipment and utensils. Never pick up anything with your fingers touching the surface the food will touch. Silverware should be picked up by the handles. Cups should be picked up by the handles, plates by the edge, and glasses at the bottom.

When filling glasses with ice, use the metal or unbreakable plastic ice scoop provided. Never dip the glass into the ice. This is a state regulation because glasses can easily break in the ice, and a customer can be served a very dangerous glass of ice water or other beverage.

Food should never be picked up by the hands, unless sanitary, disposable gloves are worn. Food should be served with tongs, spoons, dippers, or forks.

Transparency No. 26

Most disease-producing organisms grow best at temperatures near that of the human body or about 100°F. They will grow quite well at a wider

range of temperatures, and so a danger zone of temperatures has been established. This zone ranges from 45°F. to 140°F.

To assure safety, any hot food being served must be kept above 140°F. When the hot food is no longer being served, it must be tightly covered to prevent air contamination, and must be refrigerated immediately, to bring the temperature below the 45°F. point.

To assure safety, any cold food must be kept below 45°F. during the entire serving period. It must be tightly covered to prevent air contamination when it is stored. It must be kept below 45°F. while it is stored.

Transparency No. 27

Our motto is: "Hot food hot; cold food cold."



## APPENDIX B

SANITATION TRAINING MANUAL  
USING PROGRAMMED INSTRUCTION

by

Sharon Scharf

# INSTRUCTIONS FOR USING THIS PROGRAMMED TEXT

A small amount of information is presented at the top of each page. There is a dotted line below the information, beginning on page two. There are multiple choice statements concerning the previous information below the dotted line (e.g., the statements on page two concern the information on page one). Carefully choose your selection, keeping in mind the information you have previously read. All of the selections may be logical, but only one will have been mentioned in the previous information. The correct responses to these statements are on the page following them.

Please read through one page at a time, making your responses to the statements mentally. Turn to the next page to see if you responded correctly; follow the instructions below the responses. Please do not write in this manual. Thank you.

We want to welcome you as a new employee of the K-State Union Food Service. We hope you will enjoy being a member of the food service team.

Our food service has the important role of feeding many of the students, faculty, staff, and guests of Kansas State University. It is our primary objective to serve these customers safe, attractive, appetizing, and nutritious food in a pleasant surrounding to which they will wish to return. We need the help of each member of our team to accomplish this objective.

To assure safe food, there are certain rules of sanitation which must be followed. This short presentation on basic sanitation will be followed by a short examination. Do not worry about the results of this examination. They will in no way affect your job. They are to help me decide on the best type of presentation for future food service employees. Your help will strengthen our food service team.

Regular visits to the doctor and the dentist are a check on the status of personal health. Often these visits will enable the doctor or dentist to detect symptoms of a disease or disorder before it does damage.

A visit to the doctor is in order when illness is suspected or obvious. A cold, sore throat, dripping nose, boil, infected sore or cut, or diarrhea are reasons not to work. These disorders are sources of disease-producing organisms, commonly known as germs, and are dangerous to work with as they can contaminate the food and equipment. If unable to work, a worker should call his supervisor at the K-State Union Food Service.

Every worker at the K-State Union Food Service is required to have a yearly food handler's examination at the Kansas State University LaFene Student Health Center. This examination will only take about 15 minutes, and will assure all of us that you are in good health and safe to handle food served to our customers and fellow employees. Your supervisor will give you the necessary information and tell you when to go to the LaFene Student Health Center for your examination.

.....

To assure safe food, there are certain rules of \_\_\_\_\_ which must be followed. (A. conduct B. safety C. sanitation)

To assure safe food, there are certain rules of C. sanitation which must be followed.

If you selected the correct word to fill in the blank, go on to the next page. If you did not select the correct word, reread page one, and be certain you understand the statement at the bottom of page two. Then proceed to page four.

Clean, neat uniforms are not only sanitary, but can make a favorable impression on our customers. The K-State Union Food Service will provide you with a clean uniform and apron, or bus jacket. These should be worn for two days, unless they become soiled on the first day.

The evening food production manager will issue a uniform locker through which you will receive your clean uniform or bus jacket. There is a one dollar deposit for the key to this locker.

Your uniform or bus jacket must be stored in your uniform locker. It must not be worn outside the K-State Union. We provide the uniforms and bus jackets so your work clothing will be sanitary. It may become very unsanitary wearing it to and from work.

.....

Regular visits to the doctor and dentist are a check on the status of personal \_\_\_\_\_. (A. health B. attitudes C. appearances) A visit to the doctor is in order when \_\_\_\_\_ is suspected or obvious.

(A. fatigue B. illness C. irritability) Colds, sore throats, dripping noses, boils, infected sores or cuts, and diarrhea are sources of \_\_\_\_\_ organisms, (A. many B. disease-producing C. dangerous) and can \_\_\_\_\_ food and equipment. (A. flavor B. spoil C. contaminate) All workers are required to have a \_\_\_\_\_ examination, at the LaFene Student Health Center, to assure all of us that you are safe to handle food. (A. physical B. food handler's C. mental)

Regular visits to the doctor and dentist are a check on the status of personal A. health. A visit to the doctor is in order when B. illness is suspected or obvious. Colds, sore throats, dripping noses, boils, infected sores or cuts, and diarrhea are sources of B. disease-producing organisms, and can C. contaminate food and equipment. All workers are required to have a B. food handler's examination, at the LaFene Student Health Center, to assure all of us that you are safe to handle food.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page two, and be certain you understand all the statements at the bottom of page four. Then proceed to page six.



Many germs live on your hair. Therefore, hair should be kept out of the food, and off the equipment and utensils the food will be in direct contact with. Not only is hair unsanitary, but it is very distasteful looking if found in your food. The average person loses as many as 80 hairs a day.

For the above reasons, hair nets must be worn by all female employees to prevent hair from touching the food or surfaces which will be in direct contact with food. Men, with longer hair styles, must wear a cap or net for the same reasons. This is a rule of the State Board of Health and is strongly endorsed by the K-State Union Food Service and the President's Campus Sanitation Committee.

.....

Clean, neat uniforms are \_\_\_\_\_, (A. pretty B. sanitary C. nice to wear) and make a favorable impression on our \_\_\_\_\_. (A. friends B. fellow employees C. customers) Your uniform or bus jacket must be stored in your \_\_\_\_\_ and must be worn only in the K-State Union. (A. closet B. drawer C. uniform locker) Your uniform or bus jacket can become \_\_\_\_\_ on the way to and from work. (A unsanitary B. faded C. lost)

Clean, neat uniforms are B. sanitary, and make a favorable impression on our C. customers. Your uniform or bus jacket must be stored in your C. uniform locker and must be worn only in the K-State Union. Your uniform or bus jacket can become A. unsanitary on the way to and from work.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page four, and be certain you understand all the statements at the bottom of page six. Then proceed to page eight.

Your hands can be your worst enemies if you don't take proper care of them. They can contaminate your food and the food of many others.

Sneezing or coughing in someone's face is bad manners. It is not only rude but the little droplets of spray thrown out from sneezing or coughing may contain any number of disease-producing organisms of the respiratory tract. These droplets falling on another person, or his food, is undesirable. Likewise, good "sanitary" manners require washing our hands after sneezing or coughing into them or into a handkerchief held by them, before handling another person's food, or the equipment used to prepare or serve the food.

For the above reasons, scratching your head, picking at your nose, or wiping your mouth with your hand is also bad "sanitary" manners. Germs are everywhere, and we don't want in any way to contribute to the contamination of the food or surfaces of equipment.

.....

Hair is \_\_\_\_\_. (A. made of protein B. unsanitary C. always growing)

We don't want hair to touch the \_\_\_\_\_ or \_\_\_\_\_. (A. food or equipment B. hands or face C. uniform or apron) To keep hair out of the food, female employees must wear \_\_\_\_\_. (A. scarves B. hairnets

C. ribbons) Male employees with longer hair styles must wear \_\_\_\_\_ or \_\_\_\_\_. (A. head bands or hoods B. helmets or hats C. caps or nets)

Hair is B. unsanitary. We don't want hair to touch the A. food or equipment. To keep hair out of the food, female employees must wear B. hairnets. Male employees with longer hair styles must wear C. caps or nets.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page six, and be certain you understand all the statements at the bottom of page eight. Then proceed to page ten.

Smoking cigarettes is a very good way to contaminate your hands. You touch the tip of the cigarette which has been in your mouth and has saliva on it. Cigarette smoking is not permitted in any preparation or serving area, nor in the dishroom, hallways or storage areas.

Hands should be washed before beginning work, after each visit to the toilet, after handling soiled equipment or utensils, after smoking, after sneezing or coughing, even into a tissue, after touching your hair, and before preparing or serving food, or handling clean utensils or equipment.  
.....

Your hands can contaminate \_\_\_\_\_. (A. food B. clothing C. hair) Good "sanitary" manners require us to \_\_\_\_\_ (A. wipe B. rinse C. wash) our hands after sneezing or coughing into them because the little droplets of spray thrown out from sneezing or coughing may contain \_\_\_\_\_ organisms. (A. dangerous B. many C. disease-producing) Scratching your head, picking at your nose, or wiping your mouth with your hand are bad "\_\_\_\_\_" manners. (A. social B. personal C. sanitary)

Your hands can contaminate A. food. Good "sanitary" manners require us to C. wash our hands after sneezing or coughing into them because the little droplets of spray thrown out from sneezing or coughing may contain C. disease-producing organisms. Scratching your head, picking at your nose, or wiping your mouth with your hand are bad C. "sanitary" manners.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page eight, and be certain you understand all the statements at the bottom of page ten. Then proceed to page 12.

Just getting your hands wet in lukewarm water does not mean they are washed. You must wet them thoroughly with hot water, apply a generous amount of soap, and rub - not just the palms, but in between your fingers and across the backs of your hands. They must be thoroughly rinsed in hot water and dried with paper towels provided above each hand basin. You can recontaminate your hands by drying them with a soiled towel, or by touching stair rails, doors, your hair or face, or any other unsanitary surface on your way back to your work station.

.....

Smoking cigarettes \_\_\_\_\_ (A. stains B. relaxes C. contaminates) your hands because you touch the tip of the cigarette which has been in your mouth and has \_\_\_\_\_ on it. (A. saliva B. smoke C. tobacco).

Hands should be washed before beginning \_\_\_\_\_ (A. your work B. your break C. to leave), after each visit to the \_\_\_\_\_ (A. office B. toilet C. doctor), after handling \_\_\_\_\_ (A. soiled B. clean C. heavy) equipment or utensils, and before handling \_\_\_\_\_ (A. soiled B. clean C. heavy) equipment or utensils.

Smoking cigarettes C. contaminates your hands because you touch the tip of the cigarette which has been in your mouth and has A. saliva on it. Hands should be washed before beginning A. your work, after each visit to the B. toilet, after handling A. soiled equipment or utensils, and before handling B. clean equipment or utensils.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page ten, and be certain you understand all the statements at the bottom of page 12. Then proceed to page 14.



We've been talking alot about hands. They aren't the only important part of you when sanitation is concerned.

Germs live all over our bodies. This is the reason we take baths - to remove the germs and soil harboring the germs. If germs are allowed to grow on our bodies, we develop an offensive odor. Even if we take a bath every night, we need to use deodorant every day so this offensive odor does not develop. This odor makes us unpleasant to be around - for the other workers - and for the customers. We don't want the customers to think our dining area is an unpleasant place to visit.

.....

To wash your hands thoroughly, use \_\_\_\_\_ (A. cold B. warm C. hot) water, a generous amount of \_\_\_\_\_ (A. water B. time C. soap), and rub between the fingers as well as the palms and backs of your hands. Rinse them with \_\_\_\_\_ (A. cold B. warm C. hot) water, and dry them with a \_\_\_\_\_ (A. cloth B. paper C. dry) towel provided above the hand basin. Hands can be recontaminated by drying them with a \_\_\_\_\_ (A. clean B. soiled C. paper) towel, or by \_\_\_\_\_ (A. touching B. passing C. looking at) stair rails, doors, your hair or face, or any other unsanitary surface on your way back to your work station.

To wash your hands thoroughly, use C. hot water, a generous amount of C. soap, and rub between the fingers as well as the palms and backs of your hands. Rinse them with C. hot water, and dry them with a B. paper towel provided above the hand basin. Hands can be recontaminated by drying them with a B. soiled towel, or by A. touching stair rails, doors, your hair or face, or any other unsanitary surface on your way back to your work station.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page 12, and be certain you understand all the statements at the bottom of page 14. Then proceed to page 16.

Your hair is another haven for germs. This is why we wear hair nets. We should always keep our hair clean and in a neat, trim style - this includes both men and women. Ribbons and scarves should not be worn while working.

Fingernails are a good place for germs to collect and multiply. The longer the nails are, the more room for the germs. Nails should be kept short and cleaned daily.

.....

\_\_\_\_\_ (A. skin B. hairs C. germs) live all over our bodies. We must take \_\_\_\_\_ (A. naps B. walks C. baths) and use \_\_\_\_\_ (A. perfume B. make-up C. deodorant) to eliminate the offensive odor caused by the germs. An offensive odor makes us \_\_\_\_\_ (A. popular B. unpleasant C. nice) to be around - for the other employees - and for our \_\_\_\_\_ (A. friends B. relatives C. customers)

C. Germs live all over our bodies. We must take C. baths and use C. deodorant to eliminate the offensive odor caused by the germs. An offensive odor makes us B. unpleasant to be around - for the other employees - and for our C. customers.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page 14, and be certain you understand all the statements at the bottom of page 16. Then proceed to page 18.

You should brush your teeth daily before reporting to work. Brushing your teeth daily helps prevent tooth decay and bad breath. Tooth decay is costly. Bad breath is offensive to any person to whom you talk.

You are expected to wear comfortable shoes. These should be kept clean and in good repair, so you will be neat and comfortable from head to toe.

Jewelry should be kept to a minimum. Wedding rings, class rings, and watches are acceptable. Excessive jewelry is obstructive to your work. Jewelry is unsanitary due to the many corners and crevices which may harbor soil and germs.

Make-up should be used sparingly. Our customers expect neat, clean workers to prepare and serve their food. Let's show them we meet their expectations. Even if you don't work where the customers can see you, think of how many people you see when you eat in the dining room or walk to the restroom.

.....

We should keep our hair \_\_\_\_\_ and in a neat, trim style. (A. short B. clean C. combed) Ribbons and scarves should \_\_\_\_\_ be worn while working. (A never B. occasionally C. always) Fingernails should be kept \_\_\_\_\_, (A. polished B. short C. sharp) and should be \_\_\_\_\_ daily. (A. cleaned B. polished C. filed)

We should keep our hair B. clean and in a neat, trim style. Ribbons and scarves should A. never be worn while working. Fingernails should be kept B. short, and should be A. cleaned daily.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page 16, and be certain you understand all the statements at the bottom of page 18. Then proceed to page 20.

Now that we have you safe, sanitary, and in clean uniforms, we still need some help in keeping our food, equipment, and supplies safe and sanitary.

When you wash your hands, be sure that you are using a hand sink. We also have sinks in which vegetables, fruits and meats are prepared, and we have sinks in which utensils and equipment are cleaned. Organisms washed off the hands can contaminate the sink and later can be transferred to the food, utensils, or equipment cleaned in the sink.

.....

You should brush your \_\_\_\_\_ (A. teeth B. hair C. clothing) daily before reporting to work to prevent \_\_\_\_\_ (A. a bad appearance B. tooth decay and bad breath C. dandruff) You should wear shoes that are \_\_\_\_\_. (A uncomfortable, but neat B. comfortable, clean, and in good repair C. stylish and expensive) \_\_\_\_\_ are the only pieces of jewelry acceptable to wear while working. (A. Bracelets and necklaces B. Earrings and necklaces C. Wedding rings, class rings, and watches) Jewelry is \_\_\_\_\_ due to the many corners and crevices which may harbor soil and germs. (A. pretty B. unsanitary C. unattractive)

You should brush your A. teeth daily before reporting to work to prevent B. tooth decay and bad breath. You should wear shoes that are B. comfortable, clean, and in good repair. C. Wedding rings, class rings, and watches are the only pieces of jewelry acceptable to wear while working. Jewelry is B. unsanitary due to the many corners and crevices which may harbor soil and germs.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page 18, and be certain you understand all the statements at the bottom of page 20. Then proceed to page 22.



We need to be careful when we handle equipment and utensils. Never pick up anything with your fingers touching the surface the food will touch. Silverware should be picked up by the handles. Cups should be picked up by the handles, plates by the edge, and glasses at the bottom.

When filling glasses with ice, use the metal ice scoop provided. Never dip the glass into the ice. This is a state regulation, because glasses can easily break in the ice, and a customer can be served a very dangerous drink.

Food should never be picked up the hands, unless sanitary, disposable gloves are worn. Food should be served with tongs, spoons, dippers, or forks.

.....

Be certain you are using a \_\_\_\_\_ sink when you wash your hands. (A. clean B. dry C. hand) We have sinks in which fruits, vegetables, and meats are \_\_\_\_\_ (A. stored B. washed C. prepared) and we have sinks in which utensils and equipment are \_\_\_\_\_. (A. cleaned B. stored C. scraped) Organisms washed off the hands can \_\_\_\_\_ the sink, and later the food, utensils, or equipment cleaned in the sink. (A contaminate B. stain C. pollute)

Be certain you are using a C. hand sink when you wash your hands. We have sinks in which fruits, vegetables, and meats are C. prepared and we have sinks in which utensils and equipment are A. cleaned. Organisms washed off the hands can A. contaminate the sink, and later the food, utensils, or equipment cleaned in the sink.

If you selected the correct words to fill in the blanks, go on to the next page. If you did not select all the correct words, reread page 20, and be certain you understand all the statements at the bottom of page 22. Then proceed to page 24.

Most disease-producing organisms grow best at temperatures near that of the human body or about 100°F. They will grow quite well at a wider range of temperatures, and so a danger zone of temperatures has been established. This zone ranges from 45°F. to 140°F.

To assure safety, any hot food being served must be kept above 140°F. When the hot food is no longer being served, it must be tightly covered to prevent air contamination, and must be refrigerated immediately, to bring the temperature below the 45°F. point.

To assure safety, any cold food must be kept below 45°F. during the entire serving period. It must be tightly covered to prevent air contamination when it is stored. It must be kept below 45°F. while it is stored.

Our motto, with justifiable reasons, is: "Hot food hot; cold food cold."

.....

Never pick up anything with your \_\_\_\_\_ touching the surface the food will touch. (A. uniform B. hands C. apron) Filling glasses with ice by dipping them directly into the ice bin is prohibited by a \_\_\_\_\_. (A. supervisor B. state regulation C. K-State Union Food Service rule) \_\_\_\_\_ should be used to fill glasses with ice. (A. A paper cup B. An ice scoop C. A rubber glove) Food should never be picked up by the hands, unless \_\_\_\_\_. (A. your supervisor tells you to B. you wash your hands first C. sanitary, disposable gloves are worn)

Never pick up anything with your B. hands touching the surface the food will touch. Filling glasses with ice by dipping them directly into the ice bin is prohibited by a B. state regulation. B. An ice scoop should be used to fill glasses with ice. Food should never be picked up by the hands, unless C. sanitary, disposable gloves are worn.

If you selected the correct words to fill in the blanks, go on to the statements below. If you did not select all the correct words, reread page 22, and be certain you understand all the statements at the bottom of page 24. Then proceed to the statements below.

.....

The established safety zone for food ranges from \_\_\_\_\_. (A. 60°F. to 180°F. B. 45°F. to 140°F. C. 22°F. to 158°F.) Our motto is: "\_\_\_\_\_."  
(A. A satisfied customer will come back B. Hot food hot; cold food cold  
C. We guarantee you'll like our food)

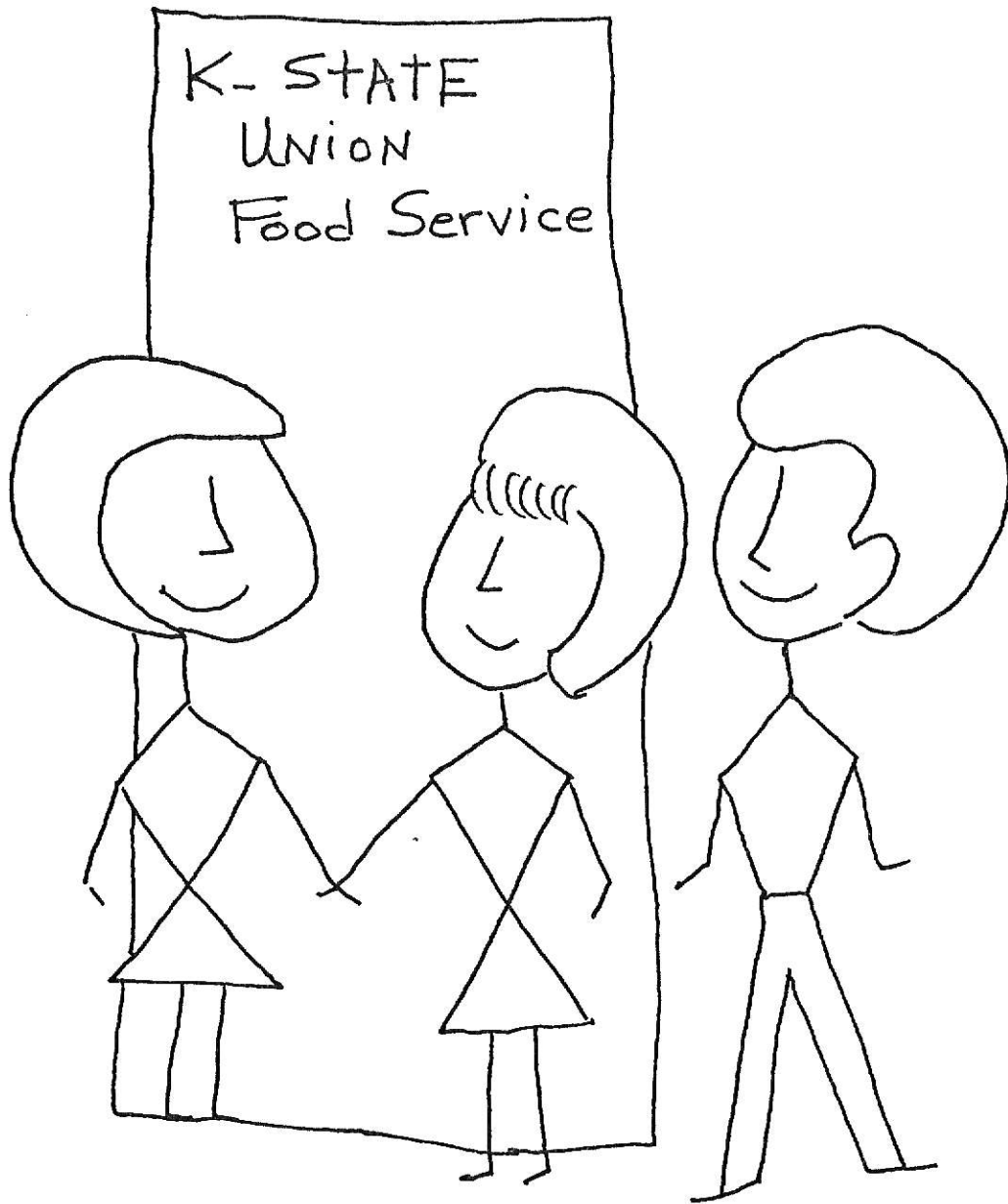
The established safety zone for food ranges from B. 45°F. to 140°F. Our motto is: B. "Hot food hot; cold food cold."

If you selected the correct words to fill in the blanks, please hand in this training manual, and I will give you the examination to fill out. If you did not select all the correct words, reread page 24, and be certain you understand all the statements at the bottom of page 25. Then, hand in this training manual, and I will give you the examination to fill out. Thank you very much for your cooperation.

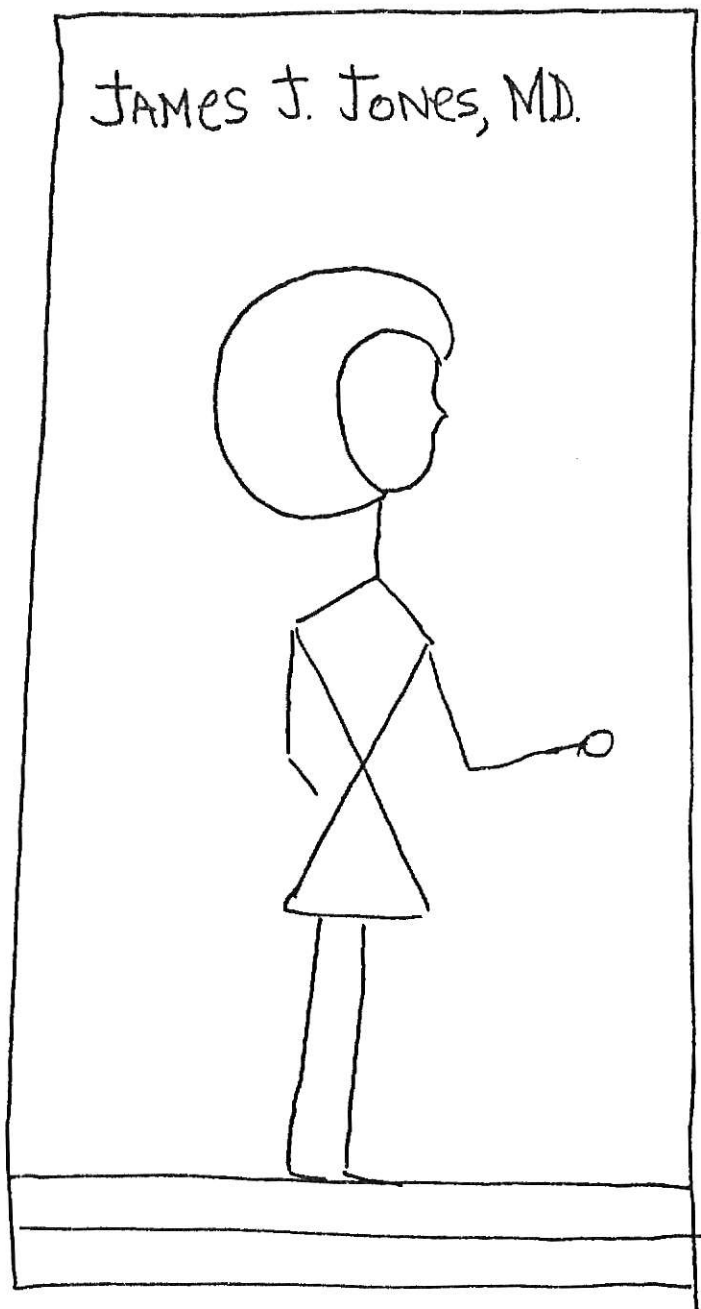
## APPENDIX C

**THIS BOOK  
CONTAINS  
NUMEROUS PAGES  
WITH DIAGRAMS  
THAT ARE CROOKED  
COMPARED TO THE  
REST OF THE  
INFORMATION ON  
THE PAGE.**

**THIS IS AS  
RECEIVED FROM  
CUSTOMER.**

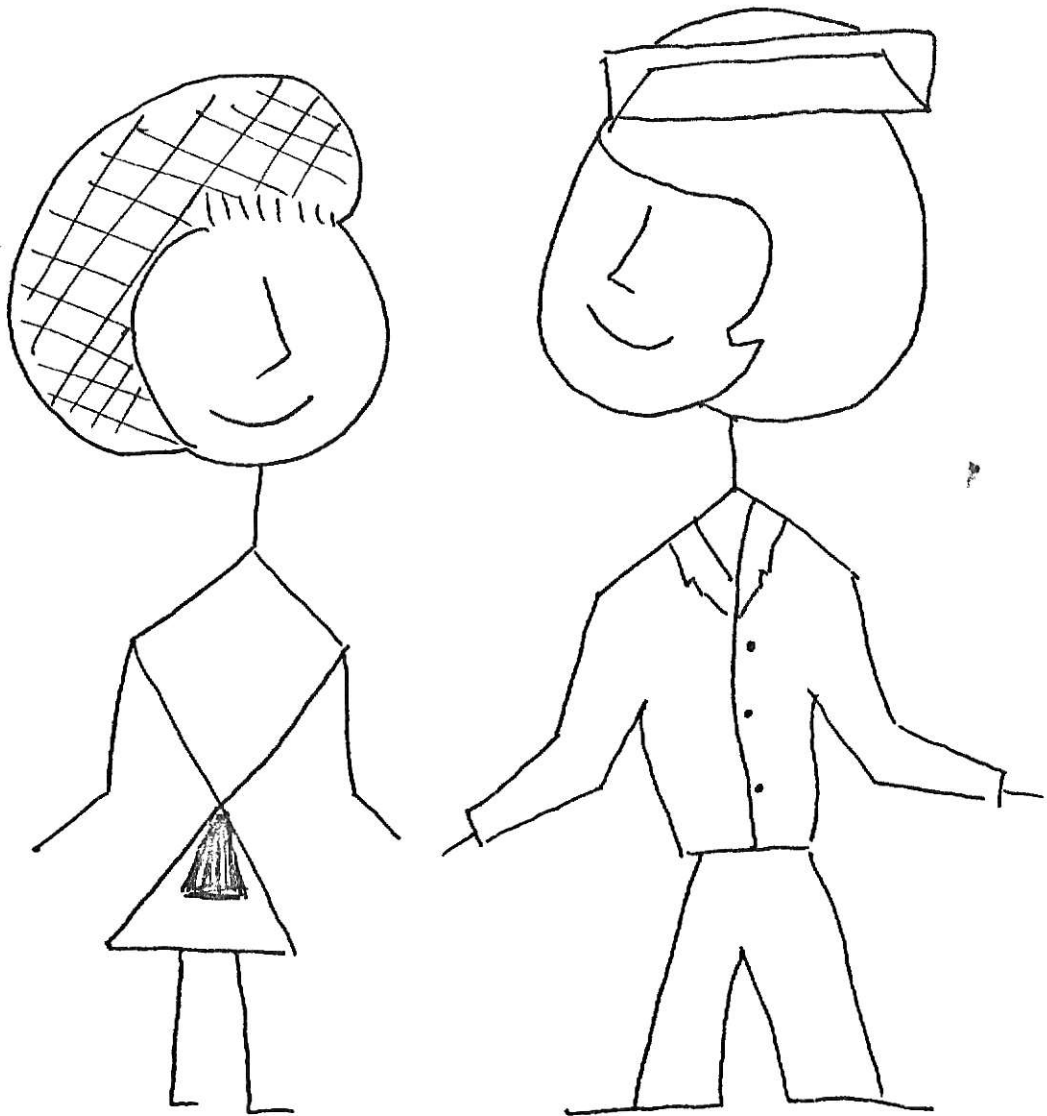








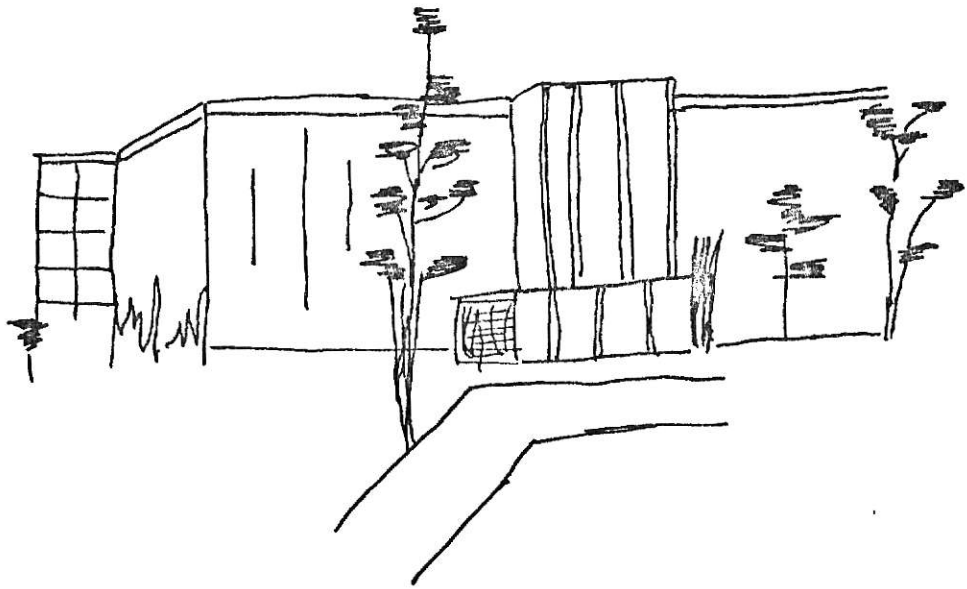


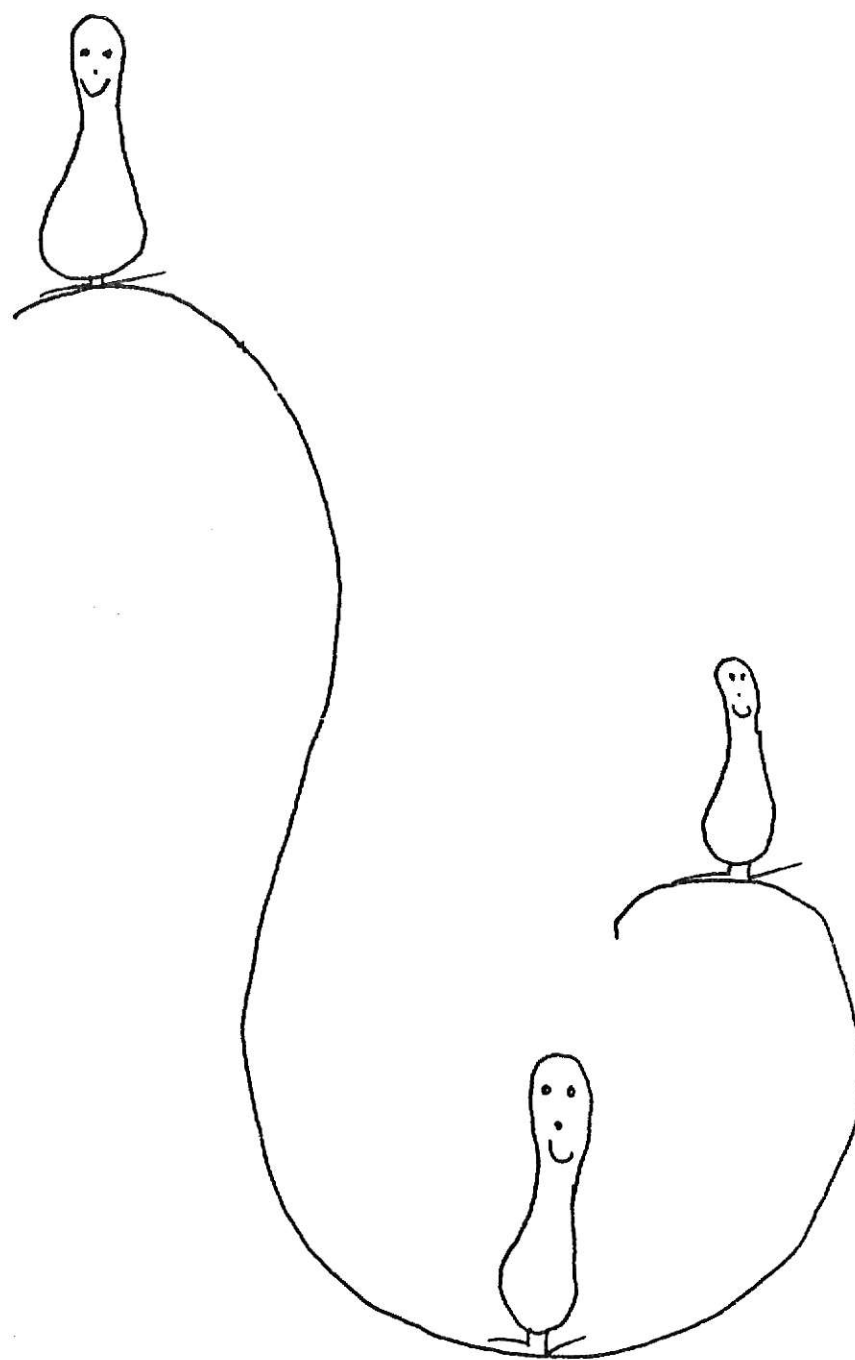


A-7



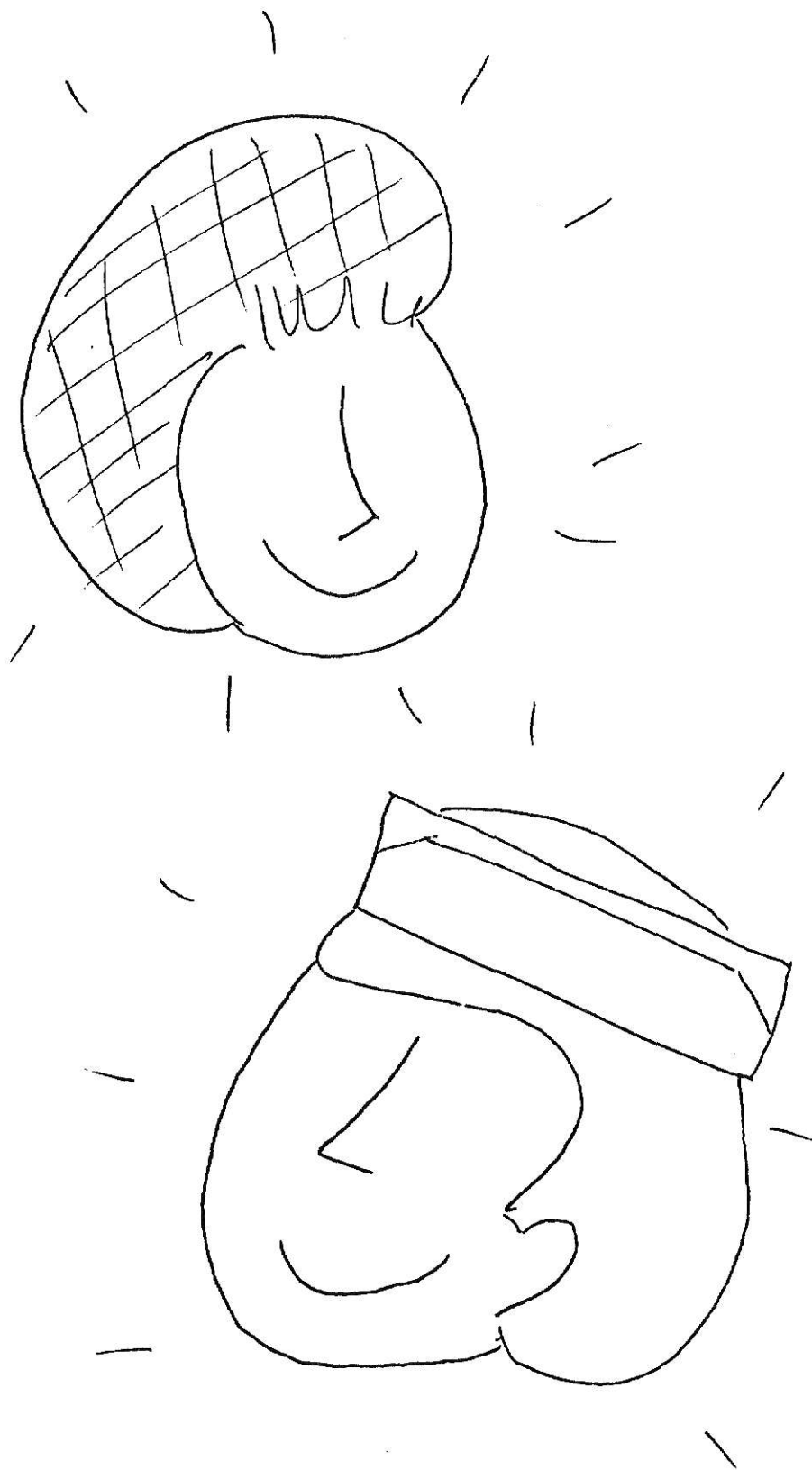
JANE DOE



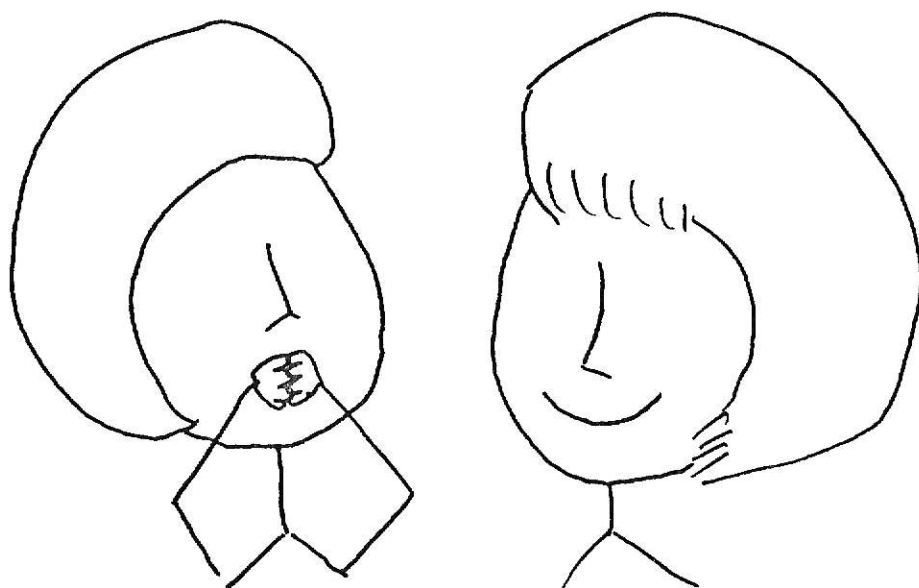
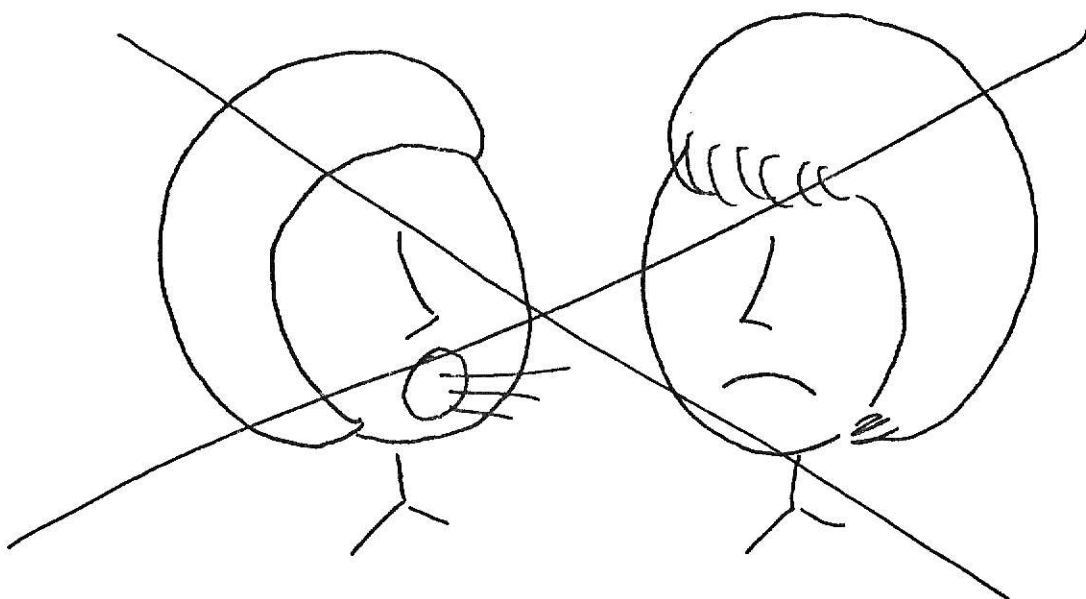


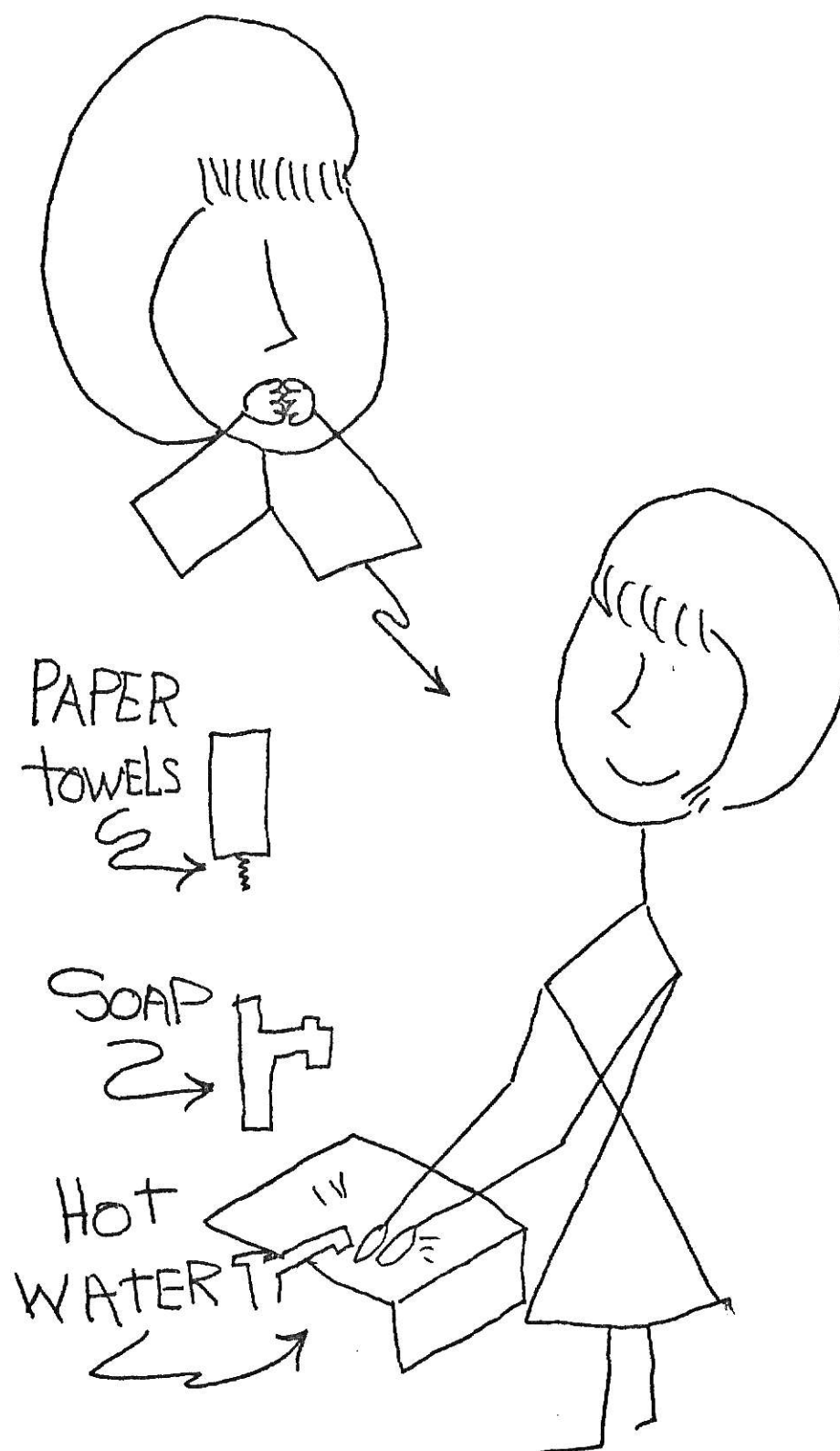


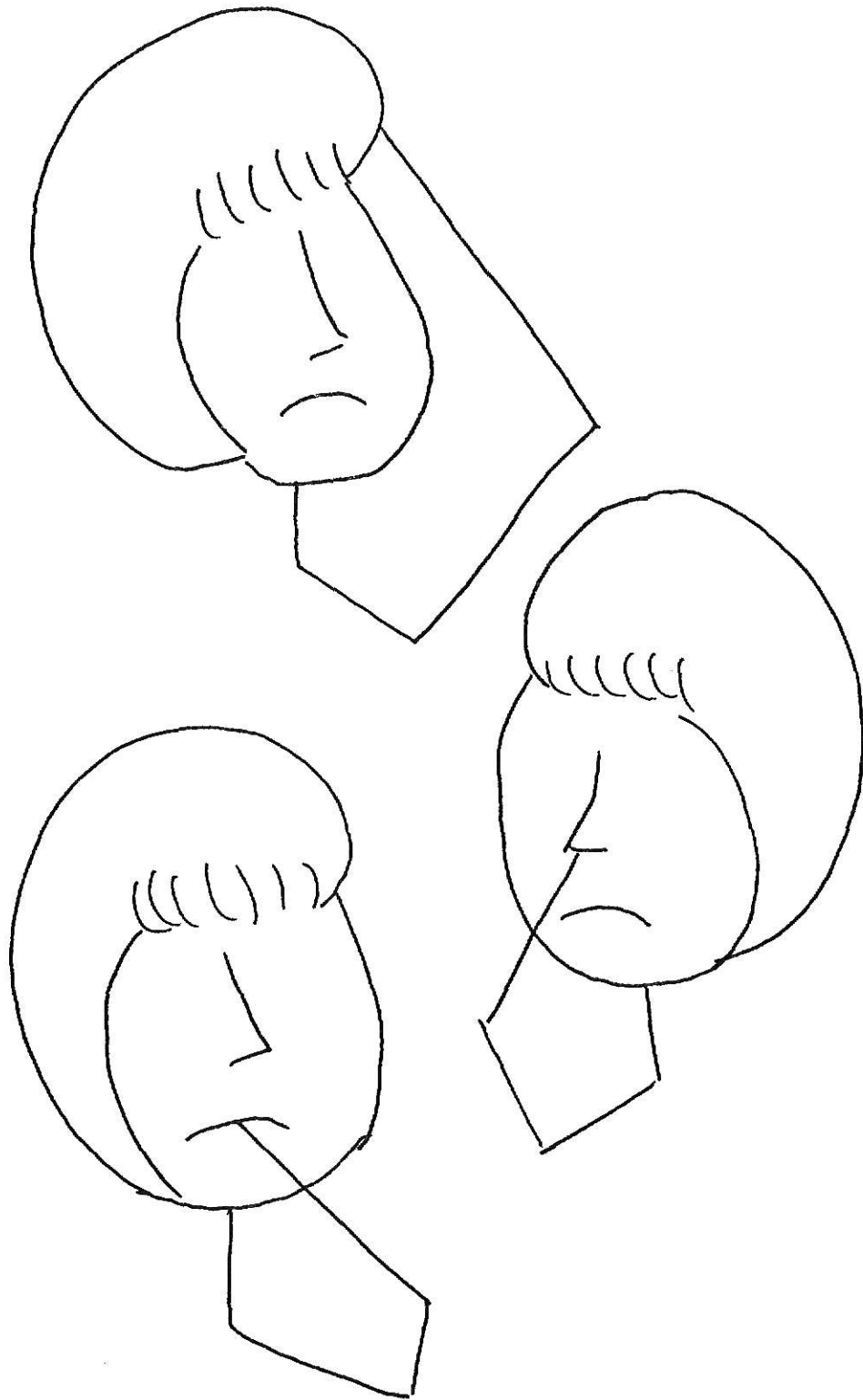


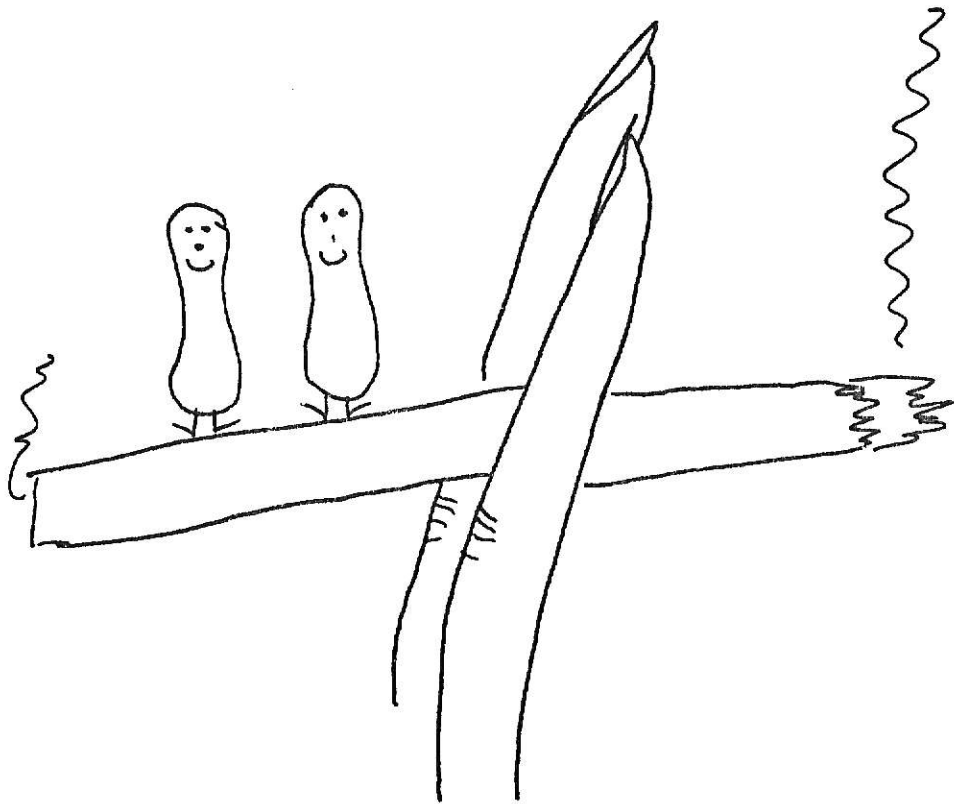


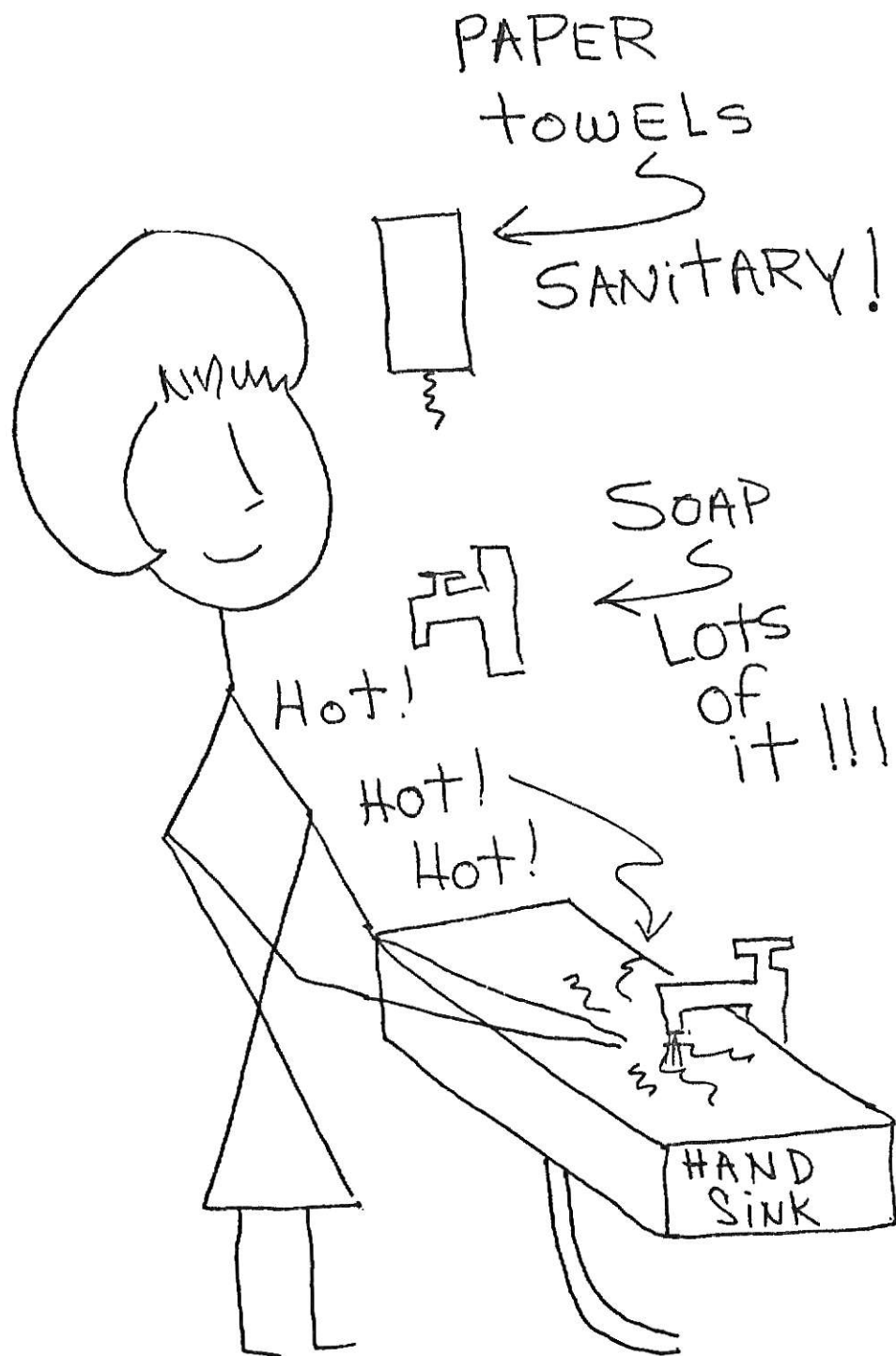


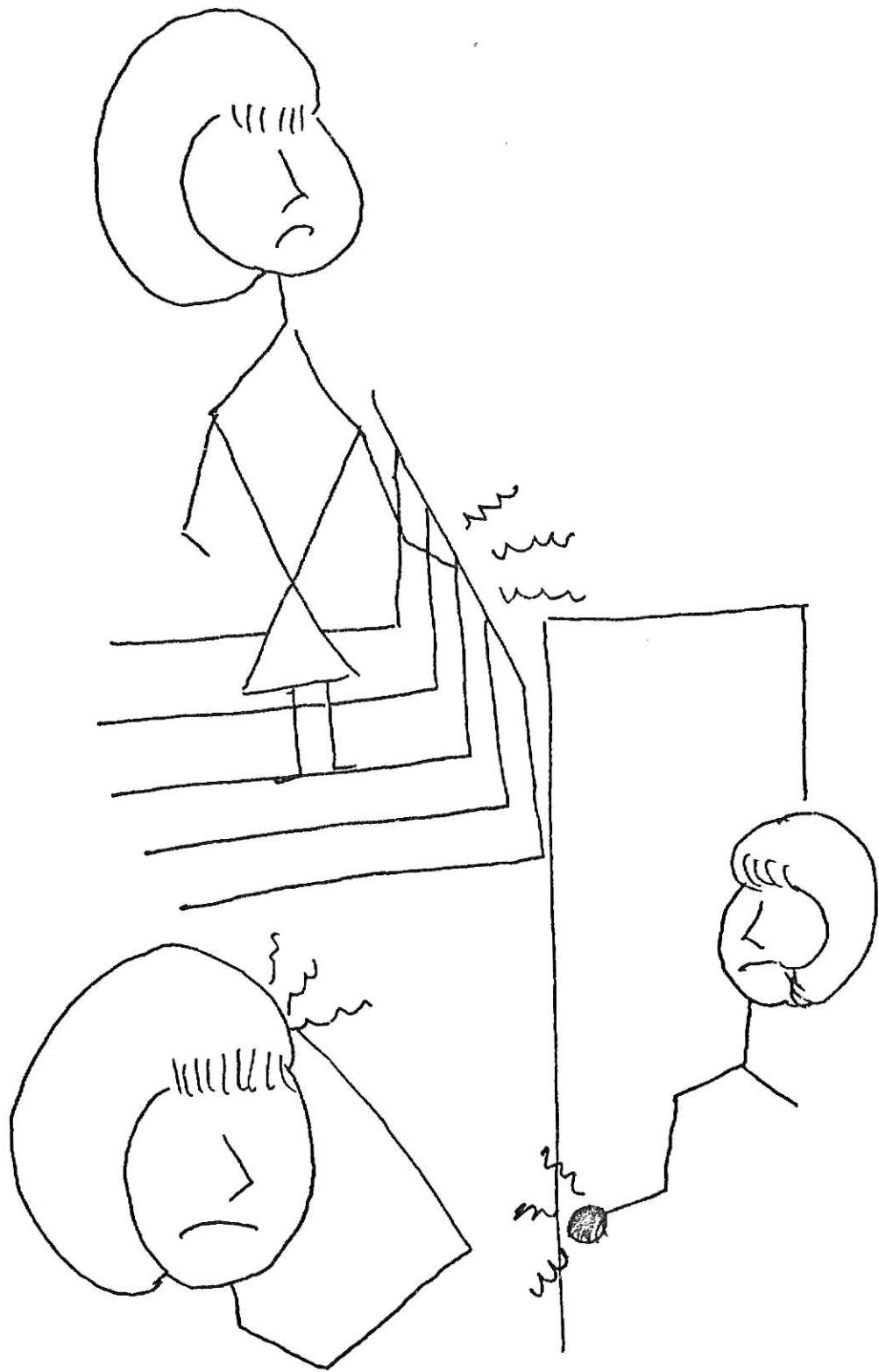






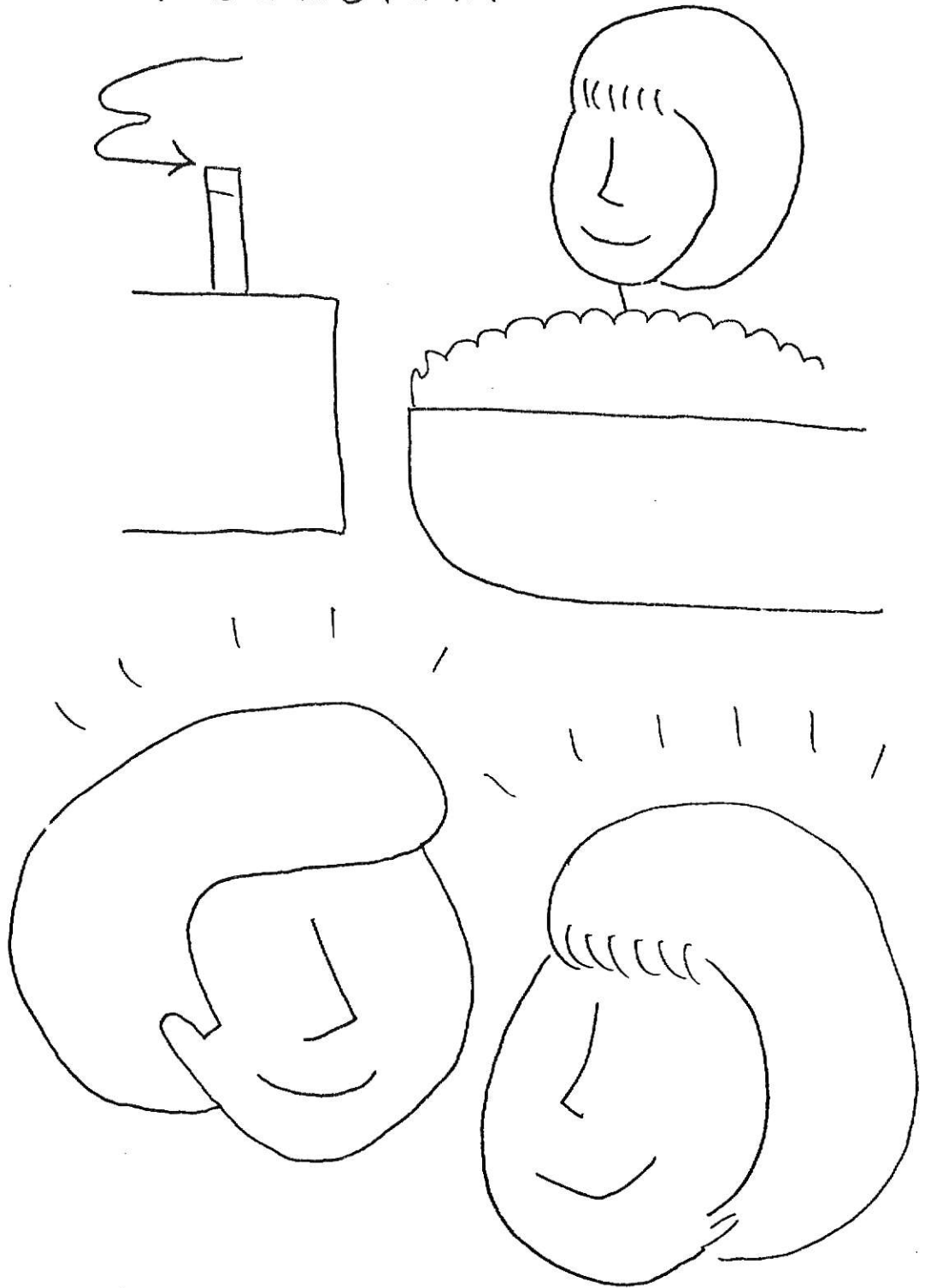


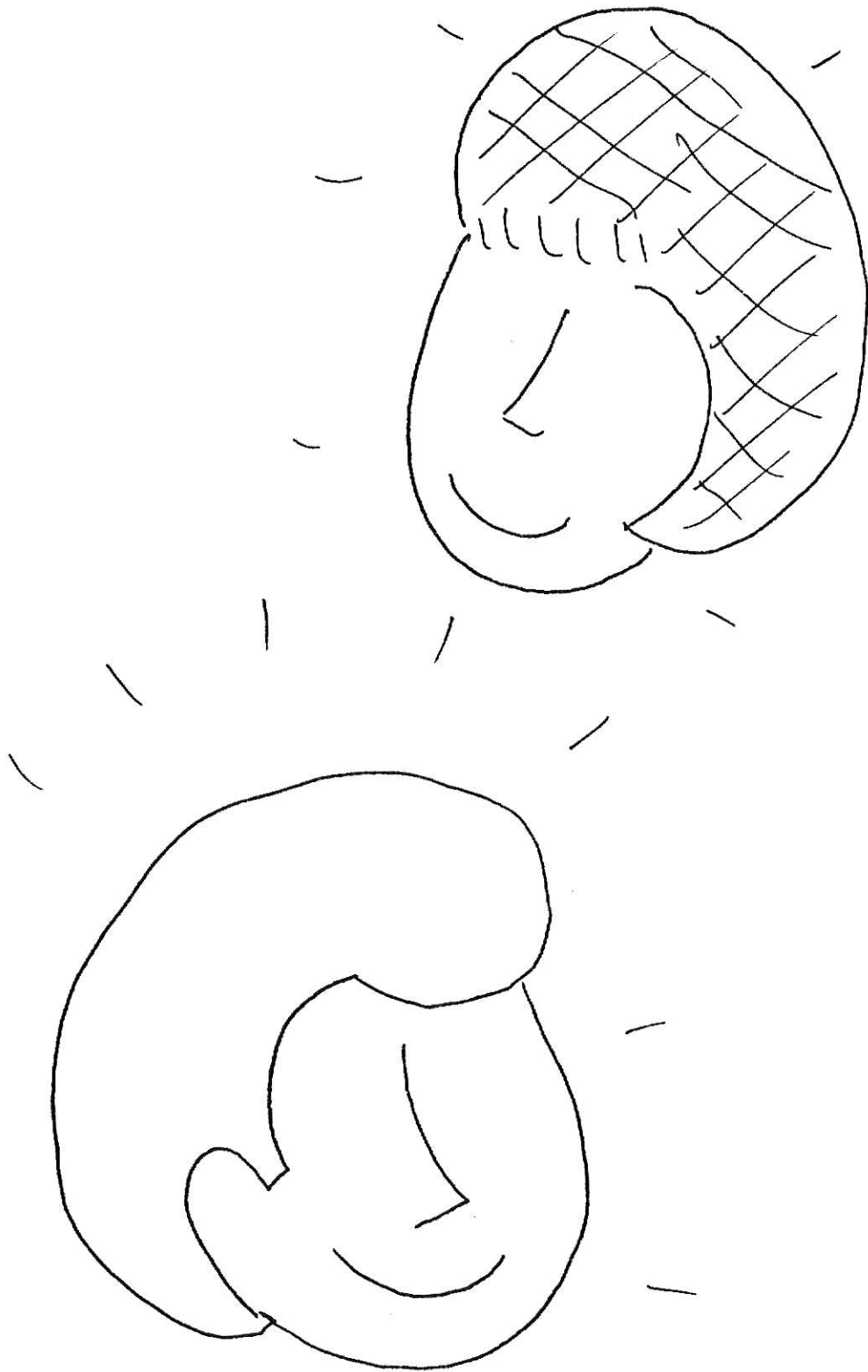


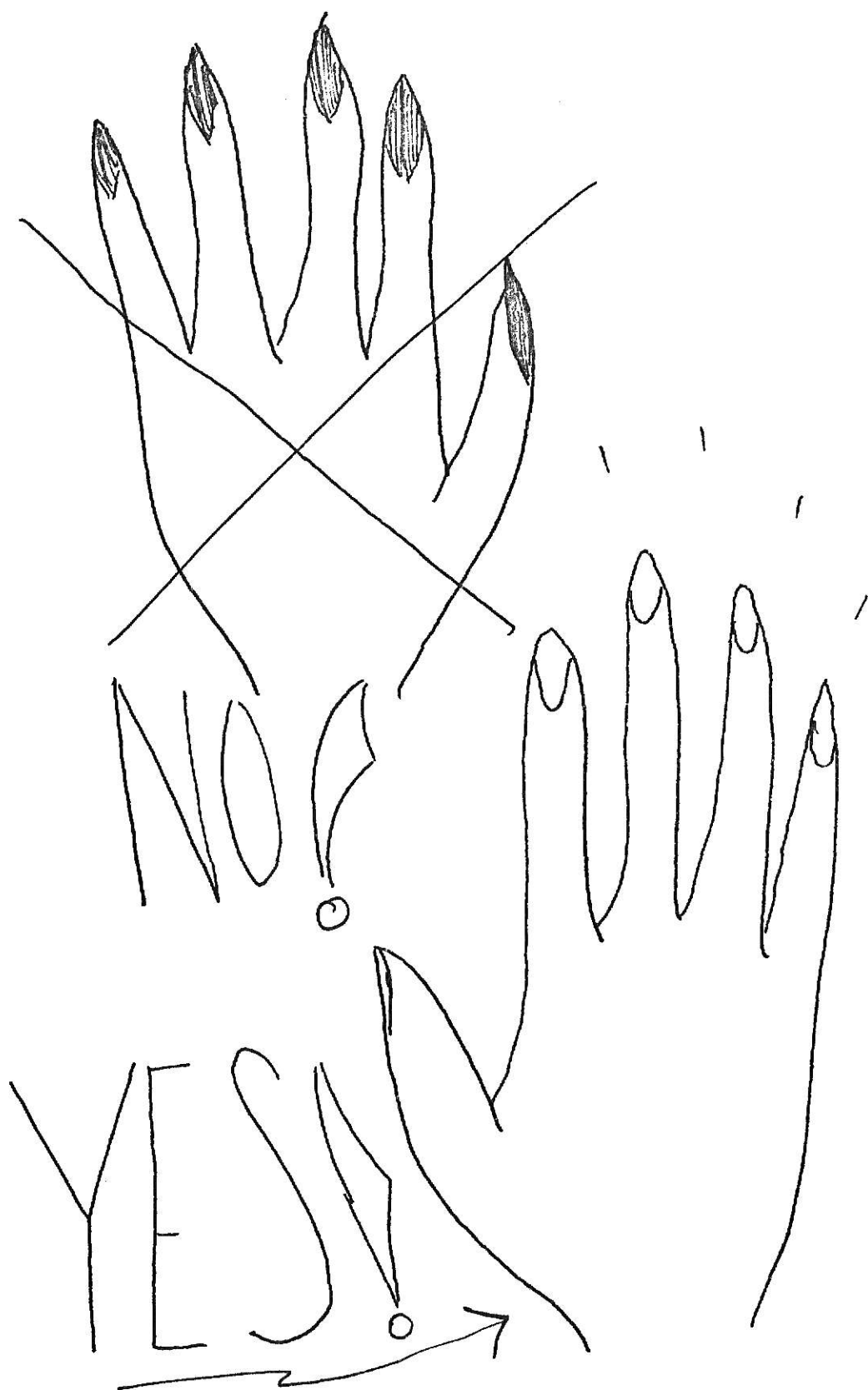


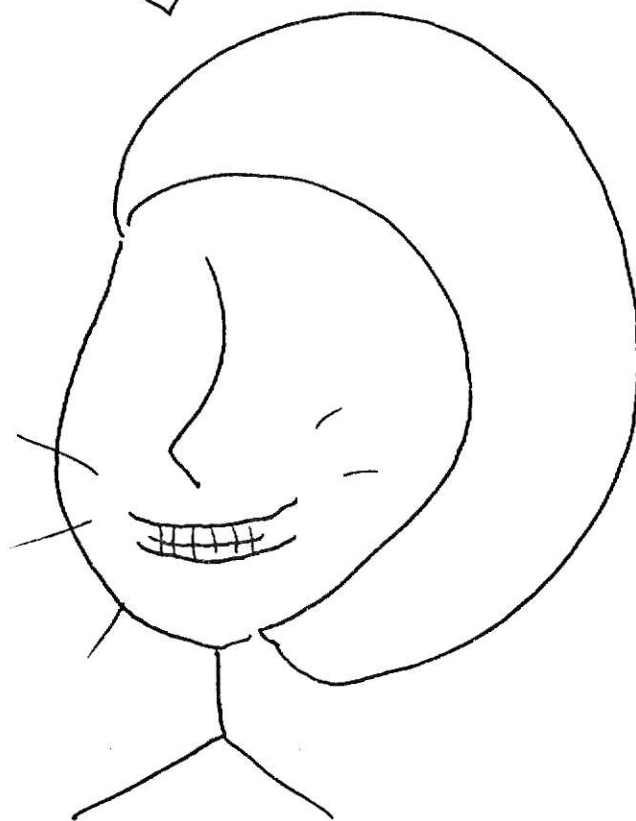
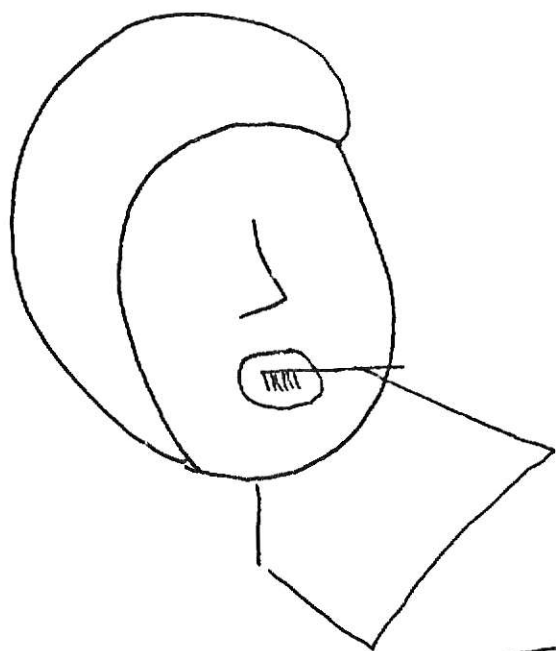


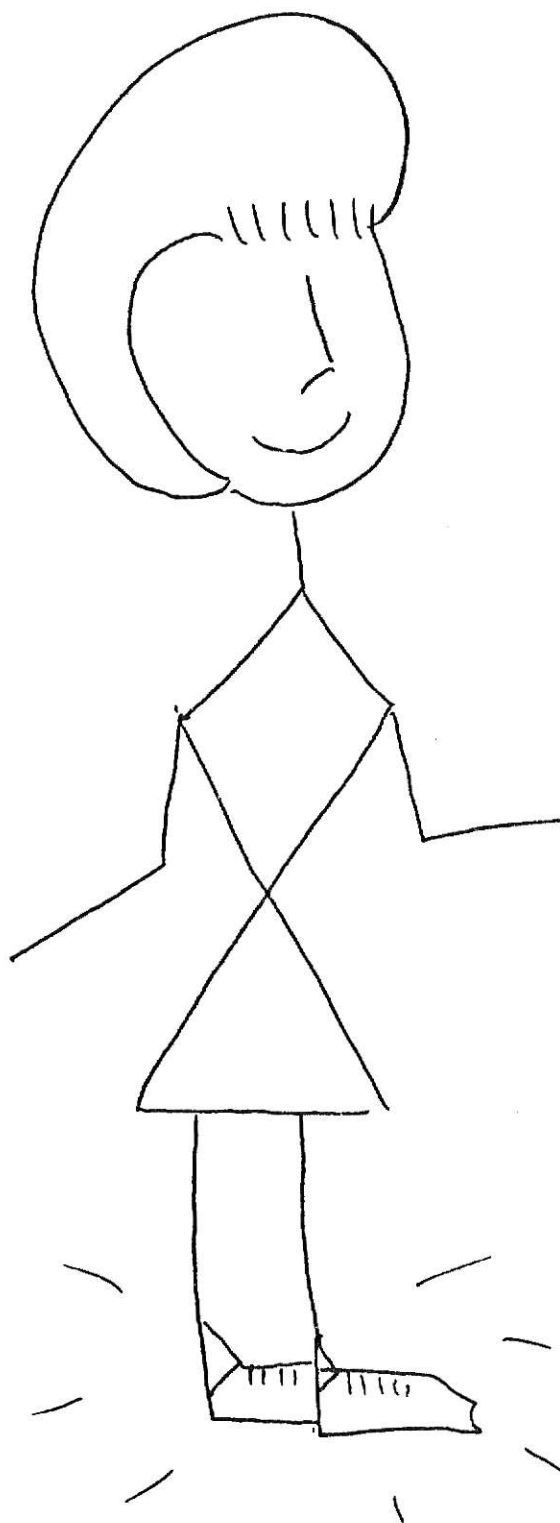
DEODORANT

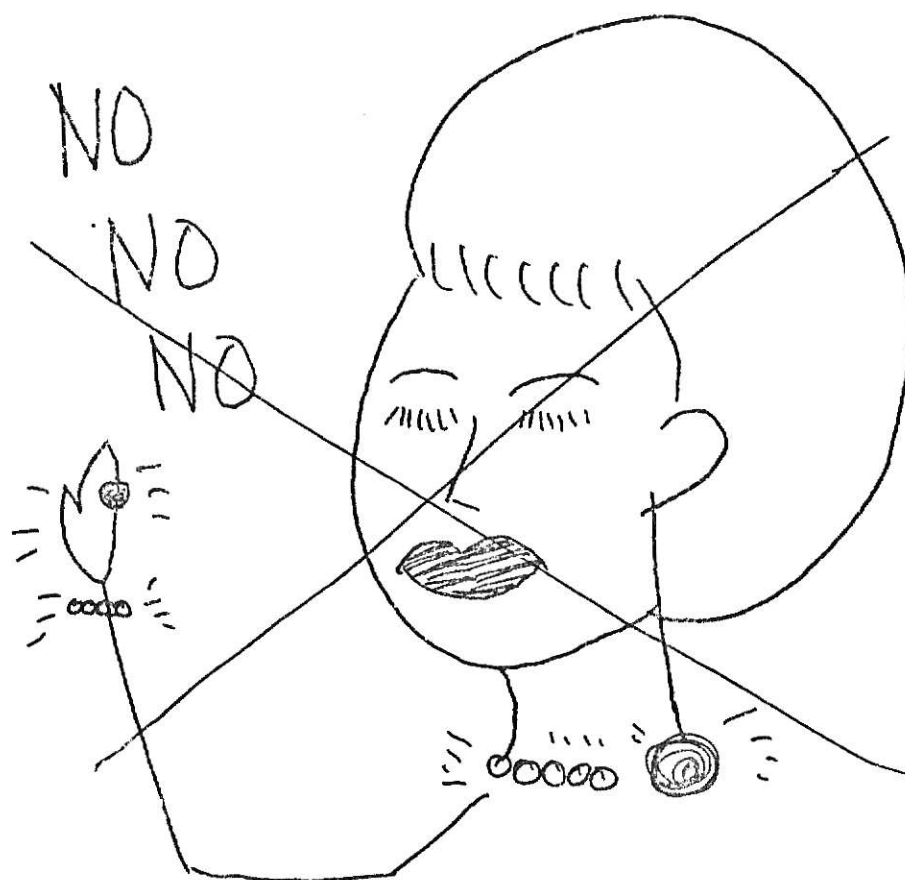








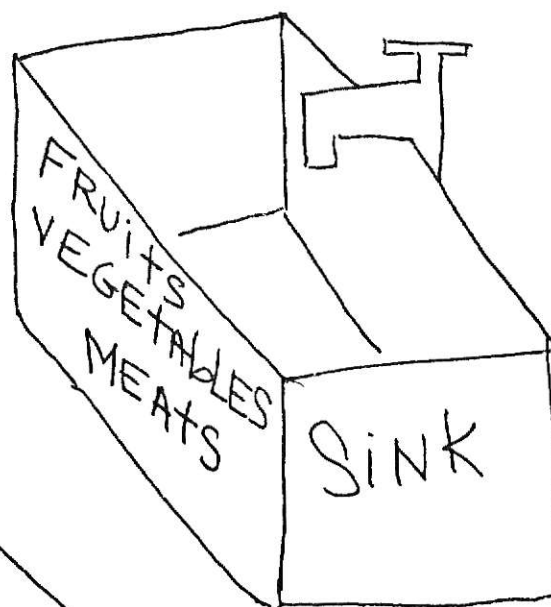






WASH  
OFTEN  
HERE!

DON'T



WASH  
HERE!







Below



$45^{\circ}\text{F}$ .

Above  
 $140^{\circ}\text{F}$ .





## APPENDIX D

## PRETEST

Instructions: Choose one response for the blank in each statement, unless otherwise indicated. Keep in mind that this is an examination on sanitation, and make your choices accordingly. Many of the statements have several correct answers, but only one dealing with sanitation.

Name \_\_\_\_\_

Date \_\_\_\_\_

Circle the correct answer

1. Regular visits to the doctor and dentist are a check on the status of personal \_\_\_\_\_.
  - A. Attitudes
  - B. Health
  - C. Appearance
2. Disease-producing organisms can \_\_\_\_\_ your food.
  - A. Flavor
  - B. Spoil
  - C. Contaminate
3. Clean, neat uniforms are \_\_\_\_\_.
  - A. Nice to wear
  - B. Pretty
  - C. Sanitary
4. Hair is \_\_\_\_\_.
  - A. Made of protein
  - B. Always growing
  - C. Unsanitary, and distasteful looking when found in food
5. To keep hair out of the food, female employees must wear \_\_\_\_\_.
  - A. Scarves
  - B. Hairnets
  - C. Ribbons
6. To keep hair out of the food, male employees with longer hair styles must wear \_\_\_\_\_.
  - A. Caps or nets
  - B. Helmets or hats
  - C. Head bands or hoods
7. Good "sanitary" manners require us to \_\_\_\_\_ our hands after sneezing or coughing into them.
  - A. Wipe
  - B. Rinse
  - C. Wash
8. The little droplets of spray thrown out from sneezing or coughing may contain \_\_\_\_\_ organisms.

- A. Many
- B. Disease-producing
- C. Dangerous

9. Scratching your head, picking at your nose, or wiping your mouth with your hand are bad " \_\_\_\_\_ " manners.

- A. Social
- B. Personal
- C. Sanitary

10. Smoking cigarettes \_\_\_\_\_ your hands, making them unsuitable to handle food.

- A. Stains
- B. Relaxes
- C. Contaminates

11. Hands should be washed before \_\_\_\_\_. (Choose more than one)

- A. Eating
- B. Smoking
- C. Preparing or serving food
- D. Handling clean equipment or utensils
- E. Using the toilet
- F. Your break
- G. Visiting the office

12. Hands should be washed after \_\_\_\_\_. (Choose more than one)

- A. Eating
- B. Smoking
- C. Preparing or serving food
- D. Handling clean equipment or utensils
- E. Handling soiled equipment or utensils
- F. Using the toilet
- G. Your break

13. To wash your hands, you should use \_\_\_\_\_ water and a generous amount of soap.

- A. Warm
- B. Cold
- C. Hot

14. You should dry your hands with a \_\_\_\_\_ towel provided above the hand sink.

- A. Dry
- B. Clean
- C. Paper

15. Germs live all over our bodies, and can cause offensive odors. For this reason we must \_\_\_\_\_.

- A. Take baths and use deodorant
- B. Get lots of sleep and use plenty of make-up
- C. Get lots of exercise and use plenty of perfume

16. Fingernails are a good haven for germs, so we should keep them \_\_\_\_\_.

- A. Polished and filed
- B. As long as possible
- C. Short and clean

17. You should brush your teeth daily to prevent \_\_\_\_\_.

- A. Tooth decay and bad breath
- B. An unnecessary trip to the dentist
- C. A bad appearance

18. You should wear shoes to work that are \_\_\_\_\_.

- A. Uncomfortable, but neat and in good taste
- B. Stylish and expensive
- C. Comfortable, clean, and in good repair

19. Jewelry should not be worn to work because it is \_\_\_\_\_.

- A. Unsanitary and gets in the way of your work
- B. In bad taste to exhibit your wealth
- C. Apt to clash with your uniform

20. You should always use a hand sink when washing your hands, because if you use food or equipment sinks, you can \_\_\_\_\_ them, and later, their contents.

- A. Stain
- B. Pollute
- C. Contaminate

21. Never pick up anything with your \_\_\_\_\_ touching the surface the food will touch.

- A. Uniform
- B. Apron
- C. Hands

22. Filling glasses with ice by dipping them directly into the ice bin is prohibited by a \_\_\_\_\_.

- A. Food service supervisor
- B. State regulation
- C. K-State Union Food Service rule

23. Food should never be picked up by the hands, unless \_\_\_\_\_.

- A. Your supervisor tells you to
- B. You wash your hands first
- C. Sanitary, disposable gloves are worn

24. The established danger zone for food ranges from \_\_\_\_\_.

- A. 60°F. to 180°F.
- B. 45°F. to 140°F.
- C. 22°F. to 158°F.

25. Our motto at the K-State Union Food Service is: " \_\_\_\_\_."

- A. A satisfied customer will come back
- B. Hot food hot; cold food cold
- C. We guarantee you'll like our food



## EXAMINATION

Instructions: Choose one response for the blank in each statement, unless otherwise indicated. Keep in mind that this is an examination on sanitation, and make your choices accordingly. Many of the statements have several correct answers, but only one dealing with sanitation.

Name \_\_\_\_\_

Date \_\_\_\_\_

Circle the correct answer

1. The little droplets of spray thrown out from sneezing or coughing may contain \_\_\_\_\_ organisms.

- A. Dangerous
- B. Many
- C. Disease-producing

2. Germs live all over our bodies, and can cause offensive odors. For this reason we must \_\_\_\_\_.

- A. Get lots of exercise and use plenty of perfume
- B. Take baths and use deodorant
- C. Get lots of sleep and use plenty of make-up

3. Food should never be picked up by the hands, unless \_\_\_\_\_.

- A. Sanitary, disposable gloves are worn
- B. Your supervisor tells you to
- C. You wash your hands first

4. Our motto at the K-State Union Food Service is: "\_\_\_\_\_."

- A. We guarantee you'll like our food
- B. A satisfied customer will come back
- C. Hot food hot; cold food cold

5. Good "sanitary" manners require us to \_\_\_\_\_ our hands after sneezing or coughing into them.

- A. Wash
- B. Wipe
- C. Rinse

6. You should dry your hands with a \_\_\_\_\_ towel provided above the hand sink.

- A. Paper
- B. Dry
- C. Clean

7. Filling glasses with ice by dipping them directly into the ice bin is prohibited by a \_\_\_\_\_.

- A. K-State Union Food Service rule
- B. Food service supervisor
- C. State regulation

8. The established danger zone for food ranges from \_\_\_\_\_.
- A. 22°F. to 158°F.
  - B. 60°F. to 180°F.
  - C. 45°F. to 140°F.
9. To keep hair out of the food, male employees with longer hair styles must wear \_\_\_\_\_.
- A. Head bands or hoods
  - B. Caps or nets
  - C. Helmets or hats
10. To wash your hands, you should use \_\_\_\_\_ water and a generous amount of soap.
- A. Hot
  - B. Warm
  - C. Cold
11. Never pick up anything with your \_\_\_\_\_ touching the surface the food will touch.
- A. Hands
  - B. Uniform
  - C. Apron
12. To keep hair out of the food, female employees must wear \_\_\_\_\_.
- A. Ribbons
  - B. Scarves
  - C. Hairnets
13. Hands should be washed after \_\_\_\_\_. (Choose more than one)
- A. Your break
  - B. Eating
  - C. Using the toilet
  - D. Smoking
  - E. Handling clean equipment or utensils
  - F. Preparing or serving food
  - G. Handling soiled equipment or utensils
14. You should always use a hand sink when washing your hands, because if you use food or equipment sinks, you can \_\_\_\_\_ them, and later, their contents.
- A. Contaminate
  - B. Stain
  - C. Pollute

15. Hair is \_\_\_\_\_.
- A. Unsanitary, and distasteful looking when found in food
  - B. Made of protein
  - C. Always growing
16. Hands should be washed before \_\_\_\_\_. (Choose more than one)
- A. Visiting the office
  - B. Eating
  - C. Your break
  - D. Smoking
  - E. Preparing or serving food
  - F. Using the toilet
  - G. Handling clean equipment or utensils
17. Jewelry should not be worn to work because it is \_\_\_\_\_.
- A. Apt to clash with your uniform
  - B. Unsanitary and gets in the way of your work
  - C. In bad taste to exhibit your wealth
18. Clean, neat uniforms are \_\_\_\_\_.
- A. Sanitary
  - B. Nice to wear
  - C. Pretty
19. Smoking cigarettes \_\_\_\_\_ your hands, making them unsuitable to handle food.
- A. Contaminates
  - B. Stains
  - C. Relaxes
20. You should wear shoes to work that are \_\_\_\_\_.
- A. Comfortable, clean, and in good repair
  - B. Uncomfortable, but neat and in good taste
  - C. Stylish and expensive
21. Disease-producing organisms can \_\_\_\_\_ your food.
- A. Contaminate
  - B. Flavor
  - C. Spoil
22. Scratching your head, picking at your nose, or wiping your mouth with your hand are bad " \_\_\_\_\_ " manners.
- A. Sanitary
  - B. Social
  - C. Personal

23. You should brush your teeth daily to prevent \_\_\_\_\_.

- A. A bad appearance
- B. Tooth decay and bad breath
- C. An unnecessary trip to the dentist

24. Regular visits to the doctor and dentist are a check on the status of personal \_\_\_\_\_.

- A. Appearances
- B. Attitudes
- C. Health

25. Fingernails are a good haven for germs, so we should keep them \_\_\_\_\_.

- A. Short and clean
- B. Polished and filed
- C. As long as possible

Please comment on the below questions:

Did you like the type of training program presented to you?

If so, or if not, why?

Do you have any suggestions for improving this training program?

## POST TEST

Instructions: Choose one response for the blank in each statement, unless otherwise indicated. Keep in mind that this is an examination on sanitation, and make your choices accordingly. Many of the statements have several correct answers, but only one dealing with sanitation.

Name \_\_\_\_\_

Date \_\_\_\_\_

Circle the correct answer

1. Filling the glasses with ice by dipping them directly into the ice bin is prohibited by a \_\_\_\_\_.

- A. State regulation
- B. K-State Union Food Service rule
- C. Food service supervisor

2. You should always use a hand sink when washing your hands, because if you use food or equipment sinks, you can \_\_\_\_\_ them, and later, their contents.

- A. Pollute
- B. Contaminate
- C. Stain

3. Scratching your head, picking at your nose, or wiping your mouth with your hand are bad " \_\_\_\_\_ " manners.

- A. Personal
- B. Sanitary
- C. Social

4. Fingernails are a good haven for germs, so we should keep them \_\_\_\_\_.

- A. As long as possible
- B. Short and clean
- C. Polished and filed

5. You should dry your hands with a \_\_\_\_\_ towel provided above the hand sink.

- A. Clean
- B. Paper
- C. Dry

6. Hands should be washed after \_\_\_\_\_. (Choose more than one)

- A. Handling soiled equipment or utensils
- B. Your break
- C. Preparing or serving food
- D. Eating
- E. Smoking
- F. Handling clean equipment or utensils
- G. Using the toilet

7. Disease-producing organisms can \_\_\_\_\_ your food.
- A. Spoil
  - B. Contaminate
  - C. Flavor
8. Regular visits to the doctor and dentist are a check on the status of personal \_\_\_\_\_.
- A. Health
  - B. Appearances
  - C. Attitudes
9. Good "sanitary" manners require us to \_\_\_\_\_ our hands after sneezing or coughing into them.
- A. Rinse
  - B. Wash
  - C. Wipe
10. To keep hair out of the food, female employees must wear \_\_\_\_\_.
- A. Hairnets
  - B. Ribbons
  - C. Scarves
11. You should wear shoes to work that are \_\_\_\_\_.
- A. Stylish and expensive
  - B. Comfortable, clean, and in good repair
  - C. Uncomfortable, but neat and in good taste
12. You should brush your teeth daily to prevent \_\_\_\_\_.
- A. An unnecessary trip to the dentist
  - B. A bad appearance
  - C. Tooth decay and bad breath
13. Our motto at the K-State Union Food Service is: "\_\_\_\_\_."
- A. Hot food hot; cold food cold
  - B. We guarantee you'll like our food
  - C. A satisfied customer will come back
14. Never pick up anything with your \_\_\_\_\_ touching the surface the food will touch.
- A. Apron
  - B. Hands
  - C. Uniform



15. Smoking cigarettes \_\_\_\_\_ your hands, making them unsuitable to handle food.
- A. Relaxes
  - B. Contaminates
  - C. Stains
16. Food should never be picked up by the hands, unless \_\_\_\_\_.
- A. You wash your hands first
  - B. Sanitary, disposable gloves are worn
  - C. Your supervisor tells you to
17. To wash your hands, you should use \_\_\_\_\_ water and a generous amount of soap.
- A. Cold
  - B. Hot
  - C. Warm
18. Clean, neat uniforms are \_\_\_\_\_.
- A. Pretty
  - B. Sanitary
  - C. Nice to wear
19. Germs live all over our bodies, and can cause offensive odors. For this reason we must \_\_\_\_\_.
- A. Get lots of sleep and use plenty of make-up
  - B. Get lots of exercise and use plenty of perfume
  - C. Take baths and use deodorant
20. To keep hair out of the food, male employees with longer hair styles must wear \_\_\_\_\_.
- A. Helmets or hats
  - B. Head bands or hoods
  - C. Caps or nets
21. Jewelry should not be worn to work because it is \_\_\_\_\_.
- A. In bad taste to exhibit your wealth
  - B. Apt to clash with your uniform
  - C. Unsanitary and gets in the way of your work
22. The little droplets of spray thrown out from sneezing or coughing may contain \_\_\_\_\_ organisms.

- A. Disease-producing
- B. Dangerous
- C. Many

23. Hands should be washed before \_\_\_\_\_. (Choose more than one)

- A. Handling clean equipment or utensils
- B. Visiting the office
- C. Using the toilet
- D. Eating
- E. Your break
- F. Preparing or serving food
- G. Smoking

24. The established danger zone for food ranges from \_\_\_\_\_.

- A. 45°F. to 140°F.
- B. 22°F. to 158°F.
- C. 60°F. to 180°F.

25. Hair is \_\_\_\_\_.

- A. Always growing
- B. Unsanitary, and distasteful looking when found in food
- C. Made of protein

## APPENDIX E

APPLICATION FOR EMPLOYMENT  
K-State Union

Date of Application \_\_\_\_\_

Date Interviewed \_\_\_\_\_

Date Hired \_\_\_\_\_

Name \_\_\_\_\_ Date of Birth \_\_\_\_\_ Sex \_\_\_\_\_

Address \_\_\_\_\_ Telephone \_\_\_\_\_ SSAN \_\_\_\_\_

Married \_\_\_\_\_ Ages of Children \_\_\_\_\_ Total Dependents \_\_\_\_\_

Civil Service Rating \_\_\_\_\_ Previously employed by State of Kansas \_\_\_\_\_

Employment Desired: Temporary \_\_\_\_\_, Full Time \_\_\_\_\_, Part Time \_\_\_\_\_, For \_\_\_\_\_ years as  
(Mark one or more) Secretary \_\_\_\_\_, Receptionist \_\_\_\_\_, Checker \_\_\_\_\_, Cashier \_\_\_\_\_,  
Desk Attendant \_\_\_\_\_, Counter Service Food \_\_\_\_\_, Janitor \_\_\_\_\_, Routeman \_\_\_\_\_, Mechanic \_\_\_\_\_,  
Banquet Waitress \_\_\_\_\_, Food Preparation \_\_\_\_\_, Dish Room \_\_\_\_\_, Pots and Pans \_\_\_\_\_, Other \_\_\_\_\_,  
Will consider any vacancy \_\_\_\_\_.

Will be able to begin work \_\_\_\_\_. How much notice do you plan to give present employer? \_\_\_\_\_ Uniform size \_\_\_\_\_

Willing to work: Summer \_\_\_\_\_, School Vacations \_\_\_\_\_, Legal Holidays \_\_\_\_\_, Evenings \_\_\_\_\_, Weekends \_\_\_\_\_.

Education:

Total years Schooling Completed \_\_\_\_\_, Degrees Received \_\_\_\_\_ Year \_\_\_\_\_

College/University and Address \_\_\_\_\_

Business School and Address \_\_\_\_\_

References: Not Relatives (List Local References if Possible)

Name

Address

Occupation

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Work Experience:

Present Employer \_\_\_\_\_ Address \_\_\_\_\_

Business of Employer \_\_\_\_\_ Length of Employment \_\_\_\_\_

Your Duties \_\_\_\_\_

Present Salary \_\_\_\_\_ Highest Salary Earned \_\_\_\_\_ Reason for Leaving \_\_\_\_\_

Last Previous Employer \_\_\_\_\_ Address \_\_\_\_\_

Business of Employer \_\_\_\_\_ Length of Employment \_\_\_\_\_

Your Duties \_\_\_\_\_

Highest Salary Earned \_\_\_\_\_ Reason for Leaving \_\_\_\_\_

FOR OFFICE USE

Appointment Form Completed \_\_\_\_\_ ID Card Requested \_\_\_\_\_ Insurance Card Completed \_\_\_\_\_

Salary at Which Hired \_\_\_\_\_ Food Handling Exam Completed \_\_\_\_\_

Employee Handbook Received \_\_\_\_\_ Meal Plan Participant \_\_\_\_\_

Advised of KSU Federal Credit Union \_\_\_\_\_ Advised of KSU Teachers and Employees Assn. \_\_\_\_\_

Comments by Interviewer: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

APPLICATION FOR STUDENT EMPLOYMENT  
K-State Union

Date of Application \_\_\_\_\_

Date Interviewed \_\_\_\_\_

Date Hired \_\_\_\_\_

Name \_\_\_\_\_ Date of Birth \_\_\_\_\_ Sex \_\_\_\_\_

Local Address \_\_\_\_\_ Telephone \_\_\_\_\_

Home Address \_\_\_\_\_ Telephone \_\_\_\_\_

SSAN: \_\_\_\_\_ Married \_\_\_\_\_ Children \_\_\_\_\_ Total Dependents \_\_\_\_\_

College/School \_\_\_\_\_ Major \_\_\_\_\_ Class \_\_\_\_\_ Will Graduate \_\_\_\_\_

Job Desired \_\_\_\_\_ For \_\_\_\_\_ months. Can work \_\_\_\_\_ hours per week.

Will be able to begin work \_\_\_\_\_ Willing to work: Summer \_\_\_\_\_, School Vacations \_\_\_\_\_  
Legal Holidays \_\_\_\_\_, Evenings \_\_\_\_\_, Weekends \_\_\_\_\_. Uniform size \_\_\_\_\_

References: Not relatives (List Local references if possible)

Name Address Occupation

1. \_\_\_\_\_

2. \_\_\_\_\_

Previous Experience:

Dates Duties Employer Address

1. \_\_\_\_\_

2. \_\_\_\_\_

Class Schedule: Mark times you are in class  
(Not available for work).

Beg. Hr.	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.
7:30						
8:30						
9:30						
10:30						
11:30						
12:30						
1:30						
2:30						
3:30						
4:30						
5:30:						

FOR OFFICE USE

Salary at Which Hired \_\_\_\_\_

Appointment Form Completed \_\_\_\_\_

Comments by Interviewer: \_\_\_\_\_

## APPENDIX F

## Summary of Statistical Analyses

for Sharon Scharf

### Study of Two Methods of Teaching Sanitary Procedures to Food Handlers

The data analyzed were obtained from two groups of newly hired food handlers, the groups being balanced as regards sex and education as closely as possible. It seems reasonable to regard the two groups initially as random samples of food handlers which would normally be hired for the K-State Union Food Service. The data were generated by giving three tests:

1. A pre-test on sanitary practices before any training was given.
2. Training one group by a lecture-transparencies method, the other by means of a programmed text designed to result in self teaching; and then re-giving the test on sanitary procedures for food handlers.
3. Giving each group the same test after the elapse of some time during which experience and forgetting were taking place.

Thereafter three differences between test scores for each person in these samples were calculated:

- a) Second test score - pre-test score;
- b) Third test score - second test score;
- c) Third test score - pre-test score;

and statistical tests conducted on each of these three measurements of gain in knowledge regarding sanitary practices. Measurement a) measures the amount learned during instruction. Measurement b) measures the effects of experience and lapsed time on the retention of the knowledge exhibited after instruction.

Measurement c) measures the total gain in knowledge of sanitary practices including instruction, experience, and elapsed time.

The measurements obtained, especially b), do not appear compatible with an assumption of normality of distribution, nor any other readily recognized statistical distribution; hence a distribution-free test was indicated as appropriate. Because major interest was in the possible effects of training method on level of knowledge of sanitary practices for food handlers, the hypothesis suggested thereby for test was taken to be:

$H_0$  [The population means (or medians) are equal], where the populations were determined by the two methods of instruction.

In addition to testing the  $H_0$  stated, it would be good to be able to detect any differences between the populations created by the two methods of instruction; hence the Smirnov two-sample test was used. This test is considered conservative when discrete data are involved, as they are here, so  $\alpha$  was taken at 0.10.

The actual analyses are as follows:

#### I. Gains after initial instruction.

Observed Gain	-2	-1	0	2	3	4	5	6	7	8	10
L-T cum. freq.	1	2	3	5	7	7	11	11	13	14	14
rel. cum. freq.	.07	.14	.21	.36	.50	.50	.79	.79	.93	1.00	1.00
P-T cum. freq.	0	0	0	2	3	8	11	12	13	14	15
rel. cum. freq.	0	0	0	.13	.20	.53	.73	.80	.87	.93	1.00
maximum difference in r.c.f.						.30					



Observed test statistic,  $T_1 = .30$ ; with  $\alpha = 0.10$  in two-tail test, the critical 10% value of  $T_1$  is 0.46. Because the observed  $T_1 = .30$  is less than the critical values of  $T_1$  at 0.46,  $H_0$  is accepted and it is believed that the two methods of training are essentially equal in imparting knowledge, which is immediately recallable. Conover's tables were used to find the critical  $T_1$ .

II. Gains after experience and elapsed time compared to immediate recall.

Observed Gain	-4	-2	-1	0	1	2	5
L-T cum. freq.	0	0	3	7	12	13	14
rel. cum. freq.	0	0	.21	.50	.86	.93	1.00
P-T cum. freq.	1	4	9	11	15	15	15
rel. cum. freq.	.07	.27	.60	.73	1.00	1.00	1.00
maximum difference in r.c.f.			.39				

Observed test statistic =  $T_1 = .39$ . With  $\alpha = 0.10$ , as in I, the critical value of  $T_1$  again is 0.46; hence the observed  $T_1$  is less than the critical  $T_1$  and  $H_0$  is accepted. It is concluded that the two methods of training do not significantly change the gain in knowledge of sanitary practices for food handlers between the second test and the third.

## III. Overall gains following instruction and elapsed time.

Observed Gain	-2	0	1	2	3	4	5	6	8	9
L-T cum. freq.	1	3	3	4	4	7	8	12	13	14
rel. cum. freq.	.07	.21	.21	.29	.29	.50	.57	.86	.93	1.00
P-T cum. freq.	0	0	2	3	8	9	11	13	14	15
rel. cum. freq.	0	0	.13	.20	.53	.60	.73	.87	.93	1.00
maximum difference in r.c.f.						.24				

Again the  $H_0$  is accepted because the observed test statistic,  $T_1 = .24$ , is less than the corresponding critical value,  $T_1 = .46$ . The  $H_0$  is that methods of instruction do not affect the gain in test score from the pre-test to the final test.

Because many people are not familiar with distribution-free and/or nonparametric tests, and therefore have more confidence in the t-test--even when it is invalid--the t-test was run on situations I and III with the following results:

For I:  $|t| = 1.40$  with 27 degrees of freedom. The critical 10%

$|t|$  is 1.71; hence  $H_0$  is accepted readily, as before.

For III:  $|t| < .7$  (in fact the difference between the mean gains is only 0.01) hence  $H_0$  again is readily accepted.

In situation II, the numbers are so obviously non-normal that no t-test was run.

DEVELOPMENT AND COMPARISON OF TWO FORMS OF INSTRUCTION  
FOR TRAINING FOOD SERVICE WORKERS IN SANITATION

by

SHARON ANNE VONEUW SCHARF

B.A., Humboldt State College  
Arcata, California, 1964

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Institutional Management

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1972

Good sanitation practices should be a primary concern of every food service worker. Training to improve the sanitary handling of food is needed to reduce the increase in incidence of foodborne illnesses. This training should begin on the first day of a worker's employment. Programmed instruction is one of the methods of training being explored for the food service industry.

The purpose of this study was to develop an orientation program on sanitation for food service workers, using a programmed text and a lecture-transparencies presentation, and to compare the two forms of the program for training food service workers at the K-State Union Food Service.

A lecture concerning basic sanitation practices was developed, including all areas important to the K-State Union Food Service. Twenty-seven transparencies were drawn to accompany the lecture.

A programmed text was developed from the lecture. An examination was written, using multiple choice questions from the programmed text. This examination was expanded into three forms, by changing the order of the questions and responses. The three forms served as a pre-test, an examination, and a post test.

All new American employees of the K-State Union Food Service were selected for the training program. Two foreign employees (Brazil and Nigeria) who displayed excellent speaking abilities in English were also chosen. The employees' employment applications were used as questionnaires to obtain needed information for the division into the two training groups. Each employee was given a pre-test on the first day of their employment.

On the second day of their employment, each worker was presented one of the two training programs. The examination followed the training program. Workers were given the opportunity to write their opinions of the training

program after the examination. Three weeks after the training presentation, each subject was given a post test.

The majority of subjects made gains on each test, regardless of the type of training received. According to the Smirnov test, there was not a significant change in initial knowledge, overall knowledge, nor retention of knowledge between the two methods of training.